INFORMATION SYSTEM
FOR THE MANAGEMENT OF THE PROCESSES

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ABSTRACT

The article deals with types of information systems which fulfill a public function and are used to provide the information for the public. These projects and their management are defined by: a high value-added knowledge-based components, high quality and reliability of their implementation, the customer's satisfaction with their use and their relation to the implementation of the information strategy. The following work attempts to prove the stated fact and, at the same time, to clarify the thinking concepts of gaining the strategic competitive advantage by applying the project process technologies and methodologies and to show the specific procedure of creation and project management. The contribution describes designing public information system, and operational and procedural access concepts.

⚷ *Processes, process management of information systems, procedural methodology, project management*

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INTRODUCTION

The project target, the development and construction of information systems, could be achieved only by logical development of the project and proper process management. Project approach must be applied in all phases, views, process sections, modules, procedural processing of the project documentation, and individual and team solutions of how to transform inputs into partial and overall project outputs.

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The definition of the **concept of the process** depends on the purpose of the processing of the relevant issues. The concept of the process is most often characterized by and developed within the economic understanding as the enterprise process. For this kind of understanding the output of the process is important, i.e. the enterprise product or service. The general concept is, however, a matter of the system or the process and leads to its wider usage in the theory of management, or project management. It's not only about the vendor-customer relationship solutions, but it specifies much more wider relationship associated with developing new products and procedures, project management issues. There is also a more practical application in the methodology of project management.

However, the categories of knowledge established by the author put a great emphasis on defining the fundamental importance and the definition of the process, and the categorization in the practical application of project management of IT projects.

1. HYPOTHESIS

The process of designing and developing a public information system is a very extensive process, which can be based on a variety of viewpoints. From some viewpoints, the social, psychological or organizational aspects may prevail. Or we can follow general management processes, or can try to concentrate on the relationship generated by IS and the information strategy implementation of the contracting authority. IS project results from the fundamental objectives of the organization, and precise methodologies, methods and tools for the development of the IS.

The basic aim of the hypothesis presented by the author was a comprehensive assessment of the options for processing the control strategy for the development of regional and public information system, while using a newly formulated PAPRIS (PAPRIS – Process Approach-Public and Regional Information System) methodology. The hypothesis is based on the formulation of a procedural approach in project management of information systems, while using the procedural principles, formulated and based on the specific procedural methodologies. This is the efficient way for the implementation of project activities of the information system projects.

In terms of the general definition of the concept of processes in projects for information systems several definitions can be used. The most common ones (Zhonghua, 2009) are based on the concept of the process as the organized whole, which accepts inputs, and transforms these into outputs. Haimes (2011: 13) defines the "process as a summary of activities, transition summary of inputs into a summary of the outputs to other people or other processes, using the people and tools".

Department of information technology at the University of Economics in Prague, according to Svatá (2007: 22), defines "a process as a set of consecutive activities which are of the defined inputs to create the desired output, weighing on resources and have measurable characteristics". Within this definition it is the activity which is the key essential element of the process. The principle of semantic relativity (Ross, 1992) leads to the deduction that each activity can be described as a process. Process approach to the activity and its description is, therefore, dependent on the need for the clarity of the model, used tool, invention, and style of the descriptor of the model, limited by the size of the model. The last part of the definition, measurability of process, became the basis for the evaluation of project processes (e.g. according to the model of maturity processes-Capability Maturity Model) (Robson & Ullah, 1996).

Other authors stress the aspect of a gradual increase in the value of the output of a process (Laudon & Laudon, 2011). The process is described and characterized as value-forming chain that always increases the value of the (customer) output. The value chain can be decomposed into sub-processes. The summary of the incremental sub-parts gives us the total value chain. By another definition (e.g., Rabbani, 1996)) The process is explained as the repeatable sequence of activities controlled by the owner of the process, which results in a measurable output, meeting one's needs. The authors emphasize the essential role of the owner of the process as the administrator and creator of the output. The process owner is the person responsible for:

- the achievement of the objectives of the process,
- the existence of the description of the process and its up-to-datedness
- the monitoring of process,
- the systematic improvement of the process,
- the clarification of communication problems in the context of its process and related processes.

For a proper understanding of the processes in project management it is important to describe triggering a variety of mechanisms of individual processes. There is always a specific reason – the initiative. According to the literature (Chapman, 1997) it is either external or internal reality, which works as a stimulus. External stimulus (coming from the surroundings of the process, is objective) is referred to as the event, while internal stimulus is the situation in which the activity is located.

