Normative and Technological Problems of Bibliographic Control over Information Resources on Social Sciences and Humanities

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Abstract—This paper describes the goals, tasks, and main areas of bibliographic control over documents that enter the databases of the Institute of Scientific Information on Social Sciences (INION). It analyzes the features of how bibliographic records of publications on social sciences and humanities (scientific, abstract-analytical, information, scientific-methodical, reference and bibliographic records) are formed. The functions of the software technological complex for automated analysis of the names of persons who are responsible for various types of publications are disclosed. The paper considers the potential of modern software and technological tools for bibliographic analysis and control of bibliographic records, references and citations, including bibliographic managers, scientific work organizers, knowledge managers, and personal information managers.

Keywords: information resources, databases on social sciences and humanities, bibliographic data, bibliographic control, bibliographic references, information retrieval, bibliographic managers

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INTRODUCTION

Digital technologies and electronic information resources have greatly simplified the obtaining of information and led to significant changes in the organization of scientific research, in the methods and forms of the educational process at higher-education institutions, and have facilitated the intensification of decision making in all spheres of public life. The impetuous development of modern information and communication technologies has had a huge impact on the expansion of the global information space, a significant part of which is occupied by information on social sciences and humanities.

The information space for various areas of scientific knowledge can differ significantly, first of all, in information resources (IRs), which contain textual, bibliographic, analytical, factual, statistical, and visual information, as well as in their structure, volume, rules for organization, search and dissemination of information and data.

The information environment in the field of social sciences and humanities, which is intended to become an important component of the information space in Russia, has been successfully formed at the Institute of Scientific Information on Social Sciences (INION) of the Russian Academy of Sciences for almost half a century ago. Currently, one of the main goals of the innovative development of the INION as the country's largest information and library center in the fields of social sciences and humanities is to provide a high level of information support for scientific research.

We consider the provision of prompt access to scientific information (actual and retrospective one), which allows us, first, to get an idea of the state and promising areas for the development of social, political, and humanitarian spheres and, second, to search for new ideas, methodological approaches, and the most effective methods for studying various phenomena and processes, key trends and patterns, the most important problems, and mechanisms for their solution.

DATABASES OF THE AUTOMATED INFORMATION SYSTEM ON SOCIAL SCIENCES

The databases of the Automated Information System for Social Sciences (AISON), which has been operating at the INION in the industrial mode for more than 3 decades, have accumulated more than 3.7 million documents, which provide the basis for a comprehensive analysis of the areas of domestic and foreign research and identification of current educational trends at higher-educational institutions. The problem-thematic profile of information resources (branch and united databases) makes it possible to create the information environment of the required scale,

necessary retrospective depth, type and language diversity for each scientific, problematic, and interdisciplinary field. Currently, the AISON contains the following integrated and branch databases (DBs): "Philosophy and Sociology," "History, Archeology, and Ethnology," "Economics and Demography," "State and Law. Political Science," "Literary Studies," "Science Studies," "Religious Studies," "Linguistics," as well as united retrospective databases.

The document flow that is reflected in these databases includes monographs, collections of articles, multivolume publications, theses, articles from journals and other periodicals, bibliographic and reference publications, reviews, etc. The information fund of the system is annually replenished with approximately 80 000 documents. Moreover, each database is characterized by its own peculiarities of problem-thematic content, the ratio between domestic and foreign literature in different languages, and the depth of the retrospective array, which is available for free searching in different modes on the Internet site of INION (www.inion.ru).

Analysis of the information flow on social sciences and humanities allows us to identify its specific aspects that influence the complexity of the technological processes of analytical and synthetic information processing and retrieval: multilingualism of documents; a variety of types and kinds of documents; the possibility of viewing and giving out a document in various formats, including the transliterated format; the presence of annotation, keywords in Russian and English, which reveal the main contents of documents, as well as codes of headings of the AISON Rubricator; availability of access to electronic copies of documents, which were created, for example, within the "Scientific Heritage of Russia" Project.

At present, INION is, on the one hand, Russia's largest center of scientific information on social sciences and humanities and, on the other, a multidisciplinary research institute that prepares and publishes unique scientific and scientific information products, such as monographs and collections of scientific articles, scientific journals, review analytical and abstract analytical publications, yearbooks, reference and bibliographic publications, materials of conferences, symposiums, and seminars. Electronic versions of these publications are sent for storage, search, and distribution to the Scientific Electronic Library, which contains abstracts and full texts of more than 26 million documents (www.elibrary.ru). In 2017, online access to electronic versions of new and retrospective publications on social sciences and humanities became possible on the website of INION.

