ON THE INFORMATION SUPPORT IMPROVEMENT OF IT PROJECT MANAGEMENT SYSTEM

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Information support of enterprise's IT project management requires continuous improvement and introduction of the appropriate changes. The study of industrial enterprise activities showed that an automated IT project management system plays the main role in this aspect. Development of an automated IT project management system is a complex and time consuming task but it is very important to execute the operational control of IT projects. Therefore, the main purpose of this article is the operation analysis and development of recommendations on information support improvement of IT project management system. In addition, the main stages of the information system life cycle were identified taking into account the mandatory requirements to the business processes. Along with the analysis of the industrial enterprise brunches the diagram of the IT project management business processes was drawn. It helps to visualize the problem, and to provide as-is and to-be situation (as it is and as it should be) allowing to identify the main benefits of IT projects AMS implementation.

Keywords: IT project, information support, business processes, IT project management system, IS life cycle.

Introduction

IT Project Management is an important area of activity which allows you to control many of the factors associated with the project management needs. Moreover, Project Management is an interaction between objects controlled by information technology capabilities. Information support for this class of systems is aimed mainly to the collection, storage, delivery and management of information for designers, heads of departments and companies [1].

Automated IT project management system is capable to accelerate many business processes of the organization considerably but their proper adjustment and improvement are often required to meet all requirements of the customer. For industrial enterprises, in particular, such class of applications as automated IT project management system, aimed at more effective and efficient support of IT project, plays an important role. Such a system will enable to monitor all project participants within the shortest time and to make management decisions on IT projects.

The automated IT project management system is a combination of a unified system of real-time data monitoring about the current state of the project. In other words, it is a kind of "layer" between the project customer and its executors or between business processes and automated IT project management system in the enterprise which converts the information on the input into a form suitable for storing, processing, and classifying within the IT project management system. It also offers the operational output data in the form that simplifies processing and studying by the project manager.

Development of an automated IT project management system is a complex and time consuming but very important task which is necessary for the IT projects operational management. Therefore, analysis of the functioning and development of recommendations on improvement of information support are very important tasks.

The main stages of the information system life cycle

In practice the use of project management methodologies allow, first of all, to set the objectives and results of the project, to determine the cost, time and quality parameters of the project, to identify quantitative characteristics, to create a sufficiently realistic plan for project implementation, to assess

the risks, to identify and prevent possible and quite likely negative consequences of the project implementation. The most important thing in the effective project management is its structuring. The meaning of the whole process is to identify the key elements:

1) The phases of the project life cycle, operations, stages and particular tasks;
2) The organizational structure of the project executors;
3) The responsibility structure.

Note that the life cycle is a sequence of project stages it has to go through for a guaranteed achievement of the project objectives, in this case, for the particular information technology implementation [2]. The organizational structure involves the defining of the executors' roles that are necessary for the immediate implementation of the project, for sharing the responsibilities for task completion, and defining the relationship between them.

In addition, an important aspect is the adaptation of the project life cycle model [3]. In this case, the model of information system life cycle is used as it meets the problem of IT projects management. The model is implemented based on the ISO / IEC 15288 standard [4]. According to the standard the start-up of each new project involves the adaptation of the existing or creation of the new life cycle model.

The process of adaptation or creation of a life cycle model starts with defining the objectives and results of each stage that make up the structure of tasks for a more detailed modeling of IT implementation processes. According to the basic standard, as well as typical stages of the information technologies' life cycle and adopted structure of their implementation, the following sequence of stages can be defined:

1) Project Planning;
2) Design;
3) Development;
4) Operation and maintenance;
5) Disposal or updating.

The aims of each IT system life cycle stages are given in the Table 1.

