

## INFORMATIONAL PROVISION OF MODERN EDUCATION

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### ABSTRACT

*Modern lawyers work with big volumes of unstructured text information. Information Technologies Center of Yaroslav the Wise National Law Academy of Ukraine (Kharkiv, Ukraine) began creation of element of perspective legal information systems. First of all it is creation format for legal information and structure of its unifying into a single system. A multi-service information network with sufficient set of information services for students was created at the Academy. Availability of these services for students supposes that future lawyers will master modern ways of work with legal information and will implement into practical activity in the future.*

**Keywords:** legal information, local network, information services, information search, format of legal documents, ontology, multimedia information.

## 1 INTRODUCTION

Ineffectiveness of work of legal system and related branches has been recognized now in Ukraine. To great extent it is the result of inability to use modern information systems and is very often connected with absence of relevant information in electronic available format. Besides the abovementioned subjective factors there is also an objective one: work of lawyers is connected with processing and use of unstructured text information, which is difficult to formalize. According to definition of legal activity, its practical, scientific and educational forms rely on means of legal activity, the most important of which are legal documents. From cybernetic point of view, any legal subsystem is a complex information system, which has on entrance initial information about legal task. Legal task is a situation of legal character, which requires actions for getting quantitative and qualitative characteristics in legal information about object of cognition. Such processing of information is achieved through some kind of its transformation. Any subject of legal activity – having professional training and experience – is able to practically realize any of abovementioned procedures of processing of information. On exit of legal subsystem we have information about adopted decisions in the form of legal documents (L.E.Gorevoy, M.Ya.Shvets, 1998). The volume of information, which is necessary to use in the process of effective legal activity is so big and different, that even experienced lawyers feel difficulties while taking correct decisions and waste a lot of time on it.

In order to overcome mentioned problems and give future professional lawyers possibility to get modern experience of use of information resources, a local computer network on the base of optical-fiber lines, and subject-oriented data bases for provision of teaching process and scientific work have been created at Yaroslav the Wise National Law Academy of Ukraine (A.P.Getman, S.N.Ivanov, V.V.Karasyuk, 2008). In order to improve access for information in the bases, which are located on the main server, Information Technologies Center conducts scientific researches, directed at creation of system of teaching and control of knowledge, which is built on the basis of the modern structure of database of legal information. In this case main efforts are concentrated on development of methods of binding of different types of legal information and automatic procedures of binding, classifying and search of information.

## 2 PECULIARITIES OF LAWYERS' WORK WITH INFORMATION

Very often lawyers face many rather trivial problems while working with electronic information. We shall mention the most important of them according to their relevance.

Search for statutory acts. It is conducted through identification of an authentic text of a statutory document in available electronic databases. The most complete and up-to-date database of statutory documents is available at the Verkhovna Rada server, however, the official acts and local government acts are missing. The search is done using key words, classifiers and hyperlinks. A great amount of other databases is also available for search, including those that are distributed on such autonomous data carriers as CD and DVD.

Identifying the precedents. It is a rather important component of a rule-making activity of lawyers. However, the formalization of such kind of search is extremely low, therefore each legal structure tries to create its own precedents base keeping it in an up-to-date state. It means that such databases have a non-standard format. The national database of such type is not available.

Shaping the instruments according to the adopted format. The formats of instruments of many types have been sufficiently fixed, however their description is given in different documents. As in the previous case a unified legal document "standards" base is also unavailable. It forces the legal users to create their own comprehensive patterns for all possible cases.

Comparative law. It is much in demand due to the expansion of international cooperation between companies and organizations and due to joining the World Trade Organization by Ukraine as well as due to the intensified migration of people. Search and interpretation of statutory acts of different countries related to similar problems requires not just an ordinary comparison of laws and other statutory documents, it also requires a systematic comparison of conceptions, instruments and practices of their application. These problems won't be solved at the level of information systems. Undoubtedly, the harmonization of Ukrainian legislation will gradually eliminate this problem, nevertheless, the legislation will keep a national component which differs from similar norms in the legislations of other countries.

