Information Technologies for Providing Project-Process Management in Law Enforcement Structures

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Abstract - **In this paper the implementation of new information technologies for effective management in the armed forces of Ukraine are given. The implementations in the armed forces of Germany and Poland are considered. It was substantiated that implementation of the project "Implementation of process management of logistics, personnel and finances on the basis of integrated systems" (the Aris type) in security structures increased the efficiency of their operation. It is proved that the use of foreign experience in conjunction with the creation of a team responsible for the implementation and use of state-affiliate funding will allow the implementation of a similar project in the security structures of Ukraine**

Keywords - **information technologies for process-based management, project managmant, ARIS, SAP, methods of information technologies.**

I. Introduction

The efficiency of economic systems of macro, meso and micro level in Ukraine, which include both public and commercial institutions and organizations in various fields of activity is provided by the use of modern management technologies and relevant information technologies (IT).

The most important benefit of using project and process management are the following: it displays the current status of processes and structures of their relations organizational, functional and information management structures.

In projects in which processes play a significant role, it is mandatory to define the goals of the project, project implementation plan, method of implementation of the project, to monitor project performance through the use of integrated information systems ARIS (Architecture of Integrated Information System) as one of the most effective platforms to create a holistic view of the system through a visual display of all aspects of its operation. The following models are used:

1. Organizational models reflect the hierarchical structure of the system – the hierarchy of organizational units, positions, and powers of individuals, the relationship between them, as well as the territorial linkage of structural units.

2. Functional models that contain a hierarchy of goals with a set of function trees required to achieve the goals.

3. Information models are necessary for the implementation of the whole set of functions of the system.

4. Process/management models form a comprehensive view of the implementation of processes within the system.

5. Input/output models are describing the flows of tangible and intangible inputs and outputs, including cash flows.

The purpose of this study is to analyze information technology to ensure process management; analysis of the implementation experience of process oriented IT systems for the management of the law enforcement structures in the EU countries (for example, Poland and Germany), and the development of recommendations for the implementtation of information technology and project-process management in Ukraine's law enforcement structures.

II. Analysis of Information Technology for Process-oriented Management

At present, an organization adapting the process approach has an organizational system which is an arrangement of positions and roles changing and defined by actions (operations), necessary to complete the product or service expected by the recipient.

organization. Processes are completed by the people who control and perform them.

The most widespread software solutions for description of the processes in social-economic and social-technical systems are ARIA, AllFusion Process Modeler (formerly BPwin), Power Designer, Oracle Designer 2000, BAAN EME43 (Enterprise Modeler Editor) Rational Rose, Paradigm Plus, Visio.

Experts classify these software applications into three categories [4]:

1. local, supporting one-two types of models and methods (Design/IDEFF, ProCap, S-Designor, -- CASE.Analyst);
2. small integrated modeling aids supporting several types of models and methods (AllFusion Process Modeler);
3. medium integrated modeling aids supporting from 4 to 10-15 types of models and methods (Rational Rose, Paradigm Plus, Designer/2000);
4. large integrated modeling aids supporting over 15 types of models and methods (ARIS toolset). The choice from among the categories is made depending on the

complexity of the system structure, number of processes, magnitude of the system tasks.

In order to perform a specific assignment there is the opportunity to apply appropriate methods. The following is used for management:

- of projects (PMBoK1, PRINCE2);
- for the software development (RUP, MSF, Agile);
- for organizational problems (ITIL, CMMI, COBIT, Six Sigma).

As the experience in the introduction of the process-based management in Poland and Germany shows, the accumulated knowledge of previously introduced projects is useful for implementation of the projects that follow. Based on the analysis of successes and failures there have been elaborated the ready-made solutions (scenarios) known as the Best Available Practices (BAP). These are the project processes or methodologies that have ensured effectiveness and produced the anticipated results, do not exceed expenses, reduce the risk and enhance effectiveness of the accomplished projects. Propagation of the BAP has numerous forms starting from internal regulations, including dissemination of knowledge and training in methodology of Prince2 or PMBoK projects. They are created on the Internet basis, extranet or intranet by people with common interests who have the experience or skills in solving problems in this sphere. Thus, such knowledge is gathered and disseminated among the interested people.

III. Information Systems of Process-based Management in The Leading Armies of the European Union Countries

Today introduction of the new management and information technologies in the leading armies of the European Union countries is a priority. For example, introduction of the new technologies in the German army is identified as the progressive process of changing "the existing old world into the new world" and combined with the revolutionary changes in all branches of the armed forces including logistics and management (finances and personnel). The works connected with the use of modern information technologies started with elaboration of a transparent and coherent strategy. Such strategy includes information on the current state prior to the decision-making on informatization, current state and perspectives for the changes before 2018 based on such projects: Standard software Familie product (SASPF) and HERKULES.