Table 1

The aims of IT system life cycle stages

Stage (ISO / IEC 15288 standard)	Stage (adapted)	Stage aims
Concept	Project planning	Evaluation of new opportunities in business sphere, the development of preliminary system requirements and their feasibility checking. Conceptual planning of the entire IS life cycle
Development	Design	System design creation that meets the requirements of the acquiring party, and may be implemented, tested, evaluated, used for its intended purpose, and later written off or updated
Production	Development and implementation	Development (adjustment) in accordance with the requirements of the acquiring party, system testing, corresponding organizational and technical measures implementation, and deploying of the supporting systems designed to ensure correct operation of an implemented product
Application, application support	Operation and maintenance	Using the implemented product under specified operation conditions, and continuous efficiency ensuring. Implementation of logistics, maintenance and repair which provide continuous operation of the system and the sustainable services provision to support its application during the operation
Withdrawal and writing off	Disposal or updating	Providing the withdrawal of the system and related service and support organizational and technological subsystems. Transition to a new version or to a completely new system support

Identified stages are stages of information system life cycle which are identical to the project life cycle. Product life cycle reflects what needs to be done for the creation, disposal, support and operation of the product but project life cycle corresponds to how to manage and organize this work. The phase of the product life cycle can include all phases of the project life cycle and, in accordance with ISO / IEC 15288 standard [4, 5], it has such stages as the provision of assessment and control, planning, as well as

a gateway i.e. decision making process by means of which the transition to the next stage of the information system life cycle occurs. This is the main point of the quality monitoring and deciding on expediency of the further implementation of the project. It is important to note that the assessment, monitoring and planning are typical for any control cycle. Thus the application of planning, even at the operation and support stage being of operational character, is quite reasonable.

An example of the relation between information system life cycle (IS LC) and project life cycle (PLC) is shown in Fig. 1.
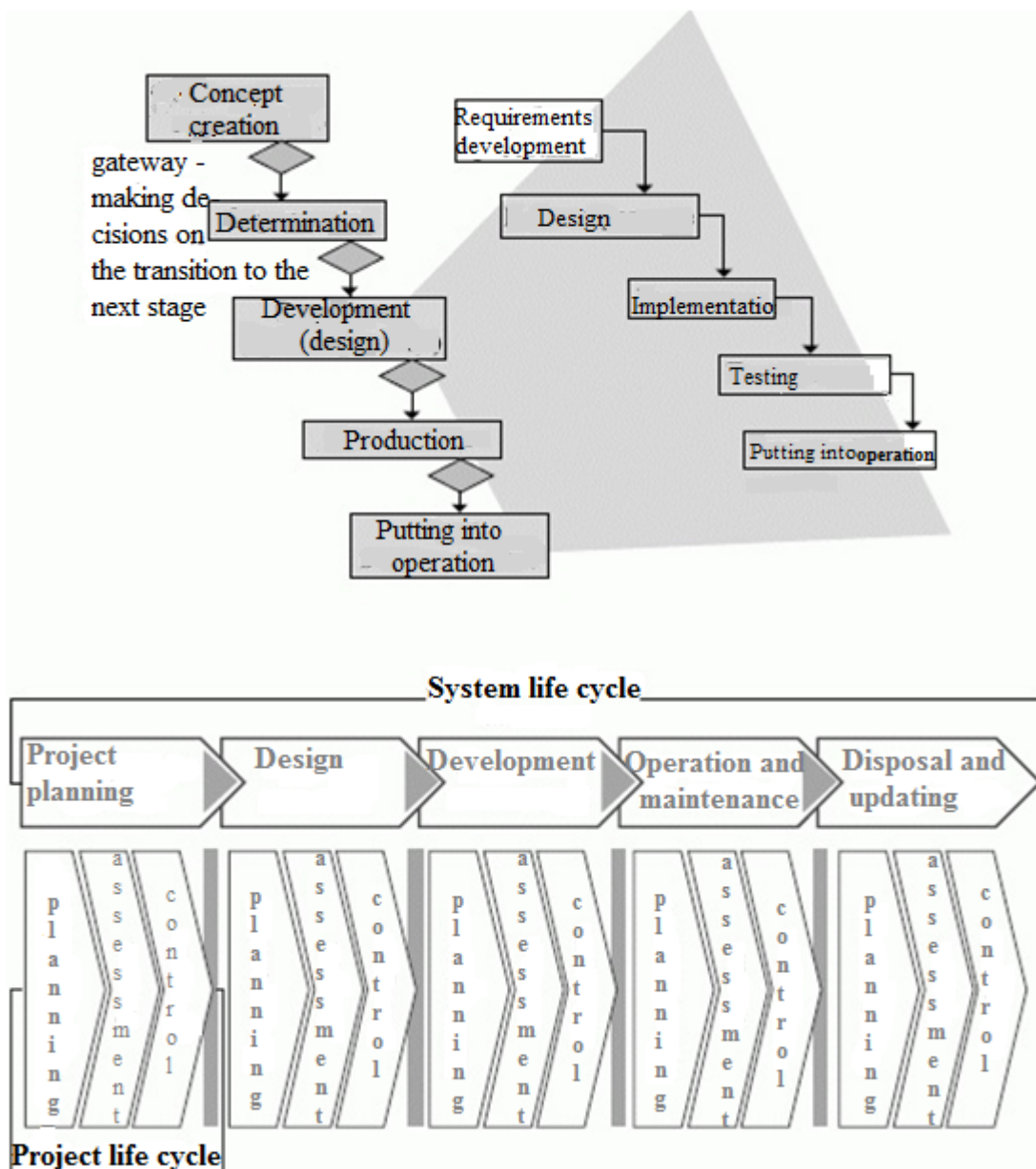