Creating of achieves of connected legal documents. The creation of a single legal information field requires the office work automation systems that are of primary importance. This aspect is caused by the need of structuring the achieved information and providing further efficient search for required documents. The practicing jurisprudence is interested in such systems.

Multimedia information operative fixing and processing. The jurisprudence started to use multimedia information relatively not long ago and so far its usage is regulated in all kinds of law-enforcement actions. First of all we are talking about actions of operative character, in particular, recording court hearings, investigating the evidence for various legal procedures, etc. The presentation of multimedia information is based on widely spread information keeping formats and it is processed using standard software tools. Its contents are mainly analyzed manually. The methods of connection of contents of different files containing multimedia data are unavailable.

On the whole one should admit that the mentioned problems related to the processing of legal information in its electronic form are caused by the fact of processing the information of a different kind and moreover such information is not interconnected (except the instruments stored in the legal information database of the Verkhovna Rada). Basically, it is unstructured information, mainly the text one, which is stored in separate databases, repositories and local networks. Information of each type uses its own display format. While searching in it, analytical processing and using it for practical purposes requires a considerable amount of manual work done using the standard and special software.

### **3 TECHNICAL ENVIRONMENT, AVAILABLE FOR WORK WITH INFORMATION AT YAROSLAV THE WISE NATIONAL LAW ACADEMY OF UKRAINE**

The multi-service informational network (local computer network) has been created at Yaroslav the Wise National Law Academy of Ukraine (Kharkiv) for the last 3 years. The systematic approach during its creation gave us an opportunity to introduce the newest technologies of transmission and processing of information on the network, and promote up-to-date informational services for all users of it. Therefore the net was called multi-service. The Center of Informational Technologies of the Academy is responsible for all organizational tasks connected with creation of new segments of the net, provision of informational services for users, data protection etc. The concept of automation of educational and research work at the Academy presupposes that every student, master, post-graduate student, researcher or lecturer should have an access to informational resources of the net from any workplace. Work-places are at the departments, at the dean's offices, at the reading-rooms, at the sporting centre, at specialized computer rooms and rooms of students' hostels.

The general features of the net are following: the general length of fiber-optic lines exceeds 40 kilometers; there are more than 700 workstations in the net; server HP ProLiant DL380 with two processors Intel Xeon 3 GHz is used. More than 300 workstations (of the total number) are computers in the rooms of the students' hostels. The disk volume is 540 Gb with ability to increase to 1 Tb. There are 4 media convector D-link for transforming optical information, 2 regulated switchboards, 20 media convector in different buildings and 18 ordinary switchboards. Created environment is able to guarantee potentially all up-to-date perspective informational services. The infrastructure of the local net of the Academy in Kharkiv is shown on figure 1.

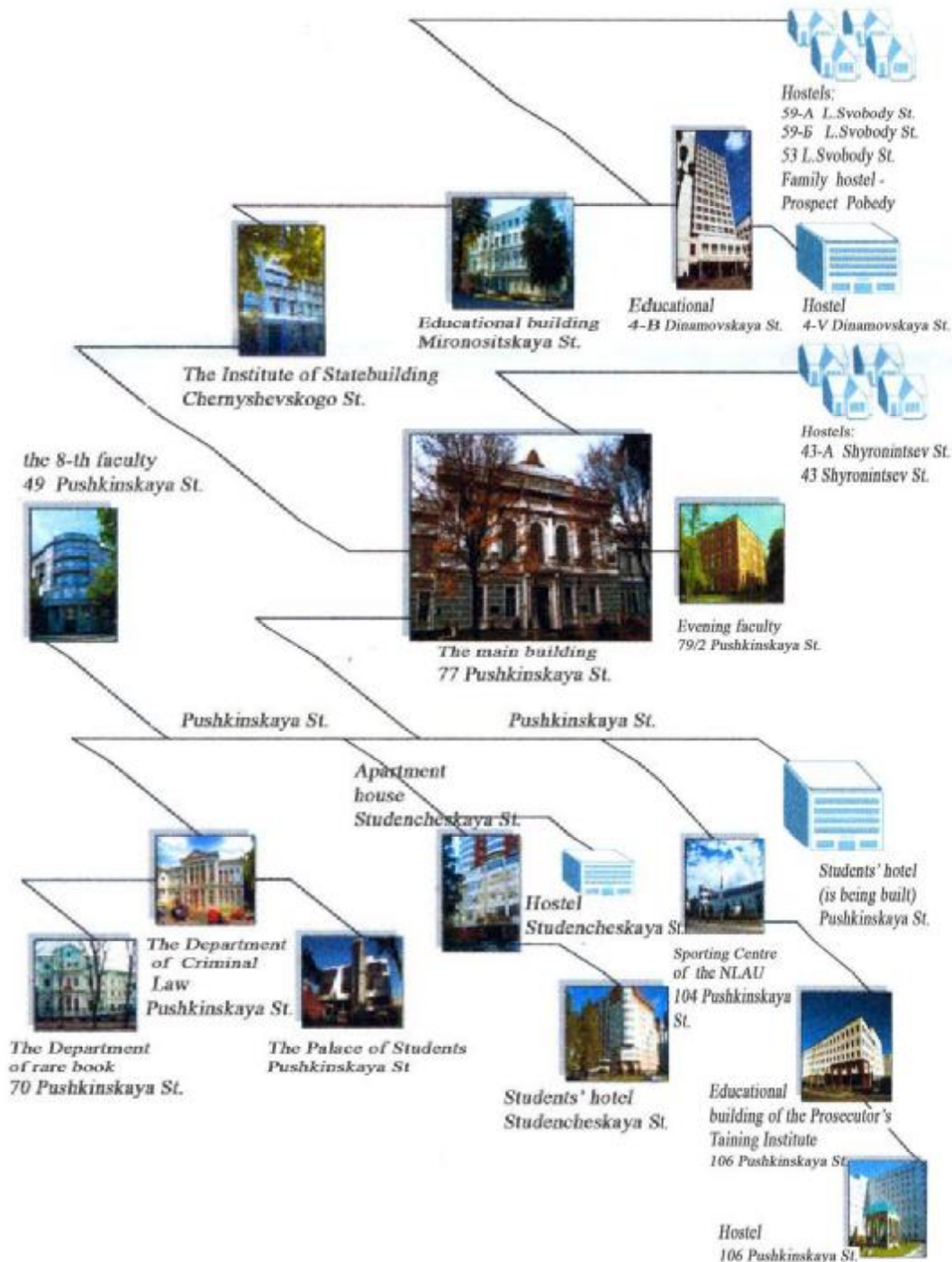


Figure 1. Infrastructure of the multi-service network of Yaroslave the Wise National Law Academy of Ukraine in Kharkiv

The separate buildings of the Academy and their connections in schematic layout are presented here according to their location in the city. Main fiber-optic cables have capacity from 48 to 4 fibers. Some hostels are located 15 km away from the main building.

#### 4 INFORMATIONAL SERVICES IN MULTISERVICE NETWORK

The requirements for the academic process organization at the Academy nowadays will be fulfilled gradually in the development of educational portal of the Academy. It is evident from the experience of electronic learning in Ukraine that Internet portals are the base of its organization. The tasks of the portal development are accumulation and systematization of informational resources on a specified theme and development of the complex of services for their effective usage. The portal is being developed but the following services can be used inside the network by students and professors of the Academy:

- automation of the process of students' knowledge module control;
- operative registration of academic results and classes attendance;
- access to the library website and catalogues from all work places;
- access to the FTP-server for educational resources organized according to the academic subjects;
- rendering services of IP-telephony, digital TV (including programs of the Academy TV centre), e-mail, local telephone network in the Academy divisions and student hostels;
- using of file-exchange services by ICQ users inside the local network;
- access to electronic copies of books of rare legal editions;
- access to Internet resources;
- access to information base of legal documents which is updated from the Verkhovna Rada server twice a day;
- access to the server of scientific information EBSCO Host Research;
- creation of conditions for distant education development;
- examination of data from the web-cameras installed in the Academy;
- other supplementary services.

At the same time there are some technological problems which appeared in the process of filling information into the network. We are going to point out some of them.

Integrated knowledge space creation. The main aim of modern education systems is to create the educational environment for a student to work him/herself achieving his/her educational tasks. Virtual educational environment (integrated knowledge space) is necessary for consolidation into the single system of the sources of information on different subjects for different users (teachers and students). Every participant of the educational process should be supplied with relevant information to satisfy his/her needs; development and renewal of the single informational system should be provided. Creation of the integrated knowledge space is our prospective objective and now the ways of academic objects presentation are being developed theoretically.

Development of standards for electronic academic materials and methods of their development. The electronic academic courses for all subjects have been developed according to the temporary methodical requirements. But the changes in curricula and academic subjects cause development of different approaches to academic problems, lack of "common" and "established" approaches. Especially it concerns the questions: what is the "correct" structure of a course and how material should be presented. Therefore there should be the effective technology for teachers to change and edit their academic courses in the educational system located in the network.

The problem of copyright for the authors of electronic educational materials is essential. From the moment the materials appear in the network, students and other users can copy and utilize them without permission of the authors. For Ukraine this problem lies not only in the sphere of legal relations and technological possibilities, but also in a suitable organizational structure.

#### 5 PROBLEMS OF IMPROVING OF WORK WITH LEGAL INFORMATION

On the basis of a specific nature of lawyers' work with electronic information it is possible to formulate the main problems of improving this work more vividly. They are all connected with general problems of work with unstructured information.

First of all, it concerns the system of links between documents. Theoretically it means the creation of automatic system of forming links in which the system on the basis of existing metadata while loading a file in a proper

database establishes connections between already existing documents in a database with a newly downloaded one automatically. Links must be formed on the basis of automatically founded concepts, thematic ontology, features.

The process of document search must be improved. The task is to extend the possibilities of search – from key words (and their synonyms, as it exist in some professional systems) to the search according to contents, e.g. according to ontological schemes of documents. At the same time to involve the possibility of search taking into account the translation from other languages. Also, these possibilities may be extended to a search of precedents with regard to technologies mentioned above. Generally speaking, these technologies are perfect enough but still closed in commercial systems of translation from/into foreign languages. Taking into account the existence of a vast database and the ambiguity of technical demands, it is important to have the open basis for creation of own systems of information of various configurations. First of all, it is important for conducting research in testing the efficiency of legal information system projects.

Precedents search. It is necessary to use key words (their synonyms), classifiers, ontology. With the latter one should find the ontological likeness according to some levels of hierarchy. The level of likeness of documents while searching must be adapted. It will ensure the adjusted accuracy of search. The number of levels begins with the main subject of a document, from the root of ontological hierarchy, or from an indicated notion, no matter what place it occupies in the hierarchy, and further downwards. But the main feature of prospective systems is that ontology, lists of key words, classifiers must be formed automatically. For this purpose available files of electronic legal documents are automatically referred by autonomous agents and new levels of ontology are formed, as well as lists of key words and classifiers. The example is the issues of a journal “Legal Informatics” which are available in electronic format.

As to electronic archives of legal documents, they are the documents of inquiry and investigation, court proceedings, supervision, local self-government, etc. (statutory acts are not transferred into a category of archives). Here the first problem is the protection of a document (access control, contents protection, automatic file backup and restoration). This problem has settled decisions with satisfactory results. The second problem is forming of archives of linked documents. The modern scope of legal documents and legal office work shows that the future belongs to automatic systems of forming links between.

Automatic electronic online data fixation. The existing programs of trial fixation “Triton”, “Oberig” require further considerable manual processing of recording. The audio record file has internal structure according to the trial record, but further external indexation, classification and linkage are not provided. Online audio and video data fixation is conducted in the Ministry of Home Affairs, but processing and linking of the contents of information are not performed.

Legal education activities data support. The availability of legal information for a wide section of the population is determined by the access to Ukrainian legal servers in Internet, prevalence of autonomous local legal data disks and the presence of a human-engineered interface (adaptive, intuitively clear). Since the majority of users of these servers do not have system knowledge in the field of law, the professional search support of required legal data is important for them. The first requirement here is ergonomic screen formats, availability of various search engines (including the vast base of examples and patterns-templates) and also the history of search requests. In the process of creation of the democratic society law-forming and universal reference mechanisms are mostly required. That’s why they ought to be easy in implementation and reliable in obtaining desired searching result with acceptable time consumption.

We leave the problems of “informational feedback”, informational state, etc, out of the limits of viewing this problem. These are separate serious questions which require additional study. The formulated problems can be regarded as setting the task to develop elements of perspective legal informational systems.

## **6 THE PRINCIPAL DIRECTION IN DEVELOPMENT OF THE INFORMATIONAL LEGAL SYSTEMS**

If our aim is creation of ideal informational legal system, it should be built within the limits of the state; and some subsystems, based on the types of informational work, should be foreseen. This is a long-range perspective for Ukraine. Nevertheless it is necessary to develop basis for building such system right now and the principal demand for it should be informational relatedness of all legal information. This is provided with the technical, organizational, and software-based package. But the main thing among these, to our mind, is development of universal format of legal information. Though the demands for it are not worked out yet, but some of the principal ones should be mentioned here for the discussion: - structure of a legal document (statutory acts, executive records, reporting, statistical, acts of local self-government and other documents); - availability of the advanced dictionaries for each of

the units of the document: - availability of the numerous hyperlinks; - enclosure of audio and video information with meta-information storage according to its content; - usage of the synonymic bases for classification of the key-words and the contents of document sections; - existence of the ontological scheme of a document; - possibility of independent effective document meta-information processing. It is necessary for the documents, classified according to such format, to have a developed automatic procedure of processing and creating the descriptors of documents (meta-information) and its inclusion into search databases of legal servers, including automatic forming of the ontological hierarchy. At present we are working on the structure of the legal documents and form demands to the format of the files with legal information.

The system of education that should be available for the academy's local network is being designed for practical processing of the suggested ideas. In the modern methodology of education the limitation of the computer-teaching systems comparing with the creative lecturer is declared. But the realization of the intellectual basement for creating informational databases of the system of education can make it active, with constantly actualized information, which is very important for modern lawyers.

## 7 CONCLUSION

Bearing in mind peculiarities of the development of the informational legal systems stated above, and realizing that complete implementation of the suggested principles will require considerable efforts and take a lot of time, Yaroslav the Wise National Law Academy of Ukraine started development of elements of such informational systems. The realization of this course is possible within the frames of conceptual description of the knowledge based on some formal apparatus, for example, on the ontology. On the other hand, even up-to-date informational systems will not be required, until their peculiarities are known to the wide range of users. That is why alongside with the work on creation the elements of such long-range informational systems the propaganda of their possibilities is arranged for the students of the Academy.

As for the technical aspects, it can be stated that in the field of work with the legal information represented as electronic documents, a great amount of different format files are accumulated on different local and departmental networks. These files are not indexed, classified and very often are not available for the search. There is no all-around concept for development of the structure and means for the automatic information processing within the state with the consideration of types of information processing. Available informational and programming systems do not cover the kinds of work with the legal information required by the lawyers at the present moment.

Generally, the stated task is complex and wide-scaled, and we will be glad, if individual researchers and research groups will be able to share their experience and ideas in the decision of similar problems.

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