The information search that is carried out on the basis of external and internal resources on social sciences and humanities, includes, first, the author's search and, second, thematic (or problem-thematic) search, which implies the introduction of restrictions,

for example, restrictions on the type and year of publication of a document, language, place of publication and publishing house, source, etc. The problems of searching for information on social sciences and humanities and ways to overcome information barriers were considered in [1].

Thematic searching is performed using the main fields of bibliographic records of documents, for which their own dictionaries are formed. Moreover, each element of a dictionary is given the indication of the number of documents, in the description of which it is included (a keyword, term, word or phrase, descriptor, heading code, author's surname, etc.). The technological capabilities of the WinIRBIS search software are used to generate queries, select a search strategy, analyze search results, select relevant documents, edit a search query and generate information. Three search modes are provided, the most frequently used of which is the so-called "pattern match" search that provides the selection of search terms from dictionaries (thesauri) and automatic establishment of logical links between query elements [2]. The models of information search in the context of main search problems are described in [3].

The presence in the AISON of a powerful complex of linguistic tools provides an opportunity for indexing documents and queries to choose search terms (descriptors and codes of headings), specify scientific concepts and ties between them, including using the BISON Electronic Dictionary (the Big Information Dictionary for Social Sciences), whose total volume exceeds 50 000 units [4].

THE MAIN AREAS OF BIBLIOGRAPHIC CONTROL IN THE AISON

The search for information on social sciences and humanities can be carried out using both individual fields of a bibliographic record of a document and their combination. An important condition for effective search is the qualitative preparation of bibliographic records of documents, whose formation and unified use are largely performed via authoritative control. An authoritative control is a set of technological operations that are aimed at achieving a uniform representation of the same bibliographic record elements, making allowance for the transliteration of surnames and names, geographical names, disclosing the abbreviations of names of academic institutions and other organizations, etc., i.e., control over "access points" to information resources.

The methodology for compiling a bibliographic record of a document on social sciences and humanities is based on normative materials [5], as well as traditions of technological document processing adopted in AISON, during which special attention is paid to the completeness of presenting information on the authors of documents. As an example, bibliographic

records of scientific, review analytical, and abstract publications of INION provide information about all of the persons who took part in their creation. In addition, the same information is reflected in the author's index to a publication. In order for bibliographic records to fulfill their functions, this information must undergo a thorough check for compliance with the established rules and be edited.

The main areas of bibliographic control over a bibliographic record of a document on social sciences and humanities in AISON are as follows:

• analysis of the completeness of data elements of the bibliographic record, depending on the type of a document, place of presentation (location) of this record in the publication, including the list of references, footnotes, title and its translation;

• control over data of a primary source in the abstract and their completeness depending on the adopted type of description;

• analysis of the structure of the bibliographic description of a document, including the set and sequence of elements (the conditions of control are the same as in the previous paragraph);

• checking the compliance with the rules for presentation of individual data elements;

• control over the use of special punctuation marks (the correctness of the so-called "prescribed punctuation"), which not only help to adequately understand the content of a bibliographic record, especially for documents in foreign languages, but are also an important basis for developing programs for automatic analysis of its structure;

• checking the correctness of presentation of Internet links to provide access to the full text of the document or its fragment (for example, a list of used literature).

While performing the analytical and synthetic processing of the document flow on social sciences and humanities, one has to deal with various bibliographic information that is necessary to identify a particular published work (or a group of works) and to compile bibliographic records of documents for their search. At present, the system of bibliographic information includes data on published and unpublished documents, including deposited manuscripts, dissertations, manuscripts from authors' archives, interviews, fragments of radio programs, and electronic resources, as well as e-mail addresses of works.

Bibliographic information is an important part of scientific documents and allows one to determine the scientific area developed by the author, to see the diversity of different points of view on a problem, and to become acquainted with the history of the study of the problem. All this is reflected in the headings of bibliographic descriptions, as well as in the lists of used literature, foot links, and author's indexes. This information is connected with the system of references that is used in the publication, including the connection of quotations with the bibliographic descriptions of documents, from which they were taken. Bibliographic processing yields various types of bibliographic descriptions: one-level, multi-level, and analytical descriptions, reviews, abstracts.

