Project Solutions for Integration of the "Book Heritage of the Shevchenko Scientific Society (1873-1913) : Digital Collection" Into the Library's Electronic Infrastructure

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Abstract

The experience of the Vasyl Stefanyk National Scientific Library of Ukraine in Lviv regarding the digitization and formation of the digital books collection of the Shevchenko Scientific Society (1873–1913) and the development of a project for its presentation on the World Wide Web is disclosed. The complex of technological solutions for the organization of optimal digitization of documents was outlined, ensuring the main processes of integration of the digital resource into the electronic infrastructure of the library, formation of a database of book monuments in AILS Aleph, entering bibliographic metadata of digitized editions to present the electronic collection on the library portal. The procedure for scanning and subsequent storage of electronic copies of books was described in detail. It has emphasized that the successful implementation of the project will provide an opportunity to effectively preserve valuable and rare editions of the digital books collection of the Shevchenko Scientific Society (1873–1913). The open access will contribute to the further inclusion of the digital collection in the international and domestic system of electronic communications.

Keywords 1

Management, project, metadata, digitization, electronic catalog, digital books collection, electronic infrastructure, library, publications, Shevchenko Scientific Society.

1. Introduction

The Vasyl Stefanyk National Scientific Library of Ukraine in Lviv (hereinafter – Stefanyk LNNB of Ukraine) is an important information-analytical and socio-cultural center, a repository of unique handwritten and printed monuments of book culture, works of Ukrainian and foreign art.

The Universal in terms of types and types, the fund of the books collection includes about 8 million items, in particular:

- one of the richest collections of Ukrainian literature in the world, which includes manuscripts and printed editions of the 11th – beginning of 20th century;
- personal archival funds of the 18th–20th centuries;
- Ukrainian and foreign periodicals of the 18th – first half of the 21st centuries, unique collections of incunabula, paleotypes, old prints of the 16th–18th centuries, cartographic editions, works of visual and musical art of the 15th–20th centuries etc.

The Vasyl Stefanyk national scientific library of Ukraine in Lviv provides its readers and users with a basis and additional library services, as well as access to electronic resources in accordance with the Law of Ukraine "On Libraries and Library Affairs" dated January 27, 1995, Figure 1.

The unique and valuable collections of Ukrainian literature, as well as collections of old printed and manuscript publications of the library belong to scientific objects that constitute national heritage [1]. The total number of publications that are of exceptional importance for national science and cannot be

reproduced in the event of their loss or destruction is 5 million 694 thousand copies.

Fund of Ukrainian Studies of the 19th–21st centuries. has about 345 thousand documents, among which an important place is occupied by publications, was issued by the printing house of the Shevchenko Scientific Society (hereinafter – NTSh).

These are unique sources for studying history, literature, linguistics, ethnography, and other areas of social life of the Ukrainian people.