The present day process of computerization of the German armed forces began in the late 90's. Then the decision was made on the choice of technology (software standard). In practice it was resolved to choose the SAP platform – Systems Applications Products. Selection of this platform, in the opinion of the German experts, permits the use of the software flexibility and ensures further dynamic development of the system through the relevant additional elements taking into consideration the specific character of the military. The project based on this software is called the Standard software Familie (SASPF). It was confirmed in the process of the project implementation that the standard solutions functioning in business (companies and enterprises) after adjustment (in line with the needs of the army) can be successfully used in the armed forces. The SASPF project in the German armed forces first of all is the organizational project and only afterwards becomes an IT-solution. In the result of introduction of the SAPF system that embraces all security agencies of Germany it became necessary to make changes in the existing approach to computerization.

Following introduction of the SASPF software in the Armed Forces of Germany users can:

- work in real-time mode on the unified sequential database that stores information in the sphere of logistics and administration,
- plan rationally and manage his potential on the basis of real data,
- feed in data wherever it is necessary,
- avoid errors and eliminate inaccuracies and absence of data consistency;
- use the set standard interfaces between the system modules.

Previous experience shows, that an effective introduction of informatization requires a process approach to management which, in its turn, requires division of projects into separate subprojects.

ARIS is a concept, set of methods and tools for planning, designing, implementing and controlling business projects in an organization.

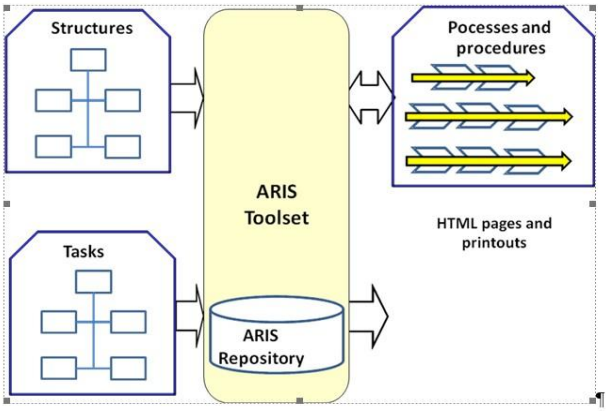

Fig.1 ARIS tools for analysis and project Source: [5].

ARIS tools and IDS Scheer implementation competencies involve informatization enterprises with SAP software. ARIS tools are used to analyze the existing processes, develop business concepts (Business Blueprint), define the range of configuration, train and implement documentation. IDS Scheer company participates in creating comprehensive concept for SAP systems integration and other applications with SAP PLM component (Product Lifecycle Management) for the SALE project (Single Army Logistics Enterprise). ARIS tools are also used for graphic description of processes and systems,

characterizing components and single connections and data processing (Fig.1).

ARIS tools included into ARIS Process Platform offer a wide choice of diagrams and objects. At the same time, within one project the number of diagrams available may be restricted down to several, most important ones. The same rule works for symbols, connections and attributes.

ARIS process tools are used by many organizations, institutions and companies. Process identification and description is the first step to adapt these tools. For example, in a material base identifying economic events, like material procurement, circulation can be grouped in the some processes [6].

The subsequent year the new information about adapted software, data base and technical infrastructure is introduced to ARIS program [7]. The software is connected to the supporting activities. This way, full architecture of an organization, institution or company is built. It describes single connections of elements in these structures, together with mechanisms of functioning. The description of all systems, processes and structures of organization, data bases and their connections is easy to modify. For example, thanks to the repository and ARIS mechanisms the change of the name for any element needs only one operation. All diagrams where the changed element exists will be modified automatically.

IV. Methodology for the projects' realization of the process approach implementation of management on the IT technologies' basis

In General, we propose to highlight the following stages of implementation of project and process management:

1) documentation of processes and situation assessment involves a description of the current situation, the construction of a model of the state of use of resources or potential;

2) analysis of processes-analysis and identification of the main factors of adequate functioning, identification of problems and shortcomings in the current state of processes;

3) identify opportunities to improve the efficiency or effectiveness of processes and to decide on the methods chosen;

4) design of new (or improved) processes, building a model of effective functioning;

resource and information support for the implementation of the new model

It is the owner of the process, who plays the key role in completing a single activity. Connection of people, processes and technology (Fig.2) and well-used power of the boss decide how the process should be performed.

This is the role, which can not be underestimated if the (owner) organization wish to operate on a given level. The owner of the process knows what he possesses at the input, what supplies the process and how the process should end.