Special mention should be made of bibliographic references, which contain information about a document that is a reference object and is sufficient for its search and identification. Bibliographic references arose simultaneously with documents, are developing and changing as the document environment is developing. They are included in the information infrastructure of the integral space of information on social sciences and humanities [6] and are used in the collection, processing, storage, dissemination, retrieval, and transmission of information. Bibliographic references are the basis for the formation of reference and research information resources (search arrays, citation indexes, reference and information tools of scientific documents, etc.).

It is important to emphasize that bibliographic references are always connected with the text of a document (publication), contain bibliographic information about the primary source, which is quoted, considered, or mentioned in the text (its constituent part or a group of documents). In this connection, a bibliographic reference can have a various content depending on the data available in the text of a document. The set of bibliographic information in the text and reference must provide the identification and search of a reference object. It should be noted that INION publications use bibliographic references, first, in the form of foot links and, second, as part of extra-text lists of literature. Intra-text references are not used (except for some cases, for example, in abstract journals on literature studies).

The rules for compiling bibliographic references are based on GOST R 7.0.5-2008 [7] that establishes the requirements that a reference may include any set of bibliographic description elements that provides the search for a reference object.

The standard stipulates that references must use the title to the works of one, two, and three authors, giving the names of all authors and without repeating them is the first information about responsibility. In this case, it is acceptable to replace the prescribed "dot and dash" signs that separate the fields of bibliographic description by the "dot" sign. Square brackets must be used only for the information formulated by the complier of a record and not used for the information borrowed from a prescribed information source.

It is particularly necessary to note the methodology for presenting authors in the bibliographic records of INION publications. The transition to GOST 7.80-2000 [8] and GOST 7.1-2003 has not been currently achieved due to the need for maintaining the continu-

ity of technological processing and compatibility with the data, which have been presented in the AISON database for 30 years, and taking the existing technical, personnel, and financial problems into account [9]. In addition, the methodical work on creating normative materials on the implementation of these standards in INION has been actively carried out for the last 2 years [10].

In addition to the above-mentioned areas of control over bibliographic information, AISON checks the compliance of titles of publications with the titles of articles (abstracts), analyzes the completeness and adequacy of the author's alphabetic index, as well as controls the use of the adopted structure of references (indication of authors' surnames or the title, year of publication of a document, and citation page in square brackets). Thus, technological control checks not only the data of bibliographic records, but also individual elements of reference and bibliographic tools.

Certain difficulties in the control of bibliographic data in INION publications are made by the information from abstracts borrowed from primary sources. Problems arise if an abstract or review contains a bibliographic description in the structure and in accordance with the rules of the original source, which makes it difficult to adequately perceive the bibliographic record and its performing the function of document identification. The main requirement that arises from numerous corrections of bibliographic records is that bibliographic data from foreign documents must be presented according to the rules adopted by INION.

In recent years, more advanced technological schemes for bibliographic control and editing in the telecommunication mode have been developed to optimize the operations that are related to monitoring the presentation of bibliographic information in INION publications, as well as the need to shorten the terms of verifying and improving the promptness of making corrections in handwritten versions: a bibliographic editor carries out verification in the listed areas of analysis, performs correction of punctuation marks, typographical errors, and also inform a publication editor of violations of the structure of bibliographic descriptions. After making corrections, the publication editor performs repeated control (full or partial), and the manuscript is sent to the Department of Scientific Publications. In addition, an archive of received, corrected, and submitted manuscripts is maintained.

AUTOMATIC ANALYSIS OF THE NAMES OF PERSONS WHO ARE RESPONSIBLE FOR A PUBLICATION

The software technological complex of automatic analysis of bibliographic records for the purpose of recognition, extraction, and necessary transformation of the names of persons who are responsible for a publication is the initial stage of automatic control of bibliographic data. The names of persons who are responsible for the publication are the most important information category that is reflected in bibliographic records. The names of persons in a bibliographic record of AISON can be divided into several functionally different groups [11]:

• authors of the main record object, that is, in the title of a description, in the information on responsibility (the field of the main title and information on responsibility), in notes (such as "In the author field..."), in the information on the titles of additional descriptions, in the information for the name index;

• authors of additional record objects, that is, within the framework of a summary description (multivolume edition) and combined description (reviews, abstracts): in the title, in the information on responsibility, as well as in notes (such as "Translated publication," "From the contents"), in the annotation, in the information for the name index;

• other persons with intellectual responsibility (editors, compliers, etc.), that is, in the information on responsibility (in the title, in the information on publication, in the notes, in the information on the headings of additional descriptions, in the annotation, in the information for the name index);

• personalities, that is, the names of persons who are mentioned in the document;

• other names (in the names of collectives, in the information on responsibility and information on the headings of additional descriptions), in titles, in the annotation.

It is first of all necessary to distinguish the most important information about the persons who are responsible for publication from all this diverse collection of names of persons in a bibliographic record. This information is of fundamental importance for the identification (search) of a document, for the compilation of a name index, the formation of authoritative/normative author files, for creating bibliographic references about authors, and for solving various scientometric problems.

It is important to note that the formation of branch and united databases on social sciences and humanities, as well as the inclusion of data in the name index in bibliographic publications, are performed using the following information on the persons who are responsible for publication:

• all of the names of the authors in the titles of a description;

• names from the "Information on responsibility" data element (an expert selection);

• a part of the names of the authors from notes such as "From the contents";

• names of authors of the document, which are part of the title;

• names from the annotation (authors, compilers, and translators of individual works);

• information that is not reflected in the bibliographic description, that is, names of authors that are not presented in the bibliographic record in the information on responsibility (the cases where the number of names of persons are shortened, for example, "et al.") is reduced in the text of the bibliographic description.

In this case, all names, except those that are reflected in the title of the bibliographic description and functionally analogous fields (authors of volumes and reviews) are repeatedly entered into the special fields of the name index. Duplication is due to the need to single out names from the text fragments of the bibliographic description and to present them in the retrieval form of documents in flexional languages.

In accordance with the technology adopted in AISON, the search DB (and, accordingly, the index to bibliographic publications) does not include the following: the names of persons who are responsible for publication of general notes (authors of original publications in case of processing the translation, other forms of the names of the authors); names from the information on responsibility when it is presented in alternative graphics (parallel languages), as well as a part of the surnames of persons in accordance with the criteria of the expert selection for the name index (translators are not always presented, etc.).

The bibliographic indexes of INION inconsistently and incompletely reflect the roles of persons who are responsible for creating a document on the basis of expert analysis by bibliographers (editors and compilers). The availability of such information in a bibliographic record would make it possible to solve a number of new tasks of author search: first, the task of reflecting the full picture of the participation of persons in the creation of the document (as a minimum, approximately 20 roles are presented in the bibliographic records of documents in AISON, and a person is very often characterized by several roles, that is, an editor, compiler, or a translator); second, the task of performing a search for persons according to a given role (for example, finding the documents in which a given person acts as an editor) in the text search mode. In practice, this process is complicated by the fact that the text fragments of bibliographic descriptions (the most striking example is the "Information on responsibility") have a developed system of synonymy in terms of reflecting the roles of persons who are responsible for publication. Thus, the role of the editor can be expressed, for example, by the following forms: "edited," "prepared," "publ.," "checking," etc., so the formalized presentation (code) of the person's role would certainly provide more effective ways to solve such problems. In addition to the search tasks themselves, it may be useful to make allowance for the person's role in the preparation of publication when preparing bibliographic references (for example, a list of scientific papers of a scientist), if it is necessary to rank documents according to the degree of participation of this person in the preparation of publication, as well as in responses to information queries (author, editor in chief, editor, compiler, translator, etc.).

It is important to note that the task of automatic analysis of the names of persons who are responsible for publication in bibliographic records of documents in AISON has now been performed in software to a significant extent only in the experimental version. The software technological complex that has been developed by the specialists of the INION Informatization Center is oriented to achieving several goals, among which the most important ones are as follows: (a) the formation of the names of persons who are responsible for publication in the search form (in this case, the procedures for manually filling and entering the fields of the name index are eliminated); (b) the preparation of an authoritative/normative author's file that includes the full names of persons (if the information is available), as well as parallel forms of names (based on the results of automatic analysis of bibliographic records and manual editing of types of connection of name forms).

Thus, we can distinguish the following main stages of the work of this software technological complex:

• the automatic analysis of bibliographic records of documents in itself, that is, identification of the names of persons, normalization of the form of a surname (bringing the surname to the initial search form for flexional languages, if it is necessary), determination of the role of a person in creating a document, assigning the code of the document's attribution according to the Russian communicative format [12]. As an example, the initial text: *Edited by Petrov N.P.* is transformed after the analysis into the following form: *Petrov N.P.*— 340 (where 340 is the editor's code);

• correction of the results of automatic analysis using the special programs that organize the work of the expert;

• replenishment of the array of reference materials that make up the information support for the operation of the algorithm;

• comparison of the results of the automatic identification of names and fields of the name index, which were filled manually when compiling bibliographic records of documents on the basis of the work of a special program;

• formation of a file of names, in which each name is supplemented with information such as: full name, heading, document type, language of the text, information about the format fields, from which the name was extracted, which accompanying words were in the information on responsibility, code of the role (attribution), record number in the DB, as well as a short version of the file of names (surname, initials, full name, record number in the file of names);

• determination of parallel forms of names and establishment of the fact of connection between the forms of a name.