Mutual interaction takes place between processes. The status of the event starts and ends, following the performance of the subsequent process. Between the individual processes we can introduce so called preceding session, which creates structural links between individual process groups. These individual process groups are characterized by linear or branched joints. Such process descriptions necessarily imply the identification and definition of the project process as the transformation of project inputs into project outputs. Project activities are well-defined by binding

(bindings) of successions. The definition leads to understanding of the importance of the methods of process management.

The horizontal plane is easy to understand. Its graphic explanation allows high-quality tracking of the progress: the fulfillment of the project performance, time, content and organization, the management and evaluation of the work of project teams within the project activities. The horizontal course contributes to the specification of interfaces between processes, and accelerates the speed of the implementation processes. It is the expression of the natural sequence of activities in a global process of project activities.

The vertical plane is more abstract, but more important for the processes of strategic management of the project, project objectives, plans, processes, control and management of changes in the project, including the setting up of project priorities. Vertical direction helps to speed up the procedure for project work, the needs formulation of necessary strategic decisions. Decision-making processes are incorporated and integrated into process groups, called the adoption and acceptance of project changes.

Other approaches to the definition of the process highlight some of its more general specifics. For example, the PMBOK methodology (A Guide to the Project Management Body of Knowledge), (Harrison *et al.*, 2006) defines a process in relation to the knowledge used by the process. Each knowledge area is described in detail, the characteristics and usage. The structure of the process is the following:

- Objectives - include the process specification and its meaning.
- Inputs - determine the materials and requirements which are necessary for the fulfillment of the objectives.
- Outputs - have the same specifications as the inputs.
- Tools and techniques - point not only at interesting techniques and modern methods of management, but also at qualification requirements for the process participants.

In the conception of the process and its relation to the project we emphasize the relationship of the project process and the changes. The process, according to Martin (Martin, 1995) is an abstract term, indicating the changes of the properties of objects and subjects. As a result we get modified objects and the observed phenomena. The process is the action or event occurring within objects during a particular time – the process is dynamic.

When you define a process, some authors underline the target direction process. According to Griffin (1997) the process is a discrete system, which is initialized by the event. The event triggers activities so that system could move to the target status. This concept underlines the target status only. The stochastic approach, suppressing permanent changes in the system, is emphasized.

Each management process has a particular form (general structure), which is the study matter of cybernetics. From a cyber perspective (Coates, 1997) the control is the functional relationship between the action of the management system and the behavior of the controlled system. This functional relationship seems like a special operation of the management system influencing the management system in the way a variant which matches the given purpose could be selected.

The management processes in IS projects focus on solutions and outcomes. Management processes are understood always in relation to the fulfillment of individual project objectives. This definition underlines the hierarchy within the processes. In project management the processes that bring the added value to meet project objectives for the investor's project are crucial. The segmentation of processes in project management occurs, being clearly reflected in the relevant methodology definition of understanding of the position of the project's processes from the perspective of the fulfillment of the project activities.

Processes in project management also bring a new perspective to the relationship between the manager – the expert, based on superiority and inferiority relationship. Such relations must be developed in the framework of the principle of delegation and in accordance with the needs of the project processes. The customer´s design needs are generated over time; some processes are more current, sometimes there is an acute need for running and securing project processes. Project managers must be able to accept the need for the change and, above all, to work out methodology for new processes, to find their place and quantifications of project management, to change the project structure, develop creative thinking, but also to make the appropriate decisions, which calls for implementation of project processes. The change is always resulting from the interest of the project process management to fulfill the project outputs.

Process project approach emphasizes the knowledge of technologies, techniques, tools and their usage. It stresses the need to solve non-standard processes within the project management. These processes require a variety of project management activities on different levels, the supervision and control during their implementation. Without a throughout knowledge and control of instruments to support general project management, project communications, computer modeling tools, knowledge management you can never make the demanded non-standard solution.

Knowledge-based processes require individual´s competence for the work with the information and the search for appropriate data resources, and their utilization. The relationship of knowledge and information is based on two mutually interwoven planes. Knowledge is used in project management in the process of selection and interpretation of the data, and making decisions. Knowledge is changed, reshaped and developed during the process management.