Most of the publications of the Shevchenko Scientific Society were banned in the Russian and later the Soviet Empire, were destroyed, and were hidden from a wide range of readers in special storage departments of scientific libraries.
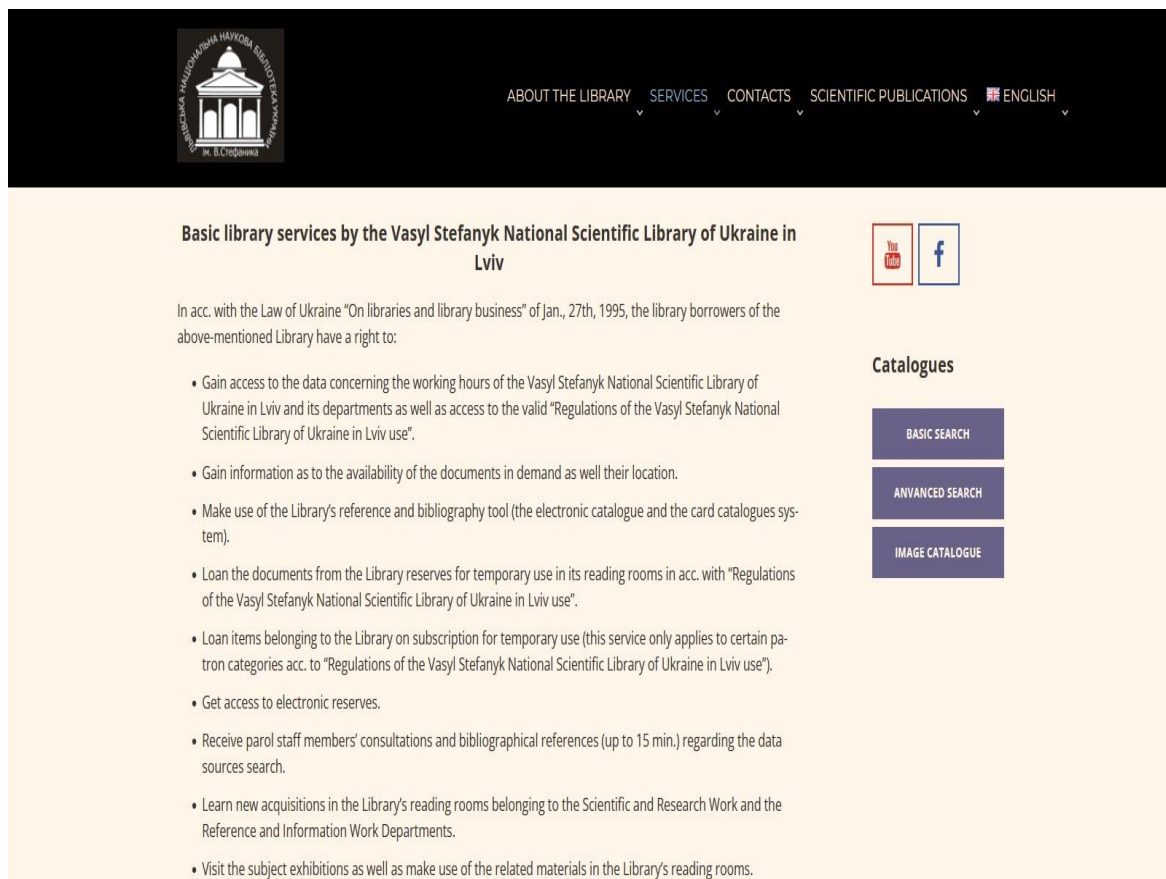

Figure 1: Screenshot from the Vasyl Stefanyk National Scientific Library of Ukraine in Lviv home page.

Considering the fact that Stefanyk National Scientific Library of Ukraine in Lviv has one of the largest and most comprehensively presented collections of publications of the Shevchenko Scientific Society, it is important to preserve and publicize it, to ensure open, convenient and effective access to documents for domestic and foreign readers from various fields of knowledge.

For this purpose, the leading specialists of the book collection developed the project "Book heritage of the Shevchenko Scientific Society (1873–1913): digital collection", which in 2023 was submitted for obtaining a grant from the Ukrainian Cultural Foundation.

As a result of passing the technical selection, a satisfactory result was achieved, Figure 2.

Figure 2: Screenshot from the Ukrainian Cultural Foundation user's account page about successful technical selection.

2. Analysis of latest research and publications

The best practices of project activity are summarized in a number of publications by Ukrainian and foreign researchers. Projects are considered as a way to sustainable development of the library business (Iryna Davydova) [2] and the method of attracting material, information and other resources (Yulia Sysova [3], Jacek Willecki [4]),are analyzed in the context of library partnership (Olena Voskoboinikova-Huzieva [5], Inna Lobanovska [6]), are elucidat as an object of professional activity (Paweł Wyrozębski [7], Maja Wojciechowska [8]).

Stefanyk LNNB of Ukraine has experience in organizing and implementing various projects. For example, in 2021, the authors of this publication prepared materials for submitting a grant application "Complex restoration of an architectural monument of the beginning of the 19th century building of the Stefanyk National Scientific Library of Ukraine in Lviv, Lviv, st. Stefanyka, 2" to the program of the President of Ukraine "Great Construction" project "Great Restoration" and entered the list of winners [9]. The implementation of the project provided for the constant innovative development of library and information activities in order to carry out a qualitative and systematic transformation of the library.

Julie Carpenter's publication "Project Management in Libraries, Archives and Museums: Working with Government and Other External Partners" is the publication remains an important source of instructions on project management in information organizations, establishing partnerships between various institutions, which describes in detail the main stages of project implementation, risk management methods, remains an important source of guidance on project management in information organizations, establishing partnerships between various institutions , material means and human resources, the peculiarities of project evaluation and ensuring the quality of expected information products are analyzed, the principles of using communication technologies are revealed [10].