The algorithm for automatic analysis of the names of persons who are responsible for publication is based on the linguistic analysis of the structure and content of data elements of bibliographic records of documents that contain the information on responsibility and uses a set of reference materials: (1) a dictionary of accompanying words, on the basis of which a person's role in the preparation of publication is determined (a multilingual dictionary that includes accompanying words from 28 main processing languages in AISON); (2) a list of fields of bibliographic records of documents that are objects of analysis; (3) a correspondence table for flexions (at present, only for the Russian language); (4) the structure of forms of surnames; and (5) a list of particles used in the surnames.

It is important to emphasize that the automatic analysis is aimed at comparing the parallel forms of names represented in Cyrillic and Latin scripts. This operation is used when forming a record in a normative author's file. At present, the technology of forming a normative file of names has been experimentally tested, which makes it possible to extract all the names of persons who are responsible for publication from a record, to automatically compare the results of the software analysis with the manual expert selection (the field of the name index), to join full names from the fields of additional descriptions to initials. The software technological complex of automatic name analysis in a bibliographic record has been tested based on an array of approximately 300 000 documents of various subjects from the branch AISON DBs. The results of the experiments have shown that the percentage of names that are automatically extracted from bibliographic records of documents and normalized correctly is approximately 80%.

MODERN METHODS FOR ANALYSIS OF INFORMATION RESOURCES

Analysis of information resources and, above all, databases of various types is more and more often performed using bibliometric, scientometric, and informetric methods. The so-called web metrics that help one navigate the information space, monitor collected data, set new goals, and track the results of their achievement have appeared comparatively recently. In these circumstances, the information approach is becoming a standard tool for organizing, planning, and managing scientific research in such areas as economics and demography, sociology and political science, state and law, history, anthropology and ethnology. Its successful application has resulted in the emergence of many indicators for measuring the scientific activity and scientific work of scientists, researchers, and academic organizations as a whole.

In this respect, all the most important scientific indicators depend primarily on the analysis of statistical data and are based on the bibliographic links of documents, on the results of studying the frequency of term use and joint occurrence of words that allow one to identify complex areas for the development of individual problems, scientific disciplines, interdisciplinary and polythematical approaches. The meaning of data analysis is to extract new knowledge from scientific texts.

In recent years, there has been a rapid increase in the volume of data. Thus, according to the estimate of the director of the Institute for Information Transmission Problems of the Russian Academy of Sciences academician A. Kuleshov, 90% of all data available in the world have appeared in the last 2 years[1]. This trend will only increase as the world becomes more and more interconnected and equipped. However, 80% of all information in the world is unstructured: it is textual information, which includes monographs, scientific articles, reports, research materials, theses, e-mails, works of fiction, information from personal blogs and chats, and text messages.

Today researchers need modern technical and software tools for quickly extracting knowledge from a huge flow of information and data in order to use them more effectively in solving key tasks of the economic and social development. The rapid development of network technologies and, above all, the Internet, most directly brings the information arrays closer to a particular user and creates the conditions for one to use many previously inaccessible opportunities, for example, to form a problem-oriented environment for scientific research in social sciences and humanities. The development of such an environment technically presents an extremely complex and costly task. However, it is this environment that will allow to radical modernization of the technological basis and the introduction of the use of innovative information technologies that meet the needs of modern society in the future. The INION databases, which have a large volume of scientific information and retrospective depth, are increasingly used to develop the systems for information monitoring of the flow of literature on the most pressing problems, to assess the current state of problems, and to forecast and model its development.

It is important to note that many old problems of working with references have remained in the process of bibliographic control over scientific and information-analytical publications of INION, but they have also been joined by new problems associated with the appearance of Internet links (or hyperlinks), that is, bibliographic links to sites, portals, databases, telecasts, radio programs, movies, video clips, photo images, and electronic documents [6]. Despite the

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[1] Konstantinov A. The Era of Useless Curiosity Has Ended: URL: http:/kot.sh/statya/951/epoha-prazdnogo-lyubobytstva-zakonchena.

fact that the work seems to become easier, identifying and searching for a specific document on the Internet are in fact often difficult, since there are often several unique Internet addresses of the same document (or its version). The technology for working with such links is not yet sufficiently standardized. In addition, the problems of using links in the new information environment are often due to the fact it is impossible to indicate a page for some types of Internet documents when making references, because there is no division of the document into pages. In this regard, reference is made to the document as a whole.