Fig. 1. ISLC and PLC correlation

The study of each stage of the information system life cycle as a separate project allows the use of a rolling wave planning method which reduces the project risk and increases the chances of success significantly.

Note that the processes performed at one stage of the information system life cycle may have a correlation with processes at other stages. It is clear that for the project to achieve its goals successfully it is necessary to ensure an integrated approach to management taking into account the interrelationships and interdependencies of both individual processes and all groups of processes.

Development of requirements for IT project management

The project on IT project management process automation is aimed at the implementation efficiency improvement of both current and future IT projects at an enterprise [6]. The application program should be a unified information space. The main objective of the project is to create conditions for real-time tracking of the stages of different task within IT projects and decision-making support in case of problems and delays.

Along with the analysis of the industrial enterprise units the diagram of IT project management business processes was drawn allowing to have a visual look at the problem and to provide as-is and to-be situation to identify the main benefits of IT projects AMS implementation [6, 7].

Based on the analysis of IT project management process in an industrial enterprise a summary table to compare "as-is" and "to-be" situations was made up (Table 2).

Table 2

Summary table to compare "as-is" and "to-be" situations

Problem	As-is	To-be	Solution analyses
A large amount of time is spent on creating a plan for the IT project management	The plan is developed manually by means of MS Office and then it is printed out. You work with a paper document	The plan is developed in a software package. There is a specified electronic access for managers. The work with the plan is carried out electronically	It simplifies the plan creation process. There is more time for other tasks due to templates and simplicity of plan creation. There is no need to print documents if you want to make changes. It helps to save time and paper
It is impossible to appoint the project executor immediately	To appoint the project executor the staff gets together and finds out who will be able to execute the project	Manager can see all the executors in the program and their workload at present and can appoint the executor immediately	You can quickly determine the employees workload and appoint an executor without the staff meeting and without distracting them from their work. Fast decision-making
There is no possibility to track the readiness of IT project	The meeting is organized where employees make their reports	No need to organize the meeting, you just need to open the application program and view all the project stages and their readiness	Time saving. Rapid monitoring. Employees do not get nervous and can concentrate on their work

Implementation of the given recommendations increases automation of work processes with the system which will mean an increase, in particular, of the economic efficiency of IT project management.

IT Project Management in company's IT Office

Company's IT Office operation was investigated in the course of the industrial enterprise activity analysis as well as the heard of department of tasks design and setting activity within the IT project management. The automation of IT project management business processes was revealed to be insufficient. Such IT project management systems turned out to be available at the investigated industrial enterprise but they do not meet the needs of the enterprise in all respects. Therefore, it is necessary to create the automated IT project management system from scratch or to use the core of existing software. Fig. 2 presents a diagram of IT project management business processes in the company's IT office. The red thick arrow presents the automated IT project management system that is suitable to all blocks and covers all business processes of IT project management. Automated IT project management system implemented in the IT office can facilitate the work of the IT office heads and help to achieve the operational work of the entire department.
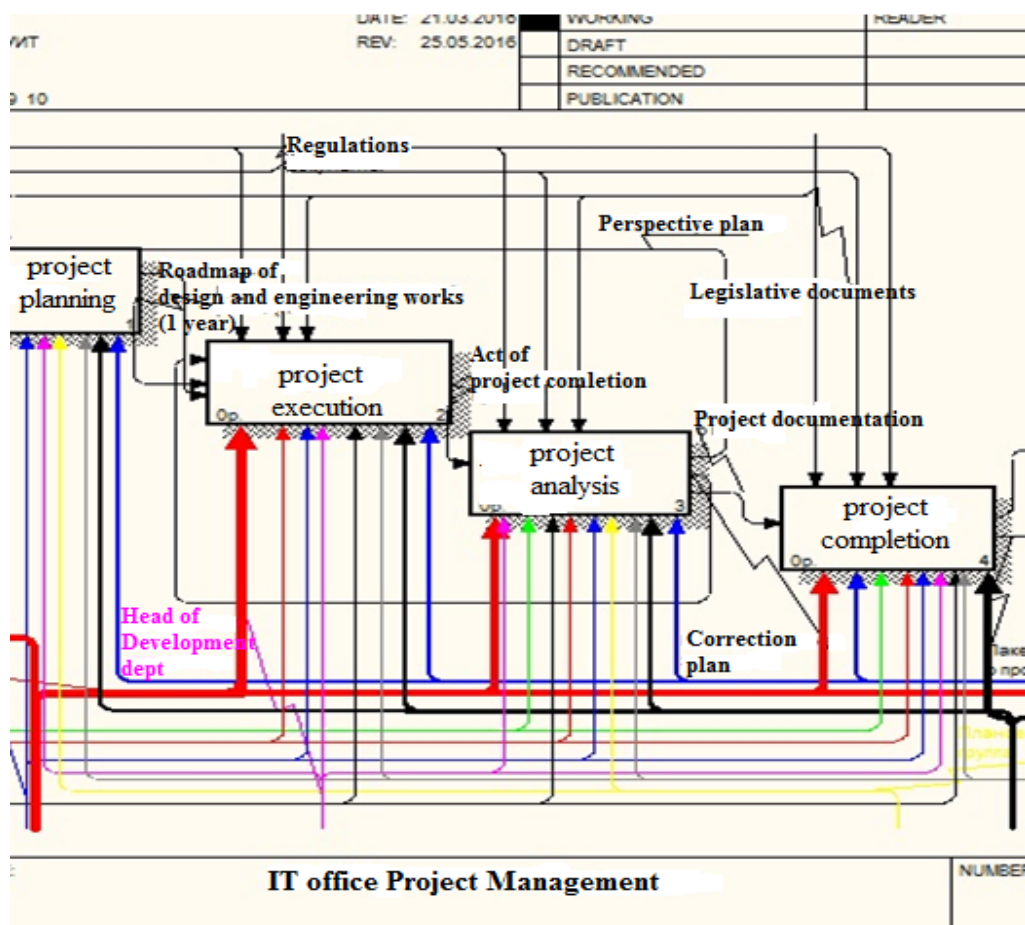
Fig. 2. AMS implementation in business processes of IT project management

The study revealed that the following business processes should be automated in the IT office:
1) Project planning;
2) Project execution;
3) Project analysis;
4) Project completion;
5) Project maintenance.

We expect the following objectives to be achieved after the introduction of software-product:
– development of IT project management plans in the software environment only;
– secure electronic access for the IT office managers;
– work with IT project management plans in electronic form only;
– the workload of all the project executors is visible on the monitors on real time bases;
– timely information about the employees' results in the unified information space and etc.

Conclusion

In conclusion we want to highlight that to improve information support of IT project management system at the industrial enterprise the following research methods were chosen: modeling of IT project management business processes and analysis of the IT projects functioning. These methods allow you to create a list of objective problems in the target area, identify the tasks aimed to achieve the goal, and develop specification and guidelines for automated IT project management system implementation.

References

1. *Informatsionnoe obespechenie. Proekt po avtomatizatsii upravleniya srednim predpriyatiem* [Information Support. Automation Project of Medium-Sized Enterprise Management]. Available at: http://kit-project.narod.ru/4.6.htm (accessed 12.05.2016).

2. *Etapy zhiznennogo tsikla izdeliya. Elektronnoe uchebnoe posobie po distsipline "Mezhdunarod-nye standarty obmena dannymi"* [The Stages of the Product Life Cycle. Electronic Textbook on the "International Data Exchange Standards Subject]. Available at: http://www.salogistics.ru/students/suai_2011/page3.html (accessed 12.09.2016).