Project management of IS is the work with knowledge. The basis of the procedural approach is the principle of maximizing the usage of knowledge processes. And the knowledge processes are what allows you to manage processes, processes of the project, as well. The knowledge processes in project management emphasize understanding the project process, both in terms of individual areas of activity and levels of hierarchical control. In general, the processes and the management of knowledge (Grove, 1998) provide the general rules for the application of managerial knowledge in the practical procedural management, while understanding the project and project management as the process of the activities. Knowledge-based processes promote the flow of knowledge in the direction where the added value output is created. The descriptions of these processes provide the necessary knowledge for the skilled execution of individual activities.

Knowledge-intensive processes can be found in the management of standard processes for IS projects. These processes are referred to as the existential processes.

Some authors (Chládek et al., 2005) describe the following:
- Primitive processes – do not contain any internal state, there is no generally objective reason to describe it in more detail, and it is only a fundamental activity.
- Complex processes – are those processes that have the internal status. Their necessity is objective – the internal status means expecting an event.

The integration processes develop from their own communication system (project system) within the surrounding environment. Communication can be done from the perspective of the structure of the transmission of information (for example, in the plane of the data planning), as well as in the resolution of the input (the supplier), integration and the output (consumer) integration. In the IS projects the integration processes are the most important process, invoked by the need for the unification of the structure of data flows and by integrating heterogeneous information environment.

Custom project management processes relate to the description and the organization of work in the project. The project develops gradually; it reveals various stages of the project life cycle. A specific project solution cannot be described as a single process. In the course of the project lifecycle, interaction, collaboration, if appropriate, the inputs and outputs form a series of interwoven process. To clarify that it is necessary to take the advantage of the described principle of aggregation and clustering of processes into a process group. There are a number of approaches to the aggregation process; many of them being described in the project process methodologies. For example, the methodology of Project Management Body of Knowledge (PMBOK, 1996) defines a number of 39 processes, which are based on defined phase of the life cycle of the project, and

at the same time are a part of specific knowledge areas. The processes are generally divided into project phases, so-called the process groups.

The principal and auxiliary processes are described for each group. Auxiliary processes should not be neglected, since their outputs are the main processes of the group. Process groups contain the following processes:

- the initialization (inaugural) project processes identify, that the IS project is to begin; at the very launch,
- the project planning processes. They define the actions and activities in the development of real work and the content of the scheme,
- the executive and coordinating planning processes. They coordinate human and other resources to work in accordance with the project plan,
- the review (regulatory) project processes. These processes ensure that the project objectives are reached by tracking and measuring project progress, if necessary, and the corrective measures are taken,
- the final project processes. They formally and materially wind up the project in its final stage, and lead to a successful conclusion and fulfillment of the planned outputs.

Each group can contain a single process, the groups are linked by their results (the output of one process is the input for the next process). The project management during the activation process is repeated. The initialization of the project processes is repeated at the beginning of each phase. This means that the project will still focus on the goals during its long life cycle, which will allow the eventual cessation of the project in the event of failure to comply with the designed requirements, and the non-fulfillment of project metrics.

Another example of the aggregation processes of PRINCE2 methodology is the access to the components of PRINCE2 (2002). The components are used primarily for the "wrapping" project management processes. Their purpose is to describe some of the knowledge and aspects of project management, which are connected with the activities in the project. We distinguish the following aggregated procedural component:

1. Starting up a project (SU)
2. Initiating a project (IP)
3. Planning (PL)
4. Directing a project (DP)
5. Controlling a stage (CS)
6. Managing product delivery
7. Managing stage boundaries (SB)
8. Closing a project (CP)

Some of the processes (such as the meeting of the project team) seem to be fundamental, and can be described rather as activities.

2. THE MANAGEMENT OF THE PROCESSES

The procedural way of thinking can be applied in a public information system output. The methodology of the development of information systems shows that this is a much formalized process of a custom implementation of the information system for the final use of the target users groups: general public. The theory of the project management provides the general framework for a public information system project and methodological recommendations, specific for the role of the system to support the custom deployment of the information system.

Functional and process approach concept

The philosophy of the functional approach was generally defined as early as in 1776 by Adam Smith in the book called National Wealth. It proceeds from the notion of separation, divisibility, where the processes of the industrial production should be broken down into the simplest partial operations so that these would be easily feasible by less qualified employees. In the developed concept of the functional approach according to Jan Truneček (the functional approach focuses on the outputs (results), which basically means the orientation on the consequences and not causes) it is evident that the evaluation of the results does not have to reveal the causes of the inefficiency. Project management leads to the excessive number of coordination and project activities. This approach in the management of human resources in projects leads to a static pyramid of the organizational structure, formed solely by linking up activities and occupying project posts with clearly defined project rights and responsibilities. Moreover, in my opinion, the feedback provided for the approach concept is fundamentally contrary to the user ś (individual´s) needs. It is oriented inwards, into the project, not outwards. It is the static structures which are stressed, not the dynamic views. During the IS project implementation the investor or the IS user are not principal anymore. The owner of the structure of the projected IS is more important.