Digitization of publications is the leading direction of project activity of libraries, which is supported by state and non-governmental institutions. Digitization has become the object of a number

of declared, initiated or implemented projects. Therefore, a wide range of publications by ukrainian librarians is devoted to the creation of electronic collections as one of the ways to preserve original documents and their copies for posterity, to the expansion of online library and information services, in particular the work of: Kateryna Lobuzina "Technologies of the organization of knowledge resources in library and information activities". [11], Yurii Horban "Preservation of book monuments as cultural values in libraries of Ukraine" [12], Ivan Lobuzin "Digital library projects: technological solutions and collection lifecycle management" [13], Olena Marina "Library in digital space" [14], Maryna Shevchenko "Digitization of Ukrainian library funds" [15].

Within the scope of the project, it is planned to bring together information about individual editions of the Shevchenko Scientific Society into a complete bibliographic database.

3. Formulation of the purposes of the article

The purpose of the article is to highlight the concept of the project, the main stages of its development, implementation features, disclosure of technological library processes and operations to ensure the preservation of the originals of rare and valuable publications of the Shevchenko Scientific Society; creation of a digital collection of book publications of the NTSh, which were published during the years 1873–1913; providing users with free and open access to digitized full-text copies of publications, introducing them into wide scientific and cultural circulation; presentation of national cultural heritage via the Internet and possible participation in international projects of Europeana (European Digital Library), World Digital Library etc.

4. Presenting main material

It should be noted that the idea of the project is determined by the need to preserve the cultural heritage of Ukraine as much as possible. On the one hand, it is important to limit the use of original documents, due to their inevitable wear and tear during mechanical contact. On the other hand, since our country has been in unprovoked state of war by russian agression for more than a year, there is an almost daily threat of losing rare editions as a result of massive enemy missile fire.

The 150th anniversary of the NTSh, which will be celebrated in December 2023, is also a significant incentive for the creation of a digital electronic collection. Making the Society's work available will give an impetus to the latest historical and scientific studies, will serve to enlighten the general public, will provide countermeasures to enemy propaganda narratives aimed at discrediting Ukrainian culture, will popularize among Ukrainian and foreign consumers the currently insufficiently known source base of the most diverse thematic and disciplinary direction (from history, linguistics , ethnography, anthropology, etc.).

NTSh is the oldest scientific organization of Ukraine, in the historical development of which 5 periods can be distinguished. Our Project chronologically covers the initial stages of the Society's activity, namely: the first period (1873–1892) and the second period (1892–1913), which reflect the peculiarities of the organization's functioning, its status, changes in management and publishing priorities.

The first period (1873–1892) is the stage of foundation and development of the Society's publishing activities. NTSh was established on December 13, 1873 in Lviv as the Shevchenko Literary Society at the initiative of well-known public figures of the Narodnytskyi orientation of Naddniprianshchyna and Halychyna. According to the charter, the Society set itself the goal of "supporting the development of Ruthenian literature" [16] through publishing and financing the printing of certain books and magazines.

The second period (1892–1913) is the stage of reorganization of the Society into a scientific institution. In 1892, an updated Statute was adopted, according to which the Society was transformed into a multidisciplinary Academy of Sciences and received a new name - the Shevchenko Scientific Society.

The Society made the greatest scientific and organizational progress during the chairmanship of Mykhailo Hrushevskyi (1897–1913). During this period, publishing activity gained significant momentum: the release of many serial and monographic publications was established. NTSH is turning into a scientific institution known within Ukraine and abroad.

The integration and representation of the digital collection of the book heritage of the NTSh (1873–1913) is entrusted to a working group consisting of leading specialists of the Stefanyk National Library of Ukraine in Lviv.

Taking into account the tasks, means and methods of forming and presenting the digital collection, as well as the professional and professional competence of the performers, several stages can be distinguished.

