

Information model of project management process of creating a technology transfer office

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Abstract. This article proposes an information model of the project management process of creating a technology transfer office (hereinafter - TTO), which will increase the efficiency of project management and provide efficient and operative communication between project stakeholders. The application of this information model will allow any higher education institution (hereinafter - HEI) to effectively exchange information flows between stakeholders at each stage of the project, which is the key to successful project implementation and creating an efficient project product on time and within budget.

Keywords: *technology transfer office; technology transfer office creation; information model of project of creating a technology transfer office; stakeholders of project of creating a technology transfer office.*

Introduction. The creation of TTO is an urgent task for HEI because the vector of Ukrainian policy is aimed at building an innovative ecosystem [1]. However, the authors' analysis of domestic and foreign sources showed that this issue has not been studied taking into account the project approach [2]. At the same time, the creation of TTO is a project itself, and therefore the application of project management methodology will allow to implement this project as effectively as possible. In the implementation of any project an important role is played by considering the interests of stakeholders and providing efficient communication between them, which is the main task of the information model proposed in the article.

Review of publications on the topic. TTO is in fact a project management office (hereinafter - PMO) in the field of technology transfer. In Project management body of knowledge (PMBOK) the PMO is defined as a management structure that standardizes project management processes and facilitates the exchange of resources, methodologies, tools and techniques [3]. P2M [4] defines the task of PMO as following: it coordinates the appointment of professionals in all project teams, provides line project teams with project management technology and related services.

The issue of the functioning of project offices has been studied by many foreign scientists, among them - I. Kendall and S. Rollins [5], Trukhanovsky O.M. [6], even the issue of the organization of the PMO was studied. Domestic scientists define the concept of PMO [7], identify functions and types [8]. However, the issue of creating a PMO (TTO) in HEI has its own characteristics, and therefore requires more in-depth research.

By TTO the authors understand the specific organizational structure which is engaged in management of projects and portfolios of projects of technology transfer, applying the project approach in the activity, within uniform information and communication system of the organization.

A technology transfer project is a sequence of managed measures to coordinate human, material and information resources throughout the technology life cycle in order to transfer and implement the results of research and development of HEI in the field of business to create an innovative product based on them.

The aim of this study is to increase the efficiency of project management of TTO creation in HEI and to provide efficient and operative communication between project stakeholders by building an information model of the project management process.

Materials and methods. During the study, a system approach and methodology of graphic simulation of information systems were used. In a system approach, the object of study is a system, a whole, a set of elements interconnected and interacting with each other, which is characterized by the presence of integrative qualities that cannot be reduced to the sum of the qualities of its parts [9; 10].

Within the system approach the problem is solved systematically by means of consideration of all elements of the project and their general optimization [11].

A system approach is the basis for building models and management methods that clearly define the goals and measures to provide the achievement of the project goal [9]. This approach is proposed to be used at the stage of project initialization in forecasting product performance indicators - feasibility study of expediency of product creation in combination with methods of system modeling [12].

The construction of the information model was also based on the methodology of graphic simulation of information systems - a special construction technology: data flow diagrams (DFD). The information model of the system in DFD is a data flow that is graphically represented using a certain notations system: external entity (terminator); process; subsystem or system; data storage or storage; data flow [13; 14].

Results and discussion. Any project management process involves managing project data flows, managing project stakeholders and communications. It is the effectiveness of the interaction of project stakeholders that directly determines whether the project product should be created efficiently, on time and within the planned budget. The introduction, processing and exchange of project data between stakeholders plays an important role in the project management process.

The project management process for the creation of TTO in HEI also involves the effective management of project data flows, stakeholders and communications. Stakeholders of TTO project in HEI: initiator, manager, project team, supervisor, customer, owner, investors,

competitors, authorities, public community, suppliers and contractors, consumers.

In order to increase the efficiency of project management of TTO in HEI and provide efficient and

operative communication between project stakeholders, the author proposed an information model in Fig. 1.

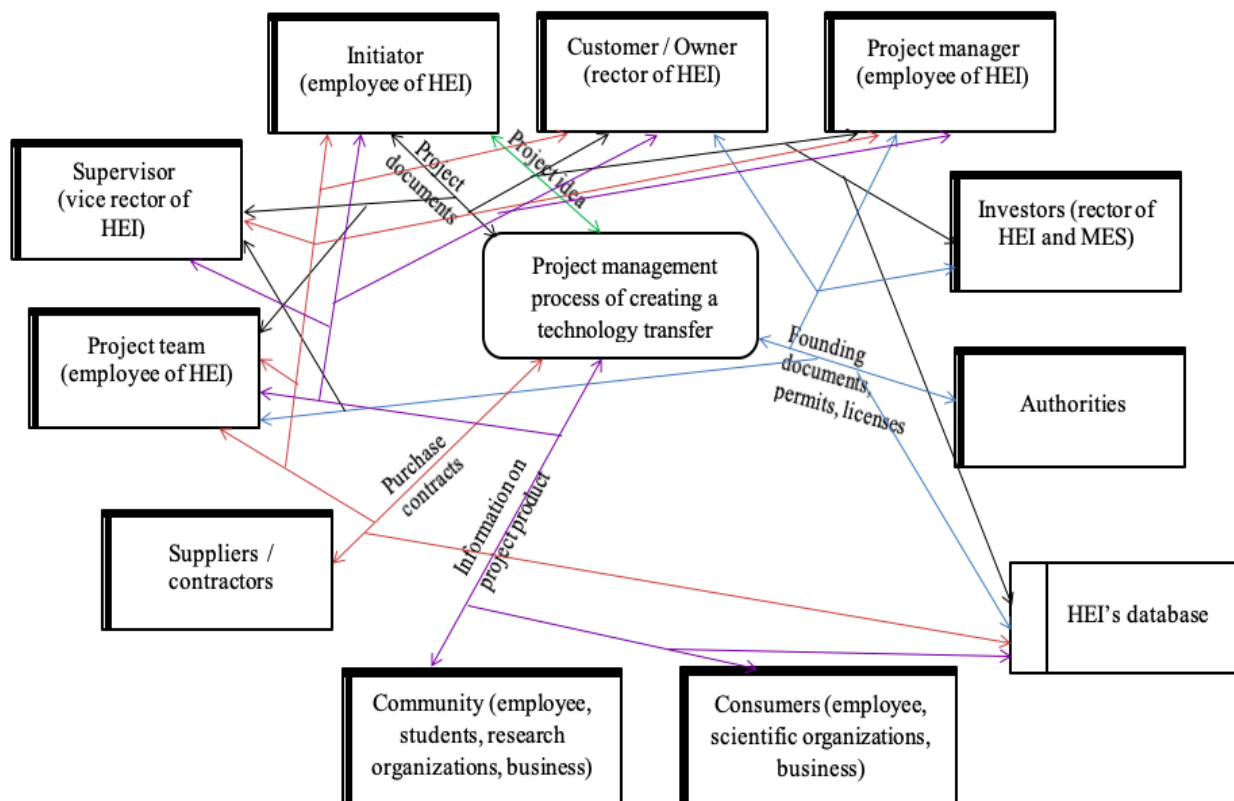


Fig.1. Information model of TTO project management process in HEI (DFD notation, context diagram) [Built by the author]

Due to the proposed in Fig. 1 information model, it could be traced how stakeholders interact in the process of managing the project of creating TTO in HEI and using

what exactly documents. Information flows of the project management process of TTO creation in HEI are given in table 1.

Table 1. Information flows between stakeholders in the process of project management of creating TTO in HEI

№	Exchanged information	Stakeholders that provide information	Stakeholders that receive information
1	Project idea	Initiator	Customer, manager, supervisor, investors
2	Project documents	Initiator, team, supervisor, manager, customer, owner	Team, supervisor, manager, customer, owner, investors
3	Founding documents, permits, licenses	Authorities	Project team, manager, customer, owner, supervisor
4	Purchase contracts	Suppliers and contractors	Team, supervisor, manager, customer, owner
5	Information on project product	In the process, the community receives information about the project product from the customer, supervisor or manager	Customer, owner, manager, supervisor, team, community, consumers, authorities

Table 1 allows to track the information exchanged by stakeholders of the project of TTO creation in HEI, as well as directly the stakeholders who provide and receive information. All information is stored in HEI's database as shown in Fig. 1.

The process of project management of TTO creation in HEI involves the several stages including: project initialization, planning, implementation control, completion and final analysis of the project. At each of

these stages, there are certain information flows between different stakeholders. In order to increase the efficiency of project management, the creation of TTO in HEI at each of the above-mentioned stages and to provide efficient and operative communication between project stakeholders at the appropriate stages, the information model on DFD notation in the form of the diagram of 1 level is suggested by the authors as shown in Fig. 2.

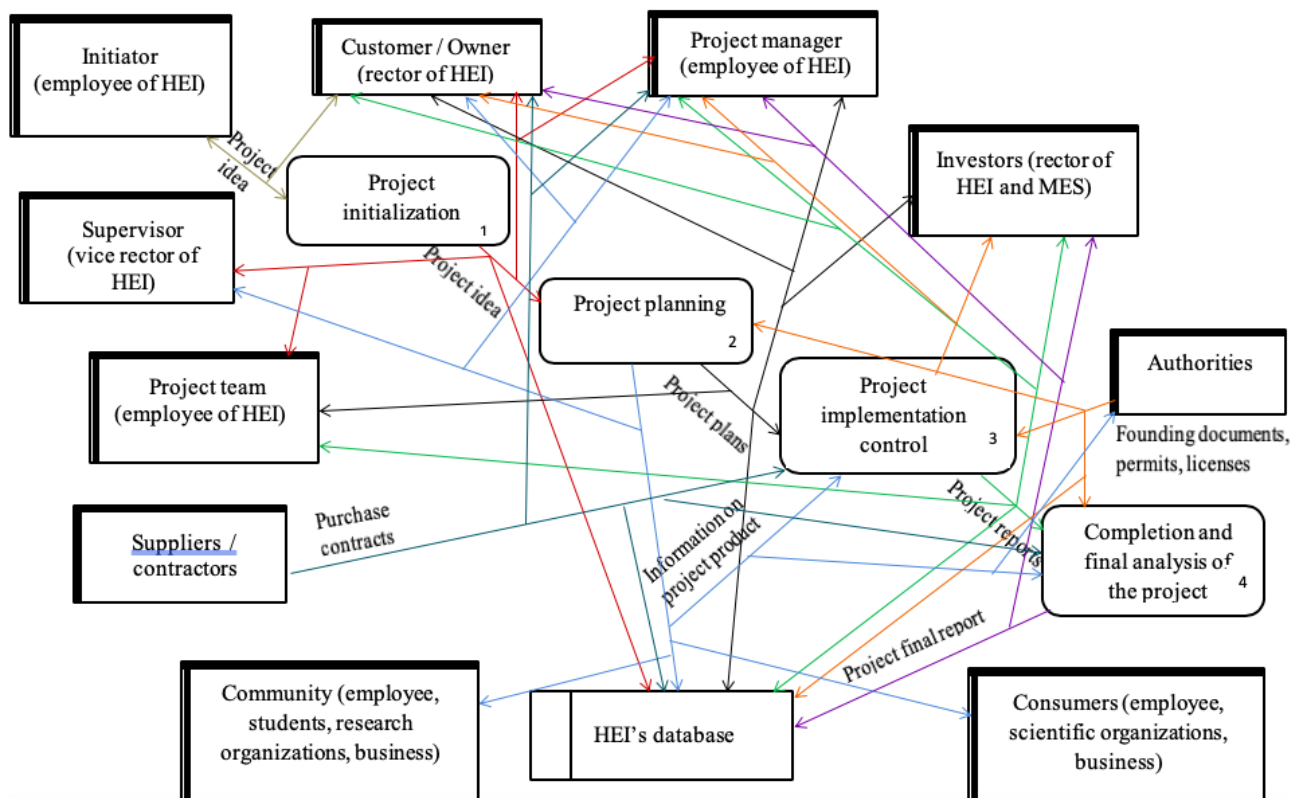


Fig. 2. Information model of the project management process of TTO creation in HEI (DFD notation, level 1 diagram) [Built by the author]

Due to the proposed in Fig. 2 information model the interaction of stakeholders could be traced at each stage of the project management process of TTO creation in HEI,

as well as using which documents. Information flows of each stage of the project management process for the TTO creation in HEI are shown in table 2.

Table 2. Information flows between stakeholders at each stage of project management process of TTO creation in HEI

No	Exchanged information	Stakeholders that provide information	Stakeholders that receive information
1. Project initialization			
1.1	Project idea	Initiator	Customer
1.2	Project charter	Manager, supervisor, team, customer, owner	Team, supervisor, manager, customer, owner, investors
2. Project planning			
2.1	Project charter	Manager, supervisor, team, customer, owner	Team, manager, customer, owner, supervisor
2.2	Project plans	Manager, supervisor, team, customer, owner, investor	Team, manager, customer, owner, investors
2.3	Founding documents, permits, licenses	Authorities	Manager, customer, owner, investors, authorities
2.4	Information on project product	Manager, supervisor or customer	Supervisor, manager, customer, owner, community, consumers
3. Project implementation control			
3.1	Project plans	Manager	Team, manager, customer, owner, investors
3.2	Purchase contracts	Suppliers and contractors	Customer, manager
3.3	Information on project product	Manager	Supervisor, manager, customer, owner, community, consumers
3.4	Founding documents, permits, licenses	Authorities	Manager, customer, owner, investors, authorities
3.5	Project reports	Team	Manager, supervisor, customer, owner, investor
4. Completion and final analysis of the project			
4.1	Purchase contracts	Suppliers and contractors	Team, supervisor, manager, customer, owner
4.2	Founding documents, permits, licenses	Authorities	Manager, customer, owner, supervisor, team
4.3	Project final report	Team	Manager, supervisor, customer, owner, investors
4.4	Information on project product	Manager, supervisor or customer	Customer, owner, manager, supervisor, team, community, consumers

Thus, the information model of project management process of TTO creation in HEI proposed in this article allows to identify information flows between project stakeholders and increase the communication efficiency

that will increase the efficiency of the project as a whole and allow to create a project product efficiently, on time and within budget.

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