On the other hand, the process approach concept is not focused on the results but on the causes. It presupposes that the causes of the low-quality outputs within the system are the ongoing process, which was not set properly before. If applying that in the project management, the following concept emphasizes the high quality setting-up of managerial project processes for the purpose to eliminate the inefficient project activities (processes). The process becomes the essential element.

What does it mean if we say that the processes are formed by the mutually interconnected partial activities, which, in a sequence, transform the inputs into the required output? It is a flow of work, which proceeds from one man to another. In project understanding it is the results of the project activities. We can define processes both on the level of the enterprise's activity and on the level of project activities, which leads to the solution of the specific project.

Each process is divided into partial processes: partial activities, which are done by a certain employee within the process. These activities can be linked up in such a manner, so that these could be carried out by specific employees. From the viewpoint of project management, this approach has significant impacts on the setting up of the project team. It presupposes project thinking, but also a project way of working. In the solver's project teams, the categories as the integration of project activities are stressed along with the main and secondary processes, inputs and outputs of processes, impacts and results. Individual solver's project teams can solve partial project activities; self-management, self control and even self-organization are typical for the teams.

According to my experience with the IS project management, the process approach concept is in comply with the above given facts, the principal requirement of the quality project management. These facts have their practical impacts also in the developed methodology of PAPRIS. It is about the requirement for a clear determination of output and input process parameters and process adaptability. What I mean by process adaptability is its response to the change of inner conditions, to the situation in the environment. The processes mustn't be formed once for good, it is necessary to secure the requirement for sustainability already at the beginning of project management. In IS projects, it does not only mean the sustainability of data, the supervision over securing the technology functionality, but rather the implementation of new processes reflecting new situations.

The way towards overcoming these troubles is a consequent use of the process approach concept and its implementation in the respective project methodology. From the process viewpoint it can be noted that the project is a one-time transformation of inputs (information, environment, material, money, abilities and skills of the people involved) into outputs (target products), by means of developmental activities (arranged into stages, steps and tasks) and coordinated by managerial activities.

In order to carry out the project successfully, we have to manage it. It is necessary to elaborate a scenario or a draft – project plans for a successful project management. To make them applicable, and ensure a better chance for success, they have to be imbedded in broader circumstances of the project environment. The strategy of the project has to be created. The strategy, or its lack, is often a cause of the failure of the project.

3. PRINCIPLES OF PAPRIS METHODOLOGY

The following principles have become the default and the basic principles (axioms) for the formulation of the principles of the procedural approach to IS projects and development of the PAPRIS methodology (PAPRIS – Process Approach-Public

and Regional Information System) as a methodology of the procedural approach to IS project management IS. Here are the following rules:

3.1 The principle of procedural strategy

The principle of the procedural strategy and the strategic concept is the basic principle for methods for designing and managing the information system. Procedural strategy shows that the custom project solutions and project production activities are not the only processes within the project, but that it is the procedural groups, clusters, and views on them, which can be described by the appropriate project process model and which can be further subdivided into major and minor procedural group. These process chains interact, complement, often take place in parallel levels, the outputs from one group enter others. The revision process and revision control affect the whole branch and shall be subject to inspection arrangements. Strategy for the usage of procedural approaches, properties of their tools is based on the idea that the information system is a model of the real system (the real world) and its basic purpose is the gradual creation of the output for the final use of the customer.

Process management in the context of the usage of the procedural strategy focuses on the causes of the results (this is different from the functional approach that focuses on the results). Procedural strategy is based on the assumption that the results are influenced by the processes that take place within a project. Procedural strategy has incorporated an element of efficiency – processes transform inputs into outputs for the efficient use. The purpose or requirement may be seen as a fundamental objective, as defined by the broader project (strategic) context, in which the development of the information system takes place. This means that the project and the system surroundings express the reason of or the requirement for the information output existence, since this is wanted or needed. This existing, not worded, or potential request is formulated by the general procedural strategist (in the project's conception it is the management committee of the project), in order to meet the basic objective of all the processes within the projects, in particular to ensure all activities to meet quality project output (IS) requirements and its sustainability at the market.

