Perspectives of development of Internet technologies for agricultural enterprises based on typification in Unified Web Space of Agrarian Knowledge

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In this paper we consider the possibilities of Web technologies for agricultural enterprises on the basis of typification within the framework of the Unified Web Space of Agrarian Knowledge (UWSAK).

According to world experience the most important problem for agrarian production development is improvement of integration processes based on information and telecommunication technologies. Their application permits farming producers to operate with significant volumes of information about goods, prices, services, firms and markets. This assists getting data fast, its accumulation, systematization and analysis for optimal managerial decisions.

According to estimations of the economists from the USA ([1]), qualitative and operational usage of information systems decreases production costs by 6% - 10% and distribution costs by 7% - 20%. Efficiency of information systems using for firms is estimated in reducing of stock materials in 3 – 4 times and reducing of current assets by 7% - 10%. Investments in products and services of information systems also increase labour productivity. Economists state that capital investments in information systems during past 10 years have had a significant influence on growth of gross domestic product (GDP) for many developed countries, that increased GDP per person by 0,3% - 0,8% in the OECD countries.

The above described effect can be feasible only with a complex and system approach to creation and implementation of information systems. Therefore only such an approach to the problem of informatization of agroindustrial complex (AIC) of the Russian Federation should be applied. There is also another significant aspect on this way. It implies that above described increase can be achieved only with a specific level of information systems development.

Ignoring this approach has resulted in the fact that information systems do not influence the development of productive forces of the Russian AIC, but are used mainly for purposes of advertisement and publicity. Internet for many leaders and managers is not more than «amusement» or additional, but not main, sales promotion tool.

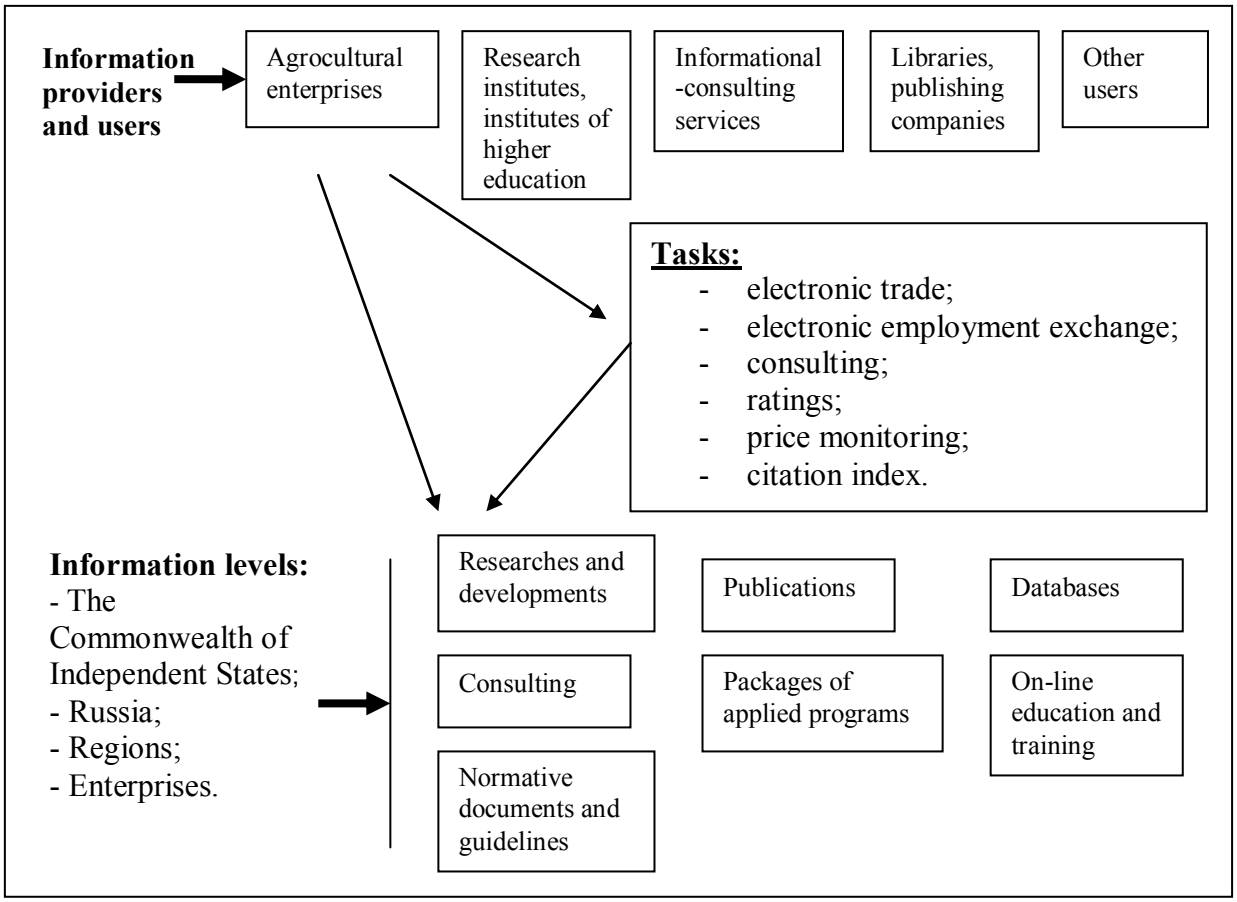
Such state of affairs has some reasons. First of all, complex information systems are much more expensive than local program solutions for one single enterprise and may cost up to several million dollars. Therefore such work for AIC or for groups of enterprises must be developed by special engineering companies but they do not exist now in the Russian AIC. Secondly, there is a huge lack of IT specialists in the area of AIC information knowledge, because many professional engineers quit and are replaced by managers. Thirdly, within the Russian AIC there is not enough advanced production and sales promotion structures, which could require developed information systems.

Due to above reasons Russia at the present time remains behind other developed countries in all ways of informatization: software, amount of computers and information systems in using, communication systems, level of utilization of large-scale computing systems. And the significant aspect is that in Russia modern technologies of designing,

creation and maintenance of information systems are being applied in industry very slowly. Informatization is currently more and more shifting by investments and innovation approaches to Internet space. But if the government structures pay little attention to these processes, it will bring only too large expenditures and scarce results, and even significant spent finances will not give expected effect.

The analysis of Web sites of research institutes of the Russian Agricultural Academy (RAA), the Russian Academy of Sciences, the Russian Academy of Medical Sciences, the Ministry of Education, the Agriculture Ministry, agricultural institutes of higher education and agricultural enterprises demonstrate that even Web sites with full and extensive content bring not so much utility because the users can extract only insignificant benefit from it. Information on those sites is not very clearly structured, concealed in different sections of sites, navigation is badly developed and does not permit making fast and complete information search. Besides, applying different approaches to design of Web sites, different data format and software - even on Web-sites within one domain of knowledge – does not allow organize a unified system for regular replenishment from local sources of information and consequently does not allow effective unified search and analysis among all related sites. Only 25% of the most progressive agricultural enterprises included in Russian club AGRO-300 have own Web sites.

At the present time, as described in the researches of the past years, there are exist real capabilities and necessities to elaborate a typical Web site for agricultural enterprises. This conclusion may be made on the results of conducted studies on the problem of integration of all principal information elements in Internet: researches and developments, publications, advisory activity, technical standards, normative documents and guidelines that have been used in the above mentioned studied Web sites. There have been carried out modeling and estimation of feasibility to download large information volumes into an information carrier system of one provider. Queries response time have been also estimated during the modeling. Therefore, the results of the studies demonstrated that it is possible to merge all information of agricultural knowledge in the united database by the common provider. The operation of this database must be effected by a united database management system. The scheme of UWSAK is represented on picture 1.



Picture 1 Scheme of UWSAK

Creation of a typical site for agricultural enterprises must be done on a united database and must be located at one provider with modern database management system. Information must be organized according to classifiers used in Russia, such as state rubricator of scientific and technical information (SRSTI), Russian classifier of products (RCP) and others. This permits to analyze and process information for the purposes of sales promotion, for setting contacts of wholesalers and suppliers, for organization of manpower resources migration, for rating estimations, price monitoring and so on. But at the present time such approach to development of corporate agricultural Web sites in Russia is not realized. According to the above described approach and investigations ([3]) the following structure of a typical site for agricultural enterprises is suggested (Picture 2).

Structure of typical site of agricultural enterprise

About enterprise:
- history;
- areas of the business;
- guidance;
- organizational and production arrangement;
- contact information;
- cooperation with Russian and other organizations.

News:
- events;
- actions and procedures;
- business and jubilee meetings;
- seminars and workshops.

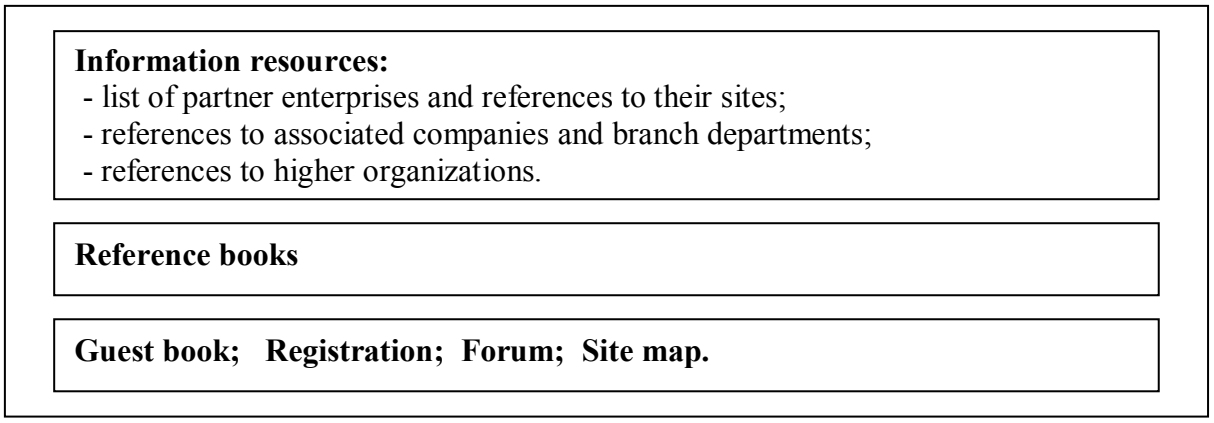
Economic and statistic information:
- income and profit;
- total enterprise area;
- area of agricultural land;
- production of agricultural crops and crop yield;
- production of animal breeding;
- farm equipment;
- other information.

Trade information (selling and purchasing):
- date of publication;
- name of product or service;
- type and sort of product or service;
- quantity, quality of product;
- lots and prices;
- package;
- delivery and purchase conditions.

Personnel:
- quantity; - top staff; - managerial; -engineering; - operational staff.

Vacancies:
- position; - profession; - education; - salary; - requirements to applicants; - working and living conditions.

Scientific, applied and practical topics:
- publications; - researches and developments, - consulting;
- technical standards, - normative documents and guidelines;
- packages of applied programs; - on-line education;
- professional databases.



Picture 2 Structure of typical site of agricultural enterprise

Full realization of this advanced project is a very hard task at the present time. Therefore initially it is proposed to create the integrated portal of the UWSAK based on unified database, catalogues, classifiers and convenient navigation system. Then it is necessary to create and reconcile normative documents and guidelines of software, to develop instructions and organize support service for enterprises while implementing their Web sites. Then it is necessary to organize digitization of all information materials (publications, researches and developments, technical standards, normative documents) and their download into the UWSAK. This centralized data preparation can minimize the expenditures.

At the next stage enterprises and institutes, which will join this project, may transform their sites for work with the unified database of the UWSAK. Typical sites may be provided to all enterprises that do not have yet proper own sites. At the next phases every enterprise will arrange information independently from its own site, and all information data will be available for all users on the portal of the UWSAK.

Realization of the UWSAK and typical sites of enterprises will allow to the Russian AIC to actualize a gross and essential step to the modern information community.

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