3. *1S: Predpriyatie 7.7* [1C: Enterprise 7.7]. Available at: http://www.1c.ru/rus/products/1c/predpr/why-predpr.htm (accessed 10/08/2016).

4. *GOST 2.608–78. Edinaya sistema konstruktorskoy dokumentatsii. Poryadok zapisi svedeniy o dragotsennykh materialakh v ekspluatatsionnykh dokumentakh* [State Standard GOST 2.608–78. Unified System for Design Documentation. The Procedure for Information Recording on Precious Materials in the Operational Documents]. Available at: http://vsegost.com/Catalog/32/32764. shtml (accessed 09.12.2016).

5. Altukhova N.F. *Electronnyy dokumentooborot* [Electronic Document Workflow. Tutorial]. Available at: http://portal.fa.ru/Content/Data/a2431dc1-7202-444e-bc90-0c5ce83725da/ЭД%20ГМУ%203%20курс%20201%20финал%20итоговая%20работ.pdf.

6. *Upravlenie IT-proektom "Effektivnaya sistema "s nulya" v lyuboy organizatsii"* [IT-Project Management "An Effective System from Scratch: IT Pproject Management in Any Organization"]. Available at: http://pmlead.ru/ITPM-Selikhovkin.pdf/ (accessed 09.09.2016).

7. Edsger W. Dijkstra. "On the Role of Scientific Thought". In *Selected Writings on Computing: A Personal Perspective*. Springer-Verlag Publ., 2012, pp. 60–66.

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К ВОПРОСУ СОВЕРШЕНСТВОВАНИЯ ИНФОРМАЦИОННОГО ОБЕСПЕЧЕНИЯ СИСТЕМЫ УПРАВЛЕНИЯ ИТ-ПРОЕКТАМИ

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Информационное обеспечение управления ИТ-проектами предприятия требует постоянного совершенствования и внесения соответствующих изменений. Исследование деятельности промышленных предприятий показало, что основную роль в данном аспекте играет автоматизированная система управления ИТ-проектами. Разработка автоматизированной системы управления ИТ-проектом является сложной и трудоёмкой, но очень важной работой, выполнение которой необходимо для оперативного управления ИТ-проектами. Поэтому анализ функционирования и разработка рекомендаций по совершенствованию информационного обеспечения системы управления ИТ-проектами является основной целью данной статьи. Кроме того, с учетом обязательных требований к бизнес-процессам выявлены основные этапы жизненного цикла информационной системы. Параллельно с анализом подразделений промышленного предприятия была составлена диаграмма бизнес-процессов управления ИТ-проектов, что позволило наглядно взглянуть на проблему, а также представить ситуацию as-is и to-be (как есть и как должно быть), позволяющую выявить основные преимущества после внедрения АСУ ИТ-проектами.

Ключевые слова: ИТ-проект, информационное обеспечение, бизнес-процессы, система управления ИТ-проектом, жизненный цикл ИС.

Литература

1. *Информационное обеспечение. Проект по автоматизации управления средним предприятием. – http://kit-project.narod.ru/4.6.htm (дата обращения: 12.05.2016).*

2. Этапы жизненного цикла изделия: электронное учебное пособие по дисциплине «Международные стандарты обмена данными». – http://www.salogistics.ru/students/suai_2011/page3.html (дата обращения: 12.09.2016).

3. 1С: Предприятие 7.7. – http://www.1c.ru/rus/products/1c/predpr/why-predpr.htm (дата обращения: 10.08.2016).

4. ГОСТ 2.608–78. Единая система конструкторской документации. Порядок записи сведений о драгоценных материалах в эксплуатационных документах. – http://vsegost.com/Catalog/32/32764.shtml (дата обращения: 12.09.2016).

5. Алтухова, Н.Ф. Электронный документооборот: учеб. пособие / Н.Ф. Алтухова; Факультет открытого образования. – 2014. – 120 с.

6. Управление ИТ-проектом «Эффективная система с «нуля» в любой организации. – http://pmlead.ru/ITPM-Selikhovkin.pdf/ (дата обращения: 06.09.2016).

7. Dijkstra, Edsger W. On the role of scientific thought // Selected Writings on Computing: A Personal Perspective / Edsger W. Dijkstra. – Springer-Verlag, 2012. – P. 60–66.

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