From the standpoint of the principle of procedural strategies the formulation of the mission of the project IS is very important. Apart from the purpose of the IS project the content of the mission of the project is decided by the strategic project manager directly, and by the stakeholders (interested party), indirectly, with their responsibilities. The mission of the project IS specifically responds to the purpose, and expresses a positive attitude. Well formulated mission of the project IS underpins the legitimacy of the project existence and its outputs, it presents: why and for whom it exists and how useful it can be.

3.2 The principle of proper separation of production and non-production processes in IS projects

Production processes in development projects of IS are those processes that in their final phase produce outputs with the added value for the customer – informational product, which is used by the final user in order to meet the specific information needs. In contrast, non-production processes do not have this property, but are inherently necessary for the custom deployment and performance of production processes. In the IS projects (respectively in procedural understanding of these projects) the non-production processes are carried out throughout the whole duration of the project: they run on demand of a particular input of a particular case, we can see them any time, based on the schedule of process management. In this regard, the production processes are more stable. Their commencement is set up by the described procedural branch; their outputs determine triggering further production processes.

The principle of strict separation of production and non-productive processes in IS projects, and its application in process model of IS development thus allows the first analytical segmentation of processes in projects. In ideal conditions, you can generally assume that a rigorous separation of individual partial processes into these two basic procedural groups results in two disjoint procedural groups (class of decomposition, the basic set of project processes). This property can be seen also in further minor incremental improvement of the processes, or partial separation into further subgroups.

The basic aim of this principle utilization is the separation of the performance from the procedural object – the product (e.g. user ś documentation of IS, but also the output of the project as the Web site of IS) from the information for strategy and performance management to the IS project product (for example, information stored on the www site of the custom control project that contains a list of key activities, timetable, etc.).

Respecting this principle we can achieve even more properties of a specific process group. The owners of all processes in the IS project will be, by the procedural approach, categorized into the owners of production processes and the owners of non-productive processes, which forms the prerequisite for further exploration of these two disjoint classes.

3.3 The principle of process modeling and abstraction

Creation of process models of IS is viewed as the key principle, which allows for the procedural analyst to accept the abstract viewpoint on general characteristics of the project of information systems, unencumbered by the current state of affairs, used technology, and other abstract characteristics. The designed information system is generally built up gradually by the hierarchical levels of the design - from

the conceptual to technological levels, until the implementation mode is achieved, while each individual level is being abstracted from the specific characteristics of other levels. The principle of the process model results in the clearly defined hierarchy of processes and the clear separation of the essence of the system (what the system must do) from the restrictions and limitations, that are added as a result of applied technologies and implementation environment (how it will be done). On the hierarchy top we can find the processes which generate outputs as the final value for the customer. These are the main processes and these form the base of the process model of the developed IS.

This structure and the process model are hierarchically joined by other related processes. Their sub models (procedural views) depend on the requirements and the input needs of the main processes of the project. The implementation of this principle is ensured by the usage of process design methods for IS design, while being supported, to the maximum extent, by automated tools. The element of and requirement for the changes, which are essential factors in the usage of the procedural approach, lead to the use of the procedural modeling tools and change management with the use in the relevant procedural models, thus to reducing the risk of adverse effects of changes on the design of the information system.

When separating different views in the procedural concept, the abstraction always plays the key role. This essential feature of the procedural guidelines, therefore, tends to be called the principle of abstraction. The main reason for the existence of the principle of abstraction in the methods of process analysis and design of IS is the effort for the generalization of the problem.

3.4 The principle of delegating, monitoring and reviewing in IS projects

The basic purpose of the usage of the principle of delegation and control as a procedural approach to IS project management is to fulfill the properties and capabilities of the product to be created by the project. These properties bind to the product´s relation (the IS) to the surroundings. Information flows and cooperation elements (interaction processes) result in the bond of the IS project objective and IS project output. Actually, this means moving from the ultimate goal – the maximum production performance efficiency of the project (that is, an attempt to create the maximum amount of information output as cheaply as possible) to the performance efficiency focused on the quality-oriented activities leading to the product (project outputs of IS project).

