ALL RUSSIAN INSTITUTE FOR SCIENTIFIC AND TECHNICAL INFORMATION (VINITI) OF THE RUSSIAN ACADEMY OF SCIENCES

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Review

SUMMARY

The aim of the paper is to overview the leading information processing domain in Russia and Eastern Europe, namely All Russian Institute for Scientific and Technical Information (VINITI) of the Russian Academy of Sciences. Russian science structure is different from that in the Western Europe and the US. The main aim of VINITI is to collect, process and

disseminate scientific information on various fields of science and technology, published in 70 countries in 40 languages, selected from books, journals, conference proceedings, and patents. A special attention is given to the journal selection and depositing manuscripts (a kind of grey literature), an important source for Russian research. VINITI has created the largest database containing about 30 million records dating back to 1980. About 80,000-

100,000 new records are added monthly. VINITI publishes the Journal Abstract (JA) on 19 fields of science, including medicine, containing about a million publications annually. Two thirds of these records are foreign and 36.7% – Russian sources.

Key words: Russian database, VINITI, journal selection, science structure, journal abstract, information service, biomedicine.

1. INTRODUCTION

1.1. Scientific research in the Russian Federation

For many years, Russia has had an excellent track record for world-class scientific research conducted in research institutes under the umbrella of the Academy of Sciences of the USSR (now—the Russian Academy of Sciences—RAS). As a science historian stated, “the Soviet Union, like all modern countries, has large universities, all supported by the state...” (1). Historically, the universities with a great scientific potential were concentrated in the two large cities, Moscow and Leningrad, such as Moscow State University and Leningrad State University (now—St Petersburg State University).

Throughout the whole Soviet period (1917-1991) there was only one agency responsible for basic research in natural and applied sciences and biomedicine in all Soviet republics, namely the Academy of Sciences of the USSR. The Academy was funded by the Government. In

1944, a decision was taken to set up the Academy of Medical Sciences (AMS) to carry out medical research and to respond to medical problems emerging in the course of the Great Patriotic war (1941-1945). The founding president of AMS was outstanding military surgeon N. Burdenko. Alongside with AMS, the Academy of Sciences of the USSR continued to conduct research in neurology, immunology, neurochemistry and related problems. There were also the Academy of Education (formerly the Academy of Pedagogy) founded in 1943 and the Academy on Agricultural Science founded in 1929 by world renowned scientist N. Vavilov.

The Ministry of Health and Social Development (MHSD) of the Russian Federation currently supports several research institutes. Of these, several institutes were involved in the proliferation of biological weapon and transferred under the jurisdiction of MHSD by a decree of the President Boris Yeltsin (2). The Russian AMS has un-

der its supervision 35 research institutes. In Soviet times, the AMS had the All-Union Institute on Medical Information (AUIMI) aimed to collect, process and disseminate information related to medical sciences. Due to economic turmoil of 1990s, AUIMI was closed down, and its section, Central Medical Library, became part of the First Moscow State Medical University named after I.M. Sechenov.

The main cancer research body is now the Russian Oncology Research Center named after N.N. Blokhin (RORC) founded in 1980. N.N. Blokhin was the founding director of the Center for many years. The leading cancer hospital in Russia, four research institutes (the Research Institute of Clinical Oncology, the Research Institute of Pediatric Oncology, the Research Institute of Carcinogenesis, and the Research Institute of Experimental Diagnostic and Tumor Therapy) and regional branches in the Altai region and in Khabarovsk are affiliated to the Center. Despite all these achieve-

ments, Russian research activity is still focused on physical sciences. The latter was noticed 30 years ago (3).

In the 1990s, there was a significant decrease in total Russian research output (by 11%). Though the output in physical sciences increased by 12%, it was offset by a 44% decrease in life sciences (4). Interestingly, the focus on physical sciences reinforced by a Presidential Decree (N576, 2002), which listed priority research programmes, and stated that any additional financial resources had to be primarily allocated to “hard science” rather than to life and environmental sciences. It is reminiscent of the regulations of the first half of the twentieth century, when physics played a leading role in sciences (2). Some data on human resources and funding for different academies are presented in Table 1.

Sciences	Total staff	Dr.Sc.& Ph.D.	Funding
	96,969	34,613	41,489
Agriculture	29,854	4,420	3,820
Medical	13,272	5,715	4,067
Education	1,582	776	389

Table 1. Human resources and funding for four Russian academies, 2008. Funding in million rubles (approximately 30,000 USD).

