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PROBLEMS OF ENTERPRISES INNOVATION DEVELOPMENT

This article reviews the problems, which must be solved in order to implement in Ukraine progressive methods of innovational development of enterprises in current economical circumstances by the example of usage of Continuous Acquisition and Lifecycle Support technology.

Keywords: CALS-technologies, product life cycle, aviation enterprises.

Problem. *Modern approach to lifecycle (LC) management technology products brings new requirements for the development of innovative enterprises, which requires a radical revision used in domestic management practice methodological tools and mechanisms of its development. Implementation and effective use of modern IT-management to ensure rapid response to business changes in external competitive environment enhance organizational flexibility and agility of industrial and economic systems, focusing on solving strategic tasks during its operation and development.*

The development and implementation of information technology (IT) in management companies are constantly in the attention field of scientists and experts from many countries. However, the scientific problem of IT development and organization in Ukrainian industrial enterprises studied deeply enough, while its tool in the management of enterprises aircraft has an essential specific that needs to examine, consider and appropriately used to improve management.

Analysis of recent research and publications. *To enhance organizational and technological potential of Ukrainian aviation industry except to increase investment in technical retooling of enterprises accelerate implementation processes create products and systems promoted products (CALs-technologies) to provide building integrated information and communication systems management with functions adapt structurally technological procedures of products and other management functions [1].*

In scientific paper [2] studied the information model implementation of corporate management system SAP R/3, which takes into account the aircraft-building enterprises and allows for the organization of interaction various departments and divisions through the use of modern IT to provide the required products quality at each production products stage in the aviation industry.

Many scientific papers [3-6] devoted to the creation of methods and algorithms for building an unified information space research and production enterprises as complex socio-economics system. These papers examined information-logical models, integration methods and algorithms of information resources and production

enterprise management concept configuration of a single information space by analyzing indicators of integrated information environment, as well as algorithms to ensure coordinated interaction in an integrated enterprise information environment.

It should be noted the development and implementation problem of integrated logistics support lifecycle technology products, which is seen as a means of enhancing international competitiveness and export development not only for civil and military aircraft, as well as any high-tech product content. Experts predict that countries that won't possess these technologies by 2015 can be fully driven not only from the international aviation market, but also in all markets complex, high technology products [7].

Special requirements in the methodology of integrated logistics support require the specific technologies development for solving CALS-strategy by automating and reengineering business processes within the virtual enterprise. The achieve directions may be different, but they are determined performance developed and implemented approaches and technologies within the methodology of integrated logistics support.

Nowadays CALS-technologies becomes one of the main conditions for business partnership of companies and organizations involved in the products LC, in the process of formalizing requirements, orders, deliveries of components, raw materials and their maintenance and repair. This technology is aimed at improving the existing processes in the industry through their transformation into the information system products LC management [8, 9].

Ukraine's backlog in the information field threatens the loss of its traditionally strong position in key areas of fundamental and applied sciences and knowledge. Without the implementation of state policies on the concentration of available country's scientific and technological potential and the establishment of national innovation systems, and the inclusion of domestic enterprises and organizations in international organizations that coordinate the use of CALS-technologies, Ukraine will not be able to reach a qualitatively new stage of social development (stage of information society) and to successfully integrate into the global economy.

Thus, the use of CALS-technologies in Ukraine is an urgent nationwide task, but the implementation of this technology on domestic technologies industries enterprises associated with certain organizational, economic, technical and other problems.

*Accordingly, the **main purpose of this article** is to analyze the complex of organizational, technical and other works to be done to implement technology continuous information support products LC in Ukraine.*

***Contribution of basic material.** CALS-technologies is a modern approach to design and manufacture of high-tech products, which is using of computer technology and IT at all stages of the product LC, which provides the same methods of process control and interaction all participants in this cycle: product customers, suppliers (manufacturer) products, operational and maintenance personnel and implemented in accordance with the requirements of international standards governing the rules specified interaction mainly through electronic data interchange.*

CALS-technologies allow:

- *systemic information support at all stages of the product LC, combining processes into a single information space, which together lead to a reduction in the value of the product LC;*
- *re-engineering business processes, which is the continuous improvement of business processes aimed at shortening the products production to market and maximum customer satisfaction at all stages of the LC;*
- *parallel engineering, which uses a fixed set of methods, procedures, techniques and tools for developing and designing with simultaneous modeling of manufacturing processes and use of products that provides shortening product development and bringing market;*
- *presentation of information in electronic form and use digital signatures to ensure the legitimacy of electronic documents and possibility of collective access to all participants products LC within its powers;*
- *standardization of information describing the subjects and objects product LC that will eliminate barriers in the exchange of information, to ensure maximum flexibility in the design, manufacturing and logistics support (maintenance supplies) products, reach new, higher quality and productivity and reduce the production cost and its output to market.*

CALS-technologies implementation requires to perform complex organizational, technical and other work, but the primary problem still remain state support and development of the legal framework, teaching materials, which by law is the basis of new ways and means of information exchange.

The technical problems include:

1. Development of an integrated enterprises information environment, which will be kept information about products and data about the enterprises. Information integration processes will be achieved through the use of public databases that enable more effective and widely to solve the problem, functions and processes at all stages of the products LC, namely, development and product design, technological preparation of production planning and production control, logistics.