Fulfillment of the basic meaning of the project in this concept is the consistent application of the procedural principle of delegation. The delegation always means the transfer of the powers and responsibilities to the owner of the transmission process, who is able to understand and recognize the current need, and, if appropriate, is able to modify the necessary realization processes leading to the fulfillment of the mission of the process (or the process groups). The structure of

the procedural team allows delegation, and adaptation to the requirements imposed. Delegation processes are often associated with the decision-making processes, which also brings the element of responsibility for the impact of the adoption and implementation of the relevant decisions by the executive in the follow-up and implementation processes. For example, for the time limited project (its duration expires on the date of information output transition), it is necessary to accept the risk of the management process due to a greater risk in all processes of the project (its scope), project costs and testing processes, all for the purpose of meeting the determined project measures.

The principle of monitoring and control in the procedural concept is based on a continuous knowledge of and checking individual processes and highlighting, in particular, those processes where change is most likely and necessary to occur. It means constant attention to non-standard processes and project activities, constant efforts to maintain the output of these processes, still in relation to the defined strategy and project objectives. The need for the application of the principle of monitoring and control is stronger if the principle of delegation is applied. A subset of the control processes must be properly planned in their respective cycles. This also affects the processes of project planning and processes of integrated change control. The importance of this principle is high even in the multi-projects management and multi-project environment.

In addition, these multi projects are often of different stages of their life cycle. Not all project managers and project staff are sufficiently equipped with the appropriate knowledge and are able to apply principles of procedural project management. Still, the description of the implementation of the multi-project environment calls for the need for the delegation process. For its application, it is necessary to comply with the principle of the procedural approach of monitoring and control. The following conditions are needed:

- to separate the specified processes that support the common procedural infrastructure,
- to use standard tools and methodologies for project management,
- to start the process of setting priorities for individual projects in parallel processes,
- to track the interactions of the individual processes within a single project, and in the inter-project context,
- to review project constraints and risk practices (influences),
- to standardize the communication processes and information flows.

3.5 The principle of repetitive procedure in IS project management

The process of gradual development of the product of the IS project is embedded in the project timelines. From the project perspective the realization of the product is divided into various project stages, phases and steps. However, the project

procedure is not linear, but it brings problems and changes due to the internal and external project causes. The definition of the procedural approach as the way to resolve these situations requires the acceptance of the changes and the acceptance of a variety of approaches. Repetitive procedures (or the introduction of a process of the repeated procedure) during the IS development control helps identify risks at each stage of the project life cycle, thus enormously reducing the cost for their later removal. For the purposes of managing the project, the life cycle of the project is divided into a number of stages, each stage consisting of a series of small parts of the repetitions (iteration). Every iteration contains four essential activities: gathering requirements, design, implementation, and evaluation.

In the individual procedural stages the requirements for IS are analyzed and softened to the level, which allows, based on the analyses carried out, designing a system for the start of the next stage. This prevents gathering unnecessary design details at the very beginning of the development and reduces the risk of subsequent changes of the requirements. Requirements are later described only in more detail. In the event of the change of the parent request, or by adding additional requirements, it is always necessary to go back to the previous stage, where the request occurred (as a change) for the first time. Only then the changes can be incorporated into all stages of the following phases.

3.6 The principle of team work, principle of assessment and project staff motivation

Although the essential attribute of the process is its unique owner, the procedural activities and project activities are carried out by individuals and their interactions. In procedural understanding, a subset of the processes creates specific outputs; these enter other processes, and affect their implementation. The interaction is so strong that the project output and its parameters depend not on a simple summary of the individual performances of individuals, but on the strict application of the principle of teamwork. For custom project, management performance it is therefore necessary to accept and promote the interests and purpose of procedural strategies, influence individual project teams and create an appropriate procedural and organizational structure. The procedural approach also focuses on the autonomy of the project teams with sufficient powers. The motivation of the teams for the performance, however, must comply with the added value of the usage of the output by the customer and user of the process output. The motivation, however, should be approached comprehensively and in compliance with the final product development.

3.7 The principle of maximalization in utilization of knowledge processes

This principle is based on the assumption that the projects, and their outputs, therefore the IS/IT products, are the evidence of a general trend in the transition

from the industrial economy to the knowledge economy. The added value of the outputs of the number of IS so high that it is necessary in the processes in the respective types of projects and their specific performance to maximize the outputs. Processes based on this principle, increase the total design intelligence (in the human factor, organizational structure, management folders, control mechanisms, etc.), and form the groundwork for the processes of permanent learning. The use of the knowledge of the principle also means to delete the project information and knowledge barriers.

4. CASