New Information Technology in Russian Agriculture Management

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In this work we consider the state of informatization of Russian agriculture and also the scientifically grounded suggestions for development of information system development, Internet technologies within the integrated Internet-space of agrarian knowledge.

Key words: informatization of Russian agriculture, integrated Internet space of agrarian knowledge, Internet-based technology.

Russia has been falling behind Western countries in terms of informatization of agriculture in the last 30-40 years, as profound changes which have taken place in recent years have not stimulated the introduction of modern information technologies (IT) into agricultural industry.

Disregard to integrated, well-balanced development of information technologies on the grounds of integration of information flows, software, telecommunication devices resulted in the situation we have now – information technologies actually do not work, they do not influence the development of productive forces. At the moment, they create an illusion of their service but in fact they are only an advertising tool.

As a consequence, a "single task-based" method of software development and implementation dominates in agriculture, which presupposes that separate task solutions are purchased from different suppliers, so as a result they have no functional, informational or ergonomic connection, though developed countries understood long ago, that only integrated informatization of enterprises is effective. The "single task-based" approach, in most cases, only damages the very idea of informatization.

Earlier AIAPI monitored the informatization state of agricultural enterprises-members of AGRO-300 club.

Table 1. states the aforementioned trends of "single task-based" approach even at the best Russian enterprises, as exemplified with data on accounting software development. The situation with enterprise control automation software development is the same.

Table 1. Percentage ratio of accounting software developers.

Enterprise type	w/o subconracting	C	Regional organization	Russian organization	Individual person	STI
Agricultural enterprises	23	6	45	6	6	3
Poultry farms	43	6	21	7	0	0
Omsk bacon	80		20	0	0	0

Global experience shows that IT can have significant influence only if Russian agriculture gets to some specific level of informatization and only on the grounds of integrated, systematic approach to development and implementation issues.

All over the world informatization is shifted towards Internet in costs and innovation approaches. The story is repeated at present. Internet technologies develop randomly and this development cannot be controlled by state or governing authorities, that is why the process of their implementation is time-consuming and results in significant resources overrun. Even those

insignificant resources, intended for Internet technologies development, are used extremely ineffectively.

Until now we could accept the "single task-based" software development and implementation approach in agro-industrial sector, due to negligible level of enterprises informatization, but uncontrollable development of Internet technologies promises enormous expenses.

For example, as forecasted by the Higher School of Economics, by the end of the decade, more than 50% of Russian economy will be serviced by the Internet.

The situation with Internet technologies in agriculture is even worse. Our institute has analyzed the state and content if websites belonging to agricultural enterprises, websites belonging to Russian agricultural educational institutions, Research Institute of Russian Academy of Agricultural Sciences. So, only about 5% of agricultural enterprises have their own websites, IKS - 48%, Research Institute of Russian Academy of Agricultural Sciences – 50%, agricultural educational institutions – 100%. Therewith, the fullness and organization of the websites is rather low along with rather poor quality of the contents.

Keeping in mind the analysis, we can make the conclusion, that they are looking for ways to inform customers with the help of trial and error method. For example, educational institutions now consider their websites as displays and do not invest in their efficient use. They are focused on applicants for entry and students, rather than on manufacturers, managers, scientists or general public. Some agrarian knowledge is presented on these websites only thanks to enthusiasm of some users who add it. Therewith, we notice the improved competence – there are some electronic catalogues and random full-scale electronic presentation. But there is no well-ordered full-scale electronic presentation.

On the grounds of our analysis we can make one more conclusion. In our country Internet is still considered to be one of types of mass media or a convenient way of visualization. That is why the Ministry of Agriculture of Russia does not place emphasis on the development of information systems (IS) including Management Information Systems (MIS) of any level - from an enterprise to the Ministry of Agriculture of the RF, in the field of Internet-technology. That is why the representatives of agro-industrial sector make mainly display websites. Therefore, people worldwide have already appreciated the great potential of Internet technologies allowing access to different MIS and IS for unlimited number of users. The Internet is considered to be a new evolutionary stage of development of means of informatization.

Therewith, on the grounds of statement, that Internet technology is a component of information technologies, technologies used for informatization should be applied for them. For this purpose a range of methodological principles for information systems (IS) development should be actualized. Those principles were stated by a member of the Academy of Sciences V.M. Glushkov. In particular we should actualize the principle of modularity and type design. The essence of this principle is the identification and development of the most independent parts of systems or modules and their maximum use in different subsystems.

It should be noted that the modularity and type design principle should be taken as the basis for development of IS in agriculture, as there is a great number of typical organizations there.

Taking into account the aforementioned data, AIAPI offered to promote informatization and Internet-technology within the Unified Informational Internet Space of Agrarian Knowledge (EIPAZ) from unified scientific and methodological positions [1]. The possibility of EIPAZ development is verified on the grounds of economic and mathematical modeling.

EIPAZ is the integration of studies, publications, advising activities, regulatory information, distance learning, application program packages, databases, developed by Research Institute of Russian Academy of Agricultural Sciences, agricultural educational

institutions, agro-industrial publications and publishing houses, EIPAZ and other organizations working in agricultural sector from a unified position in order to facilitate the search of necessary information supported by a single provider and a powerful DBMS based on unified classifiers, e.g. state rubricators of scientific and technical information GRNTI and all-Russia product classifier OKP. The integration specifies development of typical website for a research institute, educational institutions, agricultural enterprises, information and advising centers, including the following chapters: Scientific support for agro-industrial production, Documents management, Statistics, Digital market, Digital employment center. All of them are meant to facilitate access to informational Internet resources, free transfer to manufacturers and support of ready sites by a single provider.

Gathering these types of unified agrarian knowledge into a powerful data base management system (DBMS), capable to process millions of copies of entries with a sufficient speed on the grounds of GRNTI, OKP will allow processing different analytical information, including: forming different ratings, samplings, groups, calculating citation indexes, revealing plagiarism, and as it was mentioned before bringing together sellers and buyers with calculation of transportation leg and costs optimization, performing stable migration of labor resources, leasing software, performing price monitoring etc.

For these purposes, on the grounds of the results of analysis of different agricultural websites, the structures of the above specified typical websites have been offered and partially programmatically implemented.

Therewith, it will be possible to save more than 1 billion RUB a year only on websites development and support. This type of EIPAZ portal realization will allow agriculture to enter to informational community eventually.

Certainly, the complete realization of such a breakthrough project, innovative not only for Russia, but also for the whole world, seems to be impossible at the moment. We think that the best solution is the following: to try to gather everything we have in electronic format (publications, researches, distance learning, advising services etc.), develop competent architecture for their presentation in the Internet and start its step-by-step implementation.

At the following stages there should be developed databases, application program packages, programs for development of agriculture informatization identified in the project [2].

The first stage of EIPAZ development does not require considerable expenses, unlike the realization of industrial design technology, information systems development and implementation.

As for the application program packages, especially those related to management information systems, instead of rushing to develop them we should study new management methods first. There was time, when introduction of agricultural machines changed the structures of agricultural manufacturing and management and control systems. PC implementation was supposed to have similar consequences, but it didn’t happen so. Accounting may serve as a typical example. Now it is based on multiple manual aggregation of primary information about a technological operation in view of different aspects. All the modern software aimed to automate accounting repeat this technology. At the same time, computers are capable to store and perform calculations on the grounds of primary information without making temporary analytical databases.

The practice of computer implementation demands formalization of general principles and methods of production process organization and management, providing effective use of labor, material, power and informational resources.

More and more management functions can be automated by means of standards development and managers training on some standard management functions and also due to extended technical capabilities of hardware and software.

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