In the last 10 years, various software and technology tools including bibliographic managers (for example, *Biblioscape*, *EndNote*, *Zotero*, and *Mendeley*), knowledge managers (for example, *Citavi*), personal information managers, and organizers of scientific work have been developed to solve complex information problems [13−17].

Bibliographic managers are software tools that allow searching in bibliographic databases contained on the Internet, creating bibliographic descriptions of documents, storing data and files, for example, in PDF format. The following main components of bibliographic managers can be distinguished:

(1) A database in which information on sources is stored (elements of bibliographic descriptions, notes, marks, in some cases original sources themselves, etc.). It is important to note that the DB can be created on the user's computer in the autonomous mode (*offline*) or be hosted on an external server using cloud technology, for example, on the developer's server. It allows one to view and edit bibliographic links, as well as manually add new ones using different input patterns, to perform filtration and search over all fields of the bibliographic record.

(2) An input module (data import module), which allows one to automatically download information about sources (data for the formation of a bibliographic reference). An individual record is formed in the DB for each entered reference using a bibliographic manager. When being entered (imported), the reference is divided into its constituent elements (requisites), each of which is entered in a specific field of a bibliographic record for the further storage and retrieval of data.

It is important to note that the owners of information resources (electronic libraries, scientific information databases, search systems, scientific portals, etc.) for the most widespread bibliographic managers create special mechanisms for downloading bibliographic data. The user, working with such sources of information, has the opportunity to automatically enter bibliographic information about the primary source that has interested him in the database of his bibliographic manager.

Among the programs that automate the work with bibliographic references, *Citavi* is of particular interest, which is a bibliographic manager and knowledge organizer for *Microsoft Windows*; it was developed by the *Swiss Academic Software Company* (https://www.citavi.com). This program is available in German, English, French, Polish, and Italian and is widely distributed, for example, at universities in Germany. Using special software modules, this program is integrated into browsers (programs for navigation and interaction with websites), that is, *Google Chrome*, *Mozilla Firefox*, *Adobe Reader*, and *Adobe Acrobat*, and allows one to insert bibliographic references and quotations into text editors, for example, *Microsoft Word* or *OpenOffice Writer*. In addition, using *Citavi*, one can extract bibliographic metadata from PDF files, ISBNs, DOIs, etc. The main functions of this bibliographic manager are described in the instructions on the developer's website (www.citavi.com/manual5). In addition, it is very convenient to monitor the creation of quotations using *Citavi* by browsing the files attached to bibliographic records or links to web pages, for example, in *Google Chrome* or *Internet Explore*. It is enough to select a necessary text fragment and press the Quote button (quotation) so that a quotation will be created from this fragment and attached to the original bibliographic record. In the future, wherever this quotation is used, it will be accompanied by a bibliographic reference to the corresponding source. It is also possible to make a search for information over the catalogs of more than 4000 libraries, in the process of which one can determine the presence of a particular primary source in them and also to automatically create bibliographic records for the documents found. Unfortunately, the list of these libraries includes only one Russian library, that is, the Russian State Library (RSL).

CONCLUSIONS

Among the urgent tasks of strategic planning that are currently faced by the INION, the following most important ones occur: (1) development of new tools for information and analytical support of scientific research, which correspond to the complexity of problems and tasks of improving the effectiveness of their solution, scientific information, analytical, and navigation support for access to achievements of world science; (2) development of a new infrastructure and system for coordinating scientific information, research, and information analytical activities, providing the interaction of leading research centers of academic and university science, development of the mechanisms for the effective exchange of scientific information; (3) introduction of new information and communication technologies in the social and humanitarian field with consideration for the main trends of world development, first of all, based on the priority of network technologies, which are centered around people as the ultimate universal creators and consumers of information on social sciences and humanities; and

(4) integration and coordination of scientific information, research, and information analytical activity on priority areas of research and development, primarily in the field of interdisciplinary studies of socio-economic and humanitarian orientation.

To facilitate the information work of researchers with large volumes of information on social sciences and humanities, it seems necessary to use modern fairly complex software technological and linguistic means of processing information (data) in various languages, to introduce powerful tools for bibliographic analysis and control of bibliographic records, references and citations, as well as to develop convenient and effective search strategies targeted at users of various types of information and of different level of computer training.

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