Typically, the total database consists of three sections: legal background, long-term and current. In the referenced section stored information objects that contain information about construction materials, component parts and standard parts of production, the standard calculation methods, state, international and domestic standards and other regulations. Summary of reference section is updated as new and cancellation of existing regulations. In the long section stored information objects that contain data accumulate personal experience company. Its section is updated and supplemented if necessary, creating new technical solutions. In the actual section (apparently the largest volume and most complex in structure) stored information objects that contain information about products that are at different stages of LC.

Total base company consists of sections: economy and finances, external relations companies, industrial and technological enterprise environment, system quality, informational inks with the processes of technological and organizational and

economic production preparation, and production (including shipping processes and finished product transportation).

As input data used information contained in an integrated information environment and information objects are generated during the process, returned in an integrated information environment for storage and subsequent use in other processes.

Thus, a set of databases that are part of an integrated information environment provide all information necessary processes product LC.

2. Formation of a common information space (Integrated Information Environment) high-tech industries, which include businesses and organizations through the use of ISO 10303 (STEP - Standards for the Exchange of Product Model Data), which is a key technology product data description for the world market. This standard provides a description of the physical and functional parameters of the product throughout its LC, and effective exchange of information with partners, customers and suppliers worldwide.

3. Development of an integrated information security system at the enterprise level and in its interaction in cooperation with other companies. Nowadays, technical information security is an integral part of Ukrainian national security in the information field and is presented as a measure aimed at providing engineering activities confidentiality, integrity and availability of information in computer systems and facilities information activities. Development of an integrated information security system should be implemented on the basis of the state standard DSTU 3396.1-96 Ukraine "Protection. Technical data protection. The order of the work. "

4. Providing electronic digital signature in the exchange of electronic documents. Regulatory and legal framework to address its problem is the Law of Ukraine "About an electronic digital signature" (2004), which clearly defined concept, scope and use of legal force of electronic digital signature. Legal validity of electronic documents signed with electronic digital signature is equivalent to the legal effect of the document on paper with the handwritten signature of eligible persons and sealed.

5. Adjustments to existing standards requirements "Single system design and technological documentation" (ESKD, ESTD) to modern ways of presenting information and the use of concurrent engineering to reduce the time and cost of designing. To solve this problem, install the legitimacy of the use of electronic engineering design and technical documentation in enterprises and organizations, management and access by all LC participants.

6. Selection and justification of basic models and principles of technology configuration management products, as one of the most effective mechanisms for integrated logistics support LC technology products. Its technology will provide documentation of all data about product tracing all the steps associated with making changes to the structure, composition and design of the individual components of the product. It allows at any time to reproduce the process of making a product copy with warranty receipt of the required characteristics.

7. Development of an electronic maintenance and repair documentation. Creation and use of such documentation at all stages of the product LC and its information support will reduce costs and shorten the time in research and

development product samples, improve system operation and maintenance, form a single information space "customer-developer-manufacturer", reduce the cost of developing, publication, distribution and storage of technical documentation.

8. Development of the basic provisions the infrastructure organization based in customers, monitoring technical state of prognosis estimation needs to supply spare parts for the maintenance and restoration of their disability.

The organizational problems include:

1. Development the Ukrainian public policy on the implementation of CALS-technologies. It is necessary to create a public body that would coordinate the work and provided necessary assistance to businesses and organizations implement CALS-technologies. Effectiveness of such bodies brought in the United States (American Industrial CALS-technologies Management Board), in Great Britain (United Kingdom Industry CALS Council), Europe (European Industrial CALS Group), Japan (Industrial CALS Forum) and others.

2. Creating the company specialized unit to implement CALS-technology.

The main economic problems include:

1. Lack of funds for enterprises sufficient to

a) development the IT concept and strategy and its application technical equipment;

b) acquisition of modern computer technology, operation of CALS-technologies and purchase special software;

c) implementation of international and national standards in the field of CALS-technologies.

2. Lack of funds to state sufficient to

a) development of national standards for CALS-technologies;

b) introduction of software and hardware bases certification and training industry and national standards that summarize experience in implementing software and hardware for the formation and operation of integrated management systems;

c) establishment the training specialists system in designing hardware and software complex, as well as experts who will engage in the implementation of CALS-technology enterprises.

It is clear that the introduction of CALS-technologies technical and organizational issues intersect with economic and human: solving technical problems is impossible without extensive work in the field of training in IT and constrained lack of financial and material resources, lack of consistency in training methods and creation efficient organizational structure, therefore necessary to resolve all issues in the complex.

Conclusions and prospects for further research. Innovative enterprises development in our country due to the necessity constant improvement and maintenance of products competitiveness. But, it is necessary to be aware that the growing competitiveness result not all innovations, but only those that are targeted to new markets and accompanied by original designs. These innovative technologies certainly applies continuous information technology support LC products, the

international experience of which goes back several decades and shows significant benefits that are enterprises and the state of their implementation.

Possible confidently assert that the situation in Ukrainian enterprises, especially that produce high-tech products, products that are moving into international markets, demands for early use of experience and introduction fully CALS-technologies. For this purpose, as stated in this article, there is no other way but to deal with organizational, economic, technical, personnel and other problems.

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