1.2. Goals of VINITI, information products and services

Currently, there are about 400 research institutes affiliated to the Russian Academy of Sciences (RAS). Of these, the All Russian Institute for Scientific and Technical Information (VINITI) occupies a special place as a leading agency in information processing. VINITI turns 60th jubilee in October 2012. In 1952, the USSR government set up the Institute for Scientific Information as part of the USSR Academy of Sciences. The opening of the Institute coincided with “the golden time” for Soviet basic research exceedingly funded to strengthen military power. VINITI’s main goal was to facilitate access to world achievements in science and technology for the USSR research and engineering community. To implement this task, VINITI had to process, publish and disseminate comprehensive in-

formation related to basic and applied research. To expand the Institute’s activity and to ensure variety of its tasks, the Government reorganized it into the All-Union Institute for Scientific and Technical Information in 1955. VINITI began to process scientific literature and to publish Journal Abstracts (JA) from 1953. Its publications were used by a variety of research institutions, design bureaus and industrial enterprises. As Eugene Garfield emphasized in his speech on the 50th jubilee of VINITI (2002), his company, the Institute for Scientific Information (ISI) in Philadelphia, USA got its name in 1960, “in part inspired by the founding of VINITI” (5).

For three decades (1957-1986), the Institute was headed by Professor A.I. Mikhailov, the outstanding scholar, who is regarded as one of the founders of the Soviet school of information science. He managed to attract many scholars and to involve them in the Institute’s activities. Many generations of information professionals and librarians grew up reading his books published in coauthorship with Prof. A.I. Cherny and Prof. R.S. Gilyarevskii (6, 7).

For almost six decades, VINITI has been the largest information center in Eastern Europe. The main task of the Institute is to provide researchers, designers and engineers with information on the latest achievements in science and technology around the world.

Currently, VINITI employees receive and process literature on various fields of science and technology, published in 70 countries in 40 languages, selected from books, journals, conference proceedings, invention descriptions and patents, and deposited scientific papers (a kind of grey literature). They review about a million publications annually, two thirds of which are taken from foreign sources. This comprehensive information flow forms the largest database in Russia on natural, applied and technical sciences. The database contains about 30 million records, and about 80,000-100,000 new records are added monthly. The database consists of numerous subfields covering a vast variety of

scientific disciplines and technologies, economic issues and medicine.

The database is accessible online. It allows a quick access to bibliographic descriptions, abstracts, full texts, multimedia, and other information. CD-ROM database and electronic versions of the Journal Abstract (JA) are being issued.

During the seven decades of the existence of the USSR, Russian became the language of scientific communication in Eastern Europe, Asia and some American countries. As a result, VINITI’s JA became popular in the former Soviet republics and many other countries. VINITI users are now scattered in 68 countries and among the subscribers are many Russian ex-pats.

VINITI employs about 800 professionals with educational backgrounds in various fields of basic and applied sciences, fluent in foreign languages. The institute consists of 15 departments that process literature and produce JA on a specific field of science (e.g., physics and astronomy, earth sciences) and a special department for journal and book acquisition. The journal evaluation and selection is an ongoing process, with journals added and deleted monthly.

Owing to the VINITI’s mission to comprehensively process literature on basic and applied sciences published in Russian, its staff has different approaches to the selection of local and foreign journals. Editors evaluating journals are experts in various foreign languages and library science. They frequently consult editors with background in a specialized field of science to index a new journal in JA (e.g., physicists, medical editors). Given the absence of a local specialized information agency on medical sciences, VINITI took the responsibility to fill the gap and collected medical literature since 1998.

The following criteria are now considered for indexing foreign journals in VINITI: basic publishing standard, peer-review, number of other databases covering the journal, number of delivery agencies, visual analysis, and electronic version (8). The following indexing criteria

are applied to local journals selection: a) journals published by the RAS (more than 200 titles, including 155 titles published by the publishing house “Nauka”, with 119 in basic and applied sciences); b) Russian journals covered by Web of Science; c) journals included in the list of journals chosen by the High Qualification Committee (HQC or VAK, the governmental agency approving PhD and Doctor of Science theses); d) journals covered by SCOPUS (180 titles). In 2010, the share of publications in English was 49.77%, in Russian–36.9%, in Chinese–5.11%,

Country name	2006	2007	2008	2009	2010
Russia	184586	164879	149504	150328	148780
Ukraine	13782	13928	12521	15342	13128
Byelarus	2095	970	1648	1792	1401
Uzbekistan	139	960	1308	1569	1423
Moldova	167	136	160	788	171
Georgia	1504	64	743	465	313
Kyrgyzstan	117	429	110	97	82
Armenia	281	479	89	94	172
Kazakhstan	512	64	103	55	82
Total number of publications	203183	181909	166186	170530	165552

Table 2. Statistics on the number of publications from former USSR countries covered by JA

Year	Total number of publications	Number of Journals	Articles in journals	Share of articles/%	Various kind of book, issues	Articles in book and issues	Share of books/% B	Patents	Share of patents/%	Number of Deposited manuscripts
2006	993879	7733	751799	75,6	34695	164528	16,6	75820	7,6	1734
2007	957673	7408	703608	73,5	30706	167438	17,5	85135	8,9	1492
2008	948983	7497	704361	74,2	40761	159898	16,8	83570	8,8	1154
2009	813669	7526	657479	80,8	6053	80454	9,9	74818	9,2	918
2010	778393	7320	674346	86,6	5899	50914	6,5	52430	6,7	703
2011* only 8 months	517959	6961	402496	77,7	6500	83348	16,1	31602	6,1	513

Table 3. Statistics on publications distribution by type of documents for 2006-2011

in German–4.49%, in Ukrainian–0.55%, in French–0.55%, and in Japanese–0.44%. VINITI also processes journal publications from the former Soviet republics if these publications have Russian abstracts (9).

Statistics of the number of publications from former USSR countries covered by JA is presented in Table 2. VINITI has access to the journals published by Elsevier and available on ScienceDirect platform (about 500 titles), to EBSCO (to 11 full-text databases), to Blackwell Publishing journals, to Cambridge University Press, Oxford University Press, *etc.*

Statistics of publications distribution by type of documents for 2006-2011 are presented in Table 3 (10).

2. RESOURCES OF VINITI DATABASE

Main information resources are:

2.1. Journal Abstracts (Referativnyi Zhurnal) containing abstracts, summaries, and bibliographic descriptions of publications

in all fields of natural, applied and technical sciences, economics and medicine. The Journal consists of nineteen cumulative volumes, each focusing on a specific field of science, with a total of 286 issues (sub-fields of science). Since 1995, JA is issued both in print and electronic versions.

2.2. Electronic Journal Abstract (ELJA) is issued with periodicity corresponding to the print issues. ELJA is an analogue of the print journal. Upon requests of the users, ELJA can be issued on CD-ROM. Working with several issues of ELJA, the users can create and maintain their own collection of abstracts, the so-called “mini-RZH”. Software support and automated technology was created for supplementing and maintaining ELJA standard issues. The list of JA by field of science is presented in Box 1.

- Astronomy. Geodesy. Earth observation from space and Aerial Mapping
- Automation and Computer Engineering
- Chemistry and chemical technology
- Electrical and power engineering
- Electronics
- Environmental protection.
- Geography
- Geology
- Geophysics
- Industrial economics
- Information science. Publishing and Printing
- Life sciences: biology, agriculture and biotechnology.
- Mathematics. Computer sciences
- Mechanics
- Medicine
- Metallurgy and Welding
- Mining
- Physics.
- Transport

Box 1. List of VINITI Journal Abstracts and Databases.

Statistics of publications covered by various JA during 2006-2010 is presented in Table 4 (10).

3. VINITI DATABASE

VINITI is the largest database in Russia available online at www.viniti.ru, with files dating back to 1981.

The total number of records is about 30 million, with annual additions of about one million records. VINITI has a group regulating bibliographic information. The VINITI's search engine is functioning without interruptions. There are approximately one thousand search requests a day.

For universal coverage of subject categories in natural and technical disciplines in the Journal Abstract, a classification scheme (rubricator) was developed. The rubricator is based on the deepening of the State Classification (rubricator) of S&T literature (SRSTI) up to the level nine. The rubricator contains the following components: subject heading in English and Russian languages; list of keywords indicating the frequency of their use based on the five-year file of databases and experts' evaluation; links of subject headings to other classifications.

4. THE VINITI PUBLICATION

4.1. The VINITI publication named "Index of Deposited manuscripts", issued monthly, deserves a special attention.

The time lag between submission of a paper and its publication in a peer-reviewed journal was more than 2 years in 1960s. Due to the growing need to speed up the publication process, VINITI became the state repository for deposited manuscripts by a Government law in 1967. A deposited manuscript is a paper submitted to a peer-reviewed journal, accepted by its editorial board and deposited in VINITI at the authors' discretion. The abstract of the paper has to be published in JA on a relevant field of science. The paper acquires the status of published document after the depositing process and publishing the information in the special bibliographic index—the Index of Deposited Manuscripts (IDM).

Since the Soviet times, the IDM has given VINITI the opportunity, on an exchange basis, to get many valuable sources of information from the Chemical Abstract Service and other information agencies free of charge.

Since 2008, IDM contains a bibliographic description and an abstract of deposited manuscripts. The full-text copy of these manuscripts is available upon requests of organizations or individuals through the delivery department of VINITI. The annual collection consists of about 1,000 manuscripts; the total collection includes about 220,000 manuscripts.