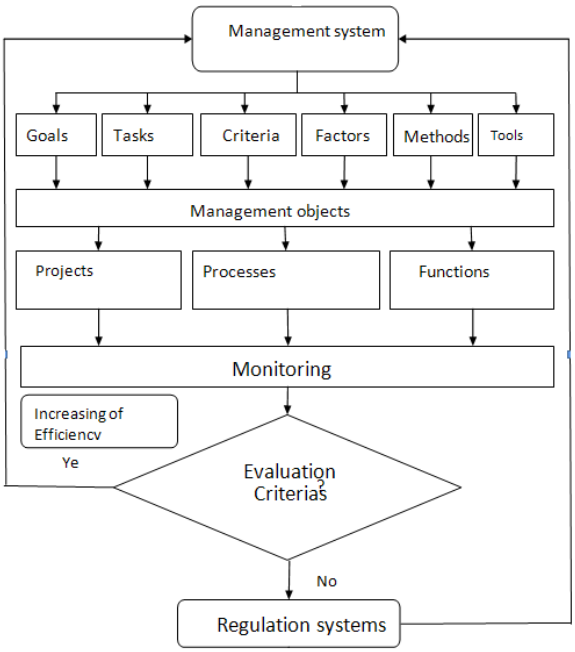

Fig.2 Principal shema for using project-process management

Moreover, he monitors and reports on the outcome and ensures the contact with suppliers and clients and cares about competences and right information.

Mapping processes for organization or institution reorientates it to the needs of the client (recipient) [3]. Each process should have a separately defined goals, both financial and qualitative, for products and services. Defining processes optimizes and facilitates building and development of the process-oriented organization. Thus, processes foster activities in the team-work based organization. Processes are control and perform them.

The full implementation of the integrated multilevel IT logistics and management system (human resources and finance) is a task for several years. It should be implemented in stages and can only be successful if:

- a transparent, integrated, design-functional structure is built, and IT projects are implemented after creating the proper executive capacity;
- the priority is given to the process of informatization on the project approach basis by creation of the appropriate body;
- single standardization, identification, codification and description of all resources (logistics, finance, and personnel) was introduced, as well as optimization of the most important logistical and administrative processes (finance and personnel management) [8].

According to the international experience of the process approach usage in the activities of economic entities, especially organizations and institutions responsible for security, the usage of modern IT support techniques is the most effective in the field of logistics, finance and human resources. Such an integrated (holistic) process approach makes it easier to build an IT system (solution) that serves to ensure the efficient functioning of economic systems.

The implementation project of process management based on the usage of integrated systems is limited in time and should provide an effective result. Its proper organization and the allocation of necessary powers of the project manager (PM) are sufficient conditions for the effective implementation.

The project manager organizes a project team, manages the project, becomes responsible for achieving the project goals within the budget, in the specified time period and with a given level of quality. The project administrator, following instructions and orders of the PM, performs technical work related to the project management. Main functions of the project management office: development and setting up of project management in the organization; training and assistance to the units involved in the projects; education of the internal project managers; assistance to senior management in the issues of the correct construction of matrix organizational structures; participation in strategic planning as part of the implementation of the project portfolio management; methodological support for project and portfolio management processes; control functions in relation to projects and formation of reports on the status of current projects.

The full accomplishment of introduction of the integrated multilevel IT system of logistics and management (human resources and finances) in the security agencies is a task for several years. It must be resolved by stages and can be successful provided only, that:

- there will be built a transparent integrated project-functional structure, and the IT-projects implemented after establishment of an appropriate executive potential;
- the process of informatization on the basis of the project approach is given priority on the basis of establishing a relevant organ at the level of the Defense Ministry;
- unified standardization, identification, codification and description of all resources (logistics, finances, personnel) have been introduced with optimization of the most important logistical and administrative processes (finances and personnel management).

The following conclusions can be made proceeding from the conducted studies:

1. application of the process approach improves performance of the social-economic and social-technical structures
2. application of integrated systems improves effectiveness of decision-making
3. there is a need to introduce integrated multilevel information systems in the security agencies of Ukraine as soon as possible.

V. Conclusion

The project of changes in the management systems, based on the process approach in the context of increasing IT usage for making managerial decisions, allows to simplify and optimize the interaction between disparate organizational elements, increase the efficiency and transparency of the law enforcement structures' functioning.

Implementation of the SASPF project in Germany is a good example of computerization of the large organizations in the security agencies of the country on the basis of commercial IT-solutions (software) available in the civil market. Introduction of the new information technologies must be regarded, first of all, as organization of restructuring of management with the process approach and only afterwards as the introduction of IT. Changes in the manning tables and functional responsibilities were made within the framework of this process in the organizations and establishments.

In Recommendations for Ukraine regarding accomplishment of the projects of introduction of the process approach must include three closely connected stages: first stage – design: analysis, identification and optimization of the processes and standardization – performed by the process owner; second stage – implementation: preparation of standard software (program platform) for adjustment – performed by the Department of Information Technologies; third stage – introduction: carried out at the workplace, the head of the organizational unit where the project is being implemented is responsible for testing, training and introduction.

In the case of a design-process approach implementation to logistics, finance and personnel management in security structures, cost savings can be achieved and it will be 60-90% reduction in cycle duration and 40-70% reduction in error rates.

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