The first stage – bibliographic and search - aimed at identifying and selecting publications intended for digitization:

- electronic and image catalogs of Stefanyk LNNB of Ukraine;
- a wide range of bibliographical sources.
- A number of items must be taken into account when selecting publications:
- availability of digitization and availability of the book in the global information space;
- the physical condition of the original and its polygraphic execution (type of frame, opening angle of the book block, method of binding, etc.);
- the transfer of the work into the public domain (compliance with the requirements of the Law of Ukraine N 2811-IX of December 1, 2022 "On copyright and related rights"), the term of validity of copyright;
- reader interest (user inquiries);
- uniqueness;
- rarity due to low circulation or small number of surviving copies;
- memoriality (publications are associated with the life and work of outstanding personalities, with the work of scientific and creative teams, with important historical events and memorable places);
- collectability, publication belonging to private collections.

The integrated library and information system Aleph 500 of the company ExLibris (Israel) has been implemented in the Vasyl Stefanyk National Scientific Library of Ukraine.

In the process of carrying out works, re-cataloging was carried out in parallel with cataloging, as well as retrospective conversion of card library catalogs.

Today, the created electronic catalog fully reflects the entire library collection since 1991. Publications before 1990 are partially included in the electronic catalog and fully displayed in the image catalog.

Among the shortcomings of the solution created on AILS Aleph, it should be noted the lack of standard solutions regarding the organization of the entire technological cycle of the formation of a library digital resource.

However, taking into account other significant advantages of using AILS Aleph as the main platform, the relevant efforts were focused on the analysis, substantiation and refinement of the existing library digital complex, its elements and technological links.

Work was carried out with a part of the general alphabetical card catalog (editions published before 1990), which was not reflected in the electronic catalog.

The first step in re-cataloging was the scanning of catalog cards and the creation of the so-called "Image catalog", which today is available for viewing by remote users on the website of Stefanyk LNNB of Ukraine.

Thus, today the electronic catalog of the library has more than 1,300,000 bibliographic records, the volume of the Image catalog is 4,240,000 cards, and the database of authoritative records is more than 30,000. In the future, it is planned to carry out retroconversion of the entire fund of documents of the book collection[17].

The employees of the department of information and computer support created software that allows specialists of the book collection, as well as readers, to work effectively with the image catalog.

Given that the project involves the digitization of the book heritage of the NTSh for the period 1873–1913, then its first stage - bibliographic and search - involves the identification by the employees of the scientific bibliography department of the necessary array of publications in the electronic and image catalogs of the library. Since AILS ISIS version 3.0.[18] records have been converted to MARC 21 format, finding relevant materials and compiling a working list of sources will

not cause any difficulties. Thanks to the Circulation module of ABIS Aleph, the working group provides for electronic ordering of publications from funds where the book we need is stored. To create an electronic order in any of the catalogs, it is enough to go to the bibliographic description of the copy and select the "Order" option (Figure 3).
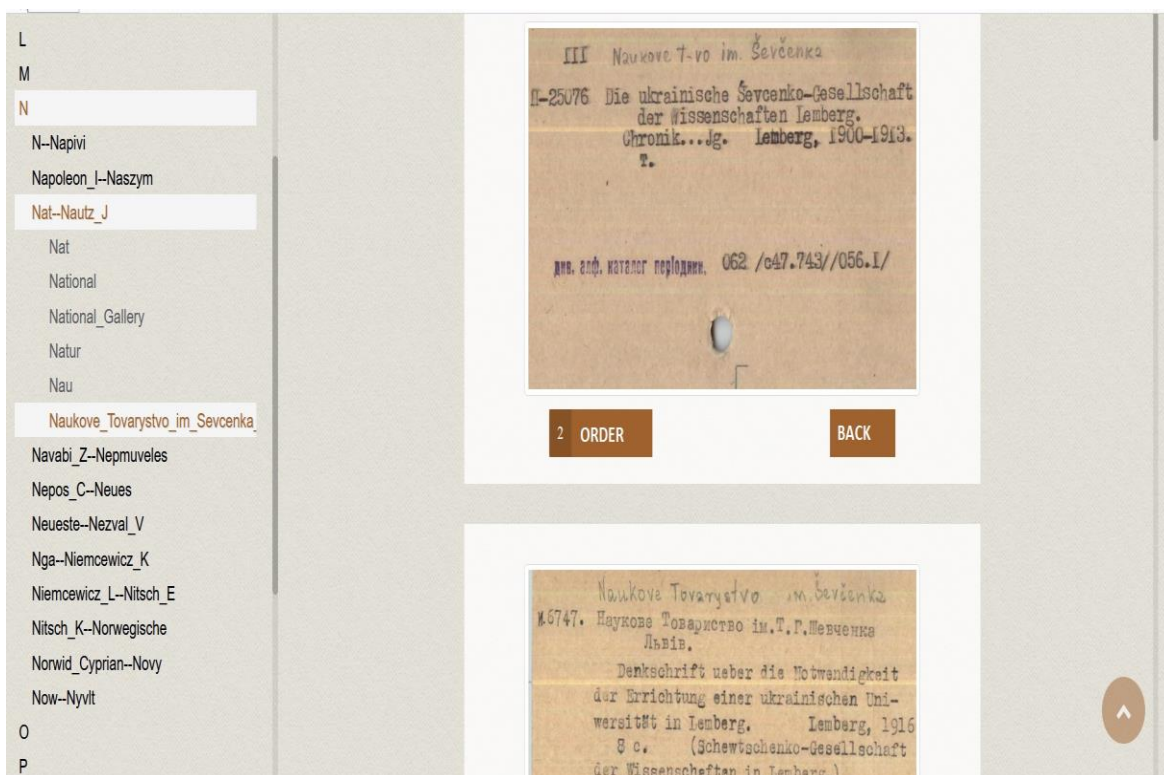