Title of JA	2006	2007	2008	2009	2010
	Number of Publications	Number of Publications	Number of Publications	Number of Publications	Number of Publications
Automation & Computer Engineering	104776	104832	88527	80112	67331
Astronomy	15308	15329	21301	13561	12348
Life sciences	309743	302789	283239	233800	165408
Geography	28178	28542	28087	22215	16950
Geology	46260	45984	45239	104125	35888
Industrial Economics	43175	40623	38002	28204	27541
Environment protection	21205	20040	16933	14514	9384
Mathematics	44145	39209	36865	40174	35906
Engineering	79195	70469	71575	64512	53512
Medicine	60012	59879	60650	60112	61521
Metallurgy	24764	23791	26020	29782	23006
Mechanics	28268	25213	26864	23139	19228
Information science	10234	9203	8465	7694	6138
Transport	38546	33530	31342	23413	22240
Physics	117725	97036	119938	79750	69402
Chemistry	223089	204342	200772	187768	143301
Electrical & power engineering	51919	50765	52277	41993	32390
TOTAL	1186530	1111697	1095446	994756	739973

Table 4. Statistics on publications covered by various JA during 2006-2010

5. SPECIAL DATABASE: FACTUAL DATABASES

5.1. The Structural Database of Chemistry (SDBC) is one of the world's three major chemistry databases since 1975. The database consists of 15 million properties of chemical compounds, 3 million chemical reactions, more than 6 millions chemical structures. A powerful retrieval program was implemented, enabling the search by structures of individual compounds, fragments of structures, subject terms, properties and application of compounds. Information on 200,000 compounds, 100,000 chemical reactions from 10,000 documents is added annually.

uments is added annually.

5.2. Database "MacroCyclic Compounds and Their Complexes" ("Russian Crown"). This database contains unique information on progress made by Russian researchers on chemistry and chemical technology of macrocyclic compounds and their complexes. The database was created in 1993. The database is updated quarterly with information on books, patents, dissertations, and periodical publications from The Russian Federation and from some former Soviet republics. Installed special catalogues enable users to search by structure, substructure, and key words. The database is available on-line.

6. SCOPE OF VINITI ACTIVITIES

VINITI is a research organization and the leader in the field of intelligent information systems development in The Russian Federation. It has a scientific council awarding PhD degrees and academic titles subject to approval of VAK. VINITI runs the free program for PhD

course and arranges various workshops on science evaluation for information professionals and librarians. The workshops attract many Russian speaking specialists. Annual seminars on classification system (UDC) are also arranged. VINITI publishes a monthly peer-reviewed journal "Scientific and Technical Information" (Nauchno-Tekhnicheskaya Informatsiya): Series 1. Organization and Methodology of Information Service; Series 2: Information Processes and Systems. Both series are translated cover-to-cover by Springer and processed by SCOPUS. Other VINITI publications include: Russian quarterly peer-reviewed journal "International Forum of Information" (International journal of FID) and "Bulletin of International Scientific Congresses, Conferences, Meetings and Exhibitions" which covers systematized information on forthcoming and current events.

6.1. Services Based on the International and State Standards

Professionals in the field of scientific and technical information, library science, publishing, and related fields are provided with copies of international and state standards. The collection of standards contains more than 100 international standards ISO/TK 46, ISO/TK 37 and more than 80 state and intergovernmental standards.

7. CLASSIFICATIONS. INFORMATION RETRIEVAL LANGUAGES

VINITI has been a member of the Executive Committee of the UDC consortium since 2000. The Institute has exclusive rights to publish and disseminate print and electronic versions of UDC editions in Russian. It renewed regular publication of Extensions and Corrections to the UDC and complete edition

of UDC Tables on Russian language and State "Rubricator" (Classification) of Scientific and Technical Information.

8. DELIVERY SERVICE

Information services on the basis of VINITI S&T collections are provided by the Center of Scientific Information Services (CSIS VINITI). CSIS processes requests of organizations or individuals for the following information services:

- Copying (on paper or electronic copies in PDF format) of primary sources processed for VINITI products and databases;
- Current awareness on a specified subject;
- Retrospective retrieval;
- These services are carried out on the basis of the collection of:
- Domestic and foreign periodicals (since 1991);
- Domestic and foreign books (since 1991).

9. CONCLUSION

VINITI has long been in collaboration with Thomson Reuters, providing access to Web of Knowledge, Elsevier, Springer, and many other partners, and is eager to collaborate with new partners in the EU and in the USA.

Conflict of interest: none declared.

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