Journal of Technology and Exploitation in Mechanical Engineering
Vol. 2, no. 1, pp. 60–65, 2016
https://doi.org/10.35784/jteme.518 Research article

Submitted: 2016.11.11
Accepted: 2016.12.22
Published: 2016.12.26

The conception of project-oriented enterprise information resources system management technology creation

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ABSTRACT
One of the main enterprise management problems is finding the source of timely, quality, full information for successful realization of projects. For solving this problem the multisystem information technology is offered. The technology unites existing enterprise's organizational and technical systems which provide creation, transfer, storing, and using project-oriented enterprise information resource. In this paper the expediency of multisystem information technology use is shown and it is model as a cube which has functional, procedure, and basic levels is built. The cube sides are: information technology of user in project activities, information technology of user in operational activities, and multisystem information technology.
KEYWORDS: information resource, project-oriented enterprise, information technology

KONCEPCJA STWORZENIA NAKIEROWANEJ NA REALIZACJĘ PROJEKTU TECHNOLOGII INFORMACYJNEJ ZARZĄDZANIA ZASOBAMI PRZEDSIĘBIORSTWA

STRESZCZENIE
Jednym z głównych zagadnień związanych z zarządzaniem przedsiębiorstwem mającym na celu pomyślną realizację projektów jest pozyskanie źródeł terminowych, właściwych i kompletnych informacji. W celu rozwiązania tego problemu stosuje się wielosystemowe technologie informacyjne. Technologie te stanowią połączenie systemów organizacyjnych i technicznych przedsiębiorstwa, umożliwiając tworzenie, przesyłanie, przechowywanie i użytkowanie zasobów informacji mających na celu realizację określonego projektu, danego przedsiębiorstwa. W artykule przedstawiono praktyczne wykorzystanie wielosystemowej technologii informacyjnej, zaprezentowano jej model w formie modułu zawierającego procedury oraz jego podstawowe poziomy konstrukcji. Moduł stanowią: technologie informatyczne realizowane w ramach projektu przez użytkownika, technologie informacyjne użytkownika realizowane w działaniach operacyjnych oraz wielosystemowe technologie informacyjne.
SŁOWA KLUCZOWE: zasób informacji, przedsiębiorstwa zorientowane na projekty, technologie informacyjne

1. Introduction

The main problem in management of modern project-oriented enterprises is finding the source of timely, quality, full information for successful realization of projects, especially when consolidated information from different departments of the enterprise. Thus, for the enterprise successful project and operational activities the issue of creating information connection for proper information management is pressing. For solving it, the task of project-oriented enterprise organizational-technical systems (OTS) integration has to be solved.

Organizational-technical system integration allows to unite the project-oriented information in sole pool and manage them effectively. It allows to control which system, department or employee should get or give information and when this event should happen. In this case OTS integration allows to increase project-oriented enterprise activities effectiveness by timely information receiving and decision-making.

In the base of this task solving is project-oriented enterprise system information technology creation which allows to centralize the enterprise information environment and build enterprise information management models.

2. Main part

2.1. Research analysis

Today, information technology influences any enterprise's everyday activities and became the essential part of the enterprise's information infrastructure. Information technology allows to research and connect the enterprise component areas. IT is developing very fast and covering more and more activities, so, any competitive activity in future cannot exist without the information technology use ways detailed analysis. Thus, information infrastructure should become an important component of any management activity. It must be supported with a set of information resources, hardware, software, and telecommunication facilities [1].

The research of information technology for enterprise management development using new concepts are getting more and more topical [2]. The analysis shows that a lot of research in project-oriented enterprises activities are dedicated to creation and using different instruments of project and operational activities management [4-5]. And the issues of using specific software which allow to solve enterprise analysis and management tasks fully and effectively are considered often (Project Expert, SureTrack, MS Project, 1C: Enterprise, SAP, cloud technology etc.) [6-12].

Using modern information technology at enterprise management issues and its economical reasoning had a big impact due to scientific contribution of the following authors in Ukraine: S.V. Voitko, S.G. Diorditsi, A.G. Lytvak, N.B. Kyrych, N.S. Medzhibivska, T.V. Sakalosh, Z.M. Sokolovska etc. In world science the big contribution to enterprise innovation development and information technology use research was made with I. Ansoff, D. Moshella, R. Nelson, M. Poter, P. Samuelson, Y. Savinova, D. Santo, J. Stigliz, J. Schumpeter, K. Colt, E. Yanch etc. In the research the significant efforts are concentrated at information and communication technology structure analysis and the peculiarities of information technology branch development investigation [13].

2.2. Main part

Enterprise project and operational activities produce information which can be presented as a distinct information resource. A lot of information resources move chaotically between departments, information systems, external organizations, and enterprise managers. Such information interaction format makes giving information requests and receiving necessary information more complicated and slower (Fig. 1.).

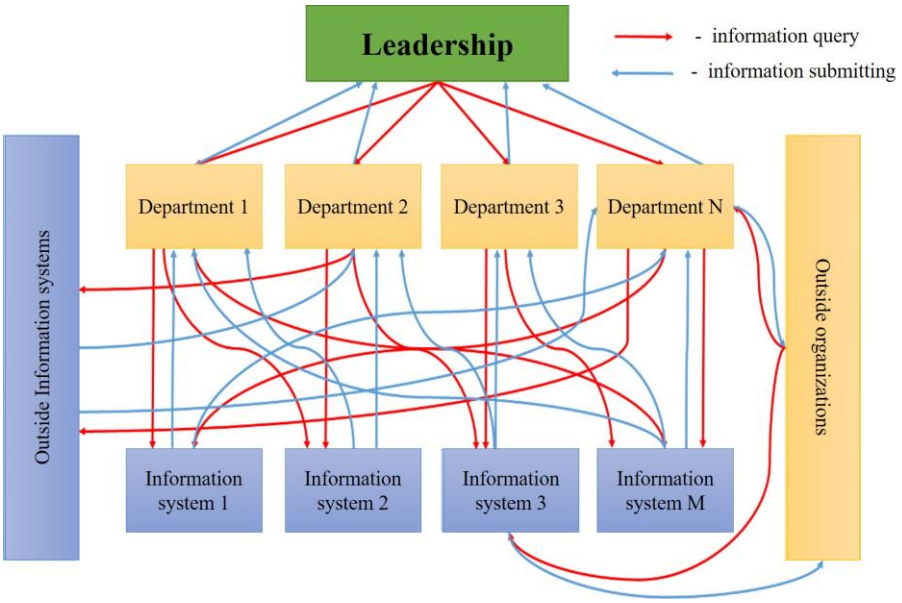

Fig. 1. Information interaction at an enterprise using information systems

Definition 1. Information resource is data, knowledge, messages, facts, ideas, concepts which change its consumer behavior and are received from project-oriented enterprise information sources as a result of project or operational activities or external environment, and are used outside of these sources.

For increasing an enterprise work efficiency, it is necessary to make the way from information resource client to the professional, who receives the information and back shorter. For this information systems must "understand" mutual requests and be able to realize them to great degree automatically. The main issue is that some of information systems are logically related, but are located in different departments of a project-oriented enterprise, and are created in different time with different developers. It causes problems not only with information exchange, but also with designing the enterprise sole information technology. For solving this problem, the project-oriented enterprise information technology should be considered as a set of people, policies, methods, and facilities, which are realized with multisystem information technology. Fig. 2. shows information interaction at an enterprise using multisystem information technology.

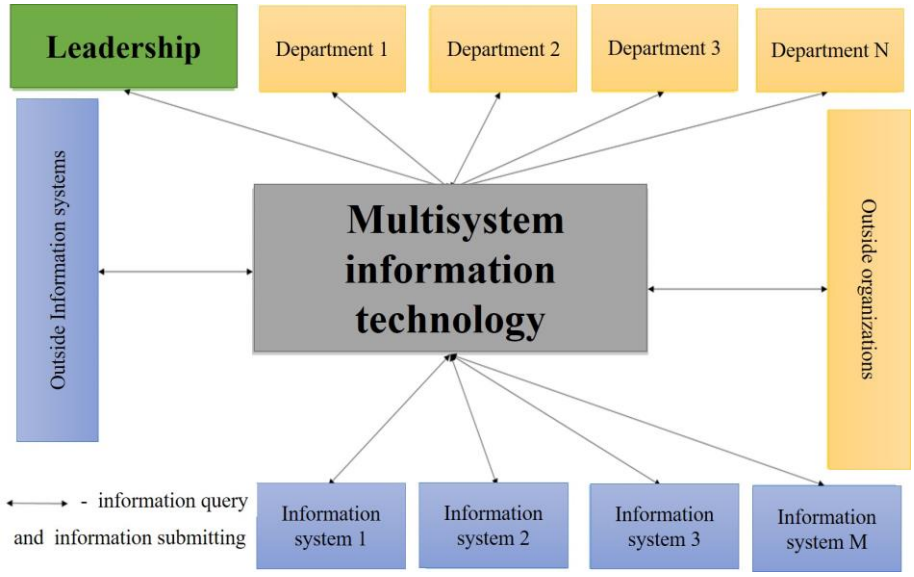

Fig. 2. Information interaction at an enterprise using multisystem information technology

Multisystem information technology helps to order enterprise information resources movement. It allows any operational or project activity member to receive the necessary information at any time.

Definition 2. Multisystem information technology (MSIT) is the technology of consolidation of enterprise existing organizational and technical systems, which provide creation, transfer, storing, and use of project-oriented enterprise information resource. Its main goal is to manage enterprise electronic information creation and use. Multisystem information technology is consolidated in sole system of functioning of different methods, information system software and information tools which provide functional tasks effective solution. The MSIT peculiarities are determined with:

1. Project-oriented enterprise information systems, information management, function localization in MSIT which allow to tune easily the whole enterprise information environment according to the users needs.
2. New information systems being created and deployed, are not adjusted to other information systems data and knowledge bases. Their integration is being done on the base of information technologies macro description, which are executed with MSIT.
3. A user can prepare requests for receiving information in MSIT sole functional environment without understanding, which information it is and where it is located.

In this paper multisystem information technology cube space model is offered (Fig. 3.). After developing MSIT space model, it is possible to answer a question “which information resources management system is necessary for the enterprise” and formulate the system criteria, goals, and structure, as well as develop the MSIT filling rational processes.

In the cube, the multisystem information technology information interactions structure is reflected. It is aimed to provide the user with necessary information on enterprise project and operational activity, and on information resource production management process. The multisystem information technology cube dimensions are:

1. User information technology in project activity (UIT PA). It is the technology of using the MSIT methods and facilities for solving the enterprise project tasks.
2. User information technology in operational activity (UIT OA). It is the technology of using the MSIT methods and facilities for solving the enterprise operational tasks.
3. System information technology. It is MSIT information resource processing management technology.

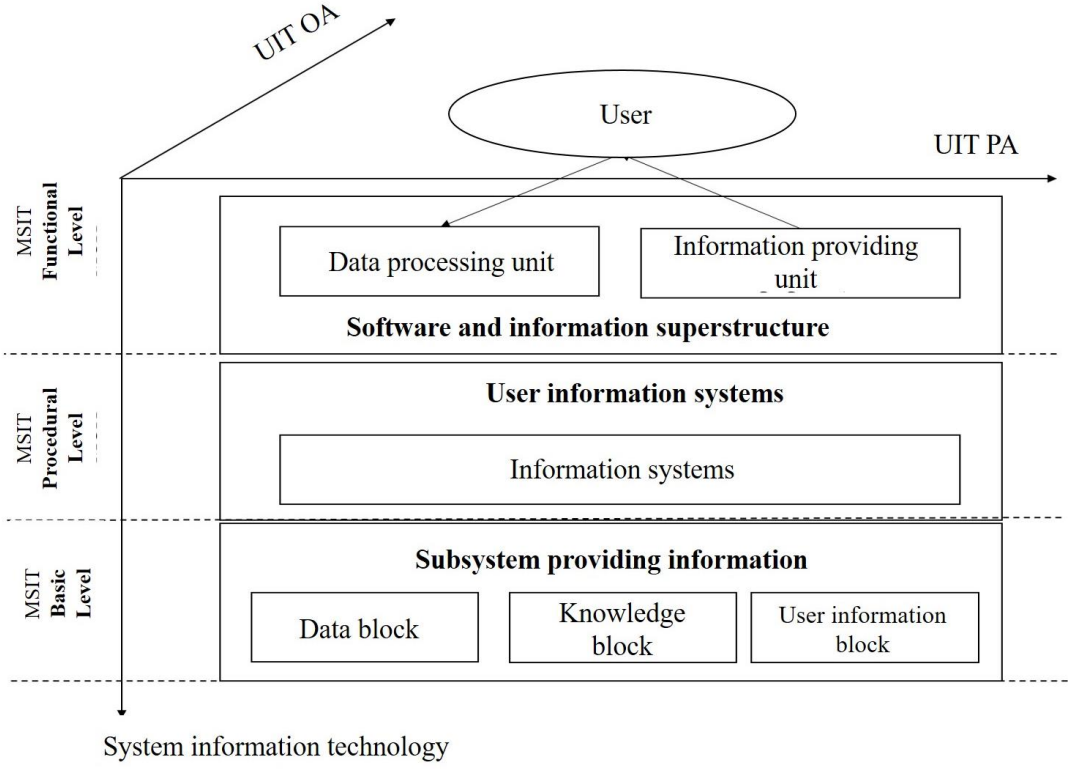

Fig. 3. MSIT cube model

The cube model MSIT consists of three levels: functional, procedure, and basic. At functional level software and information superstructure contains two blocks:

- Requests processing block, which is used to organize input and control requests.
- User influence block, which forms influence on users.

Procedural level includes user information systems, which contain project management information processes, and operational activities information systems, as well as information resource creation traditional organizational components like departments, units, centers etc.

Project management information systems provide and maintain enterprise project activities and operational activities information systems provide and maintain enterprise operational activities. These systems exchange the information on enterprise project and operational activities with users and between each other.

Basic level contains information provision sub-system, which consists of data block, knowledge block, and user information block.

- Data block includes a set of data organized in a special way through databases and programs, which provide data input, output, storing, and processing in computers through database management system.

- Knowledge block includes knowledge base and system based on knowledge. Knowledge is information on domain objects, their interaction, and processes existing inside it. The knowledge can be declarative (knowledge describing the domain which can be stored directly in computer memory) and procedural (knowledge which can be received using algorithms describing processes in domain).

- User information block. It is information created with users; the user is responsible for storing and processing it.

3. Conclusions

Certainly, MSIT is not a database management system which provides database requests. MSIT provides requests to users, who work with different information systems, and get different information for executing their functions. On the other hand, MSIT realizes computer-based information receiving technology. When information request is an information management scoped element, it is planned and directed to the appropriate addressee, its execution is controlled, all actions with information are logged etc.

The following issue needing rigorous research is building project-oriented enterprise information resources management models and methods with multisystem information technology.

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