Figure 3: Screenshot from the electronic order from image catalog of Stefanyk LNNB of Ukraine.

Further work with the book requires the presence of special professional knowledge of the employee. In particular, we are talking about the possibility of adequately determining the features of the physical condition of the book, its polygraphic execution (type of frame, opening angle of the book block, method of binding, etc.), which is extremely important for further work on digitization. Employees of the department of cataloging and organization of the electronic catalog carry out the initial cataloging of books, as well as the formation of a bibliographic database of book monuments of the NTSh in the electronic catalog of the library. To do this, it is necessary to check for the presence of a record and the correctness of entering bibliographic metadata, and in the absence of such a record, its compilation. Despite the fact that the interface and presentation of search catalogs of Stefanyk LNNB of Ukraine is in Ukrainian, and the language of publication cataloging is national, distributed search allows you to search for publications and receive results in different languages.

To present electronic editions with full-text access for library readers, an authorized mode of access to digital collections is created.

Employees of the information and computer support department carry out additional technical processing of the provided digitized materials, as well as detailed meta-information about the source of the description and access to a digital copy of the document as a multi-page file in .*pdf format (compressed version) are provided by means of AILS Aleph.

In the process of development and expansion of the electronic infrastructure of the library, new electronic resources are created, which are filled with digital content.

Based on the AILS Aleph database and the implemented bibliographic description for mixed electronic documents in MARC21 format, indexed fields and metadata have been added to describe and access the digital collections and electronic resource, in particular.

The second stage involves the following actions: ordering publications from the library fund; their reconciliation for presentation in digitized form on the network; determination of the physical

condition of selected editions for further digitization; formation of a bibliographic database of book monuments of the NTSh in the electronic catalog of the library, which includes checking the presence of a record and the correctness of entering bibliographic metadata, and in the absence of such a record, its compilation.

At the third stage, a digital collection is being created in the library's electronic catalog, which involves the scientific processing of book monuments of the NTSh (1873–1913). In particular, the description and creation of extended metadata for the bibliographic description in the Marc21 format is carried out, such as: provenance, marginalia, bookplates, publication history, belonging to private collections, access mode and name of the digital collection, itemization and indexing of publications in AILS Aleph.

The home page of the institution's electronic catalog presents the structure of the Library's digital collections, which are constantly updated and supplemented with new electronic resources. It is also planned to expand the number of titles and projects of digital collections [19].

Within the framework of project planning, a tree of project goals and objectives is formed, which reproduces their hierarchical subordination to the goal. For each of the tasks, the expected result is defined and the indicators of its achievement are outlined. A fragment of the tree of goals of the project "Book heritage of NTSH: digital collection" is shown in Figure 4.
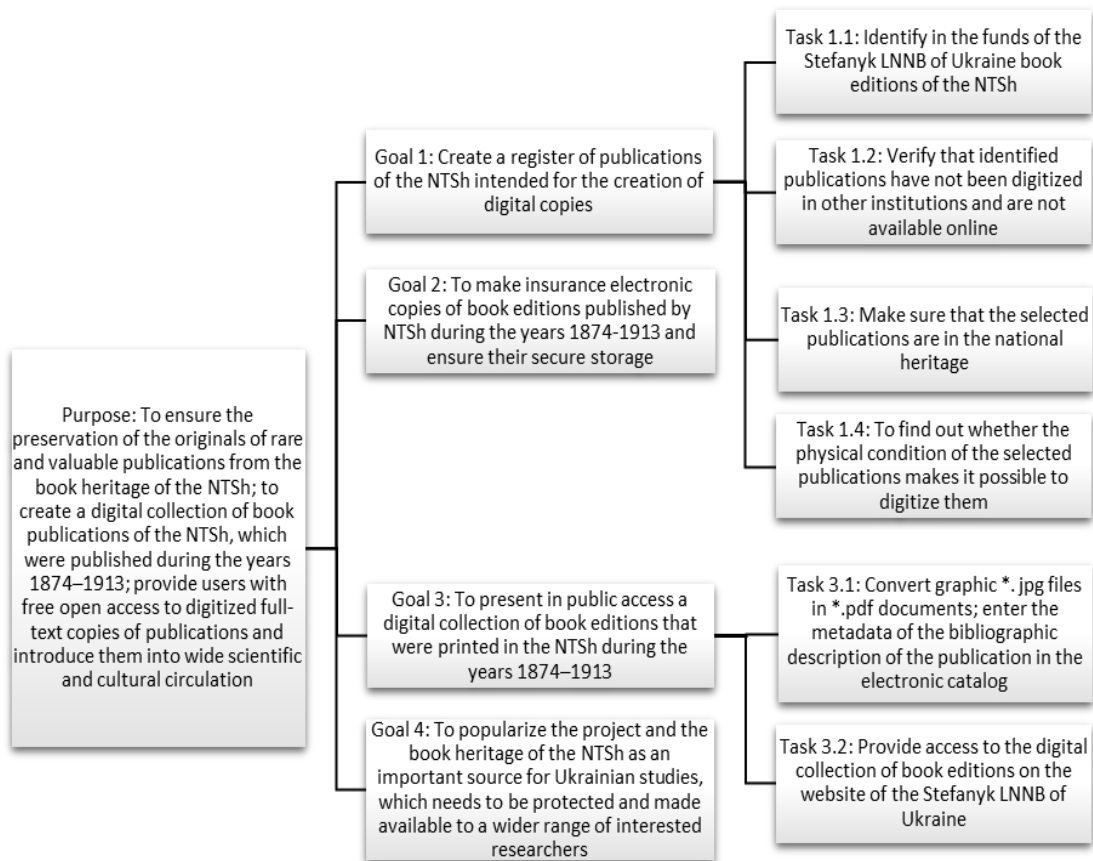

Figure 4: A fragment of the tree of goals of the project "Book heritage of the Shevchenko Scientific Society: digital collection"

Such a technological sequence is determined by the logic of the execution of processes and operations at Stefanyk LNNB of Ukraine. The book heritage of the NTSh (1873–1913) is a specific object of study and requires a special approach, and individual editions require an in-depth bibliographic study from the point of view of memoriality and meaningfulness. Therefore, it is extremely important that the executors of the project carry out qualified cataloging with the provision of an accurate and detailed description of each copy and its digital copy.

Technical and software plays an important role in the implementation of the project. The technological capabilities available at Stefanyk LNNB of Ukraine allow to ensure a full cycle of digital resource formation in the process of representing copies of documents: creation, processing, storage, description and provision of open access.

A single hardware and software complex for facsimile conversion of paper documents into electronic format is used to create and process digital copies, namely: a personal computer with 8 GB RAM and a 23-inch monitor; Fujitsu SV600 non-contact projection scanner (PA03641-B001) with a maximum scanning area size of 297x420 mm (A3 format). The contactless scanning function provides simple digitization of bound documents or voluminous documents, it becomes possible to scan thin and fragile documents without difficulty. Images made in pencil or oil paints, marginal handwritten inscriptions left in pencil, as well as photographs that may be damaged during processing are subject to rapid digitization. The scanner performs direct digitization of documents of various sizes: from thumbnails, library cards to panoramic documents of A3 format, such as newspapers, historical documents or maps. The available "finger removal tool" allows users to hold the document while scanning without degrading the quality of scanned copies.

After scanning, leading experts and specialists of the library use the Adobe Photoshop graphic editor to process the digital image and adjust it. A licensed ABBYY FineReader optical character recognition program is used to convert a scanned paper document into an electronic format, with the possibility of further editing.

Digitized book editions of NTSH in the form of separate images will be stored in *.jpg format. In the future, in order to present the scanned materials in the electronic catalog of the Stefanyk LNNB of Ukraine, additional technical processing of the provided digitized materials is carried out and their conversion into *.pdf format will take place. In order to ensure access to bibliographic records of a digital collection with an electronic catalog, AILS Aleph provides detailed meta-information about the source of the description and access to a digital copy of the document as a multi-page file, identifier addresses (URL) are added, which identify and specify the location of the resource by applying the syntactic structure of the protocol (the domain name and the actual name of the file in which the resource is currently located) Figure 5.

Figure 5: Screenshot from view of the bibliographic description of the publication with access to the full-text version.

At the final stage, accounting and ordering of digital copies of documents will be carried out, ensuring their preservation on the library's server storage and the NAS Synology DS420+ network storage. AILS Aleph software and hardware tools are used to present the collection. The capabilities of such an open electronic archive, as well as a set of its services, ensure the implementation of the processes of accumulation, storage, distribution and search of digital resources.

From the point of view of saving large volumes of digital data, in recent years the concept of dividing the total mass of data into classes depending on the content, frequency of access and storage period has been spread. According to this approach, three elements of the task of storing digital data are applied, namely: immediate access to information, backup and archival storage. To solve each element of the task, different equipment is used, according to the requirements. specifics of storage and access. Operational archives are placed on the server, for small volumes of information on a separate hard drive and NAS Synology DS420+. To increase the reliability of such systems, they use the means of backup, duplication of information and "mirror disks", and are also used to store metadata and the accounting database of the archive (Master References File). The further development of solutions for storing large volumes of data are specialized data storage systems. A modern data storage system includes the following main components: data storage devices – hard drives; server access infrastructure to data storage devices; data archiving and backup system; storage management software. From the point of view of storing the electronic document files themselves, an approach is used where the files are stored separately, and only the electronic addresses of the files are registered in the database (that is, the file access path is indicated).

In addition, this software provides users with advanced search tools and access to the digital collection. Thus, all digitized editions will not lose their value as sources for Ukrainian studies over a long period of time, which will, accordingly, ensure the long-term beneficial effect of the project. Electronic copies will make it possible to extend the life of the printed original, protect it from physical wear and tear and ensure the preservation of the book heritage.

5. Conclusions

Implementation of the project "Book heritage of the Shevchenko Scientific Society (1873–1913): digital collection" is of particular importance for the Stefanyk LNNB of Ukraine. The book collection of publications of the NTSh available in the Library's funds is rare and unique, therefore the priority task is the publication of digitized publications and the provision of free access to full texts to all interested persons.

In addition, the project will perform an educational function, thanks to the publication of information, the interest of users of the library and its followers in social networks will grow in the activities of the NTSh, which in turn can catalyze new research and diversify their topics. After the completion of the project, the work on the digitization of the book heritage of the NTSh will continue, because the publishing activity of the Society continues to this day. Thus, the transfer of as many editions as possible to the electronic format will contribute to satisfying the information needs of users, will significantly increase the attractiveness of the library as a scientific and cultural institution, and will contribute to improving its image among scientific institutions of the national level.

Recently, state funding of Ukrainian libraries provides only the necessary items of expenditure, which makes it impossible to implement complex and expensive projects. Therefore, in 2023, specialists of Vasyl Stefanyk LNNB of Ukraine prepared the project "Book heritage of the Shevchenko Scientific Society: digital collection" and applied for a grant from the UCF within the framework of the «Digitization» subprogram. The implementation of the project is of special importance for the institution, because the book collection of publications of the NTSh available in the funds is rare and unique. Therefore, the priority task is to preserve it and make it accessible to all interested researchers.

It is important that the objects of digitization project activities were innovative software solutions/products/applications that would ensure effective user interaction with the digital content of libraries and related institutions: collections, full-text databases, electronic catalogs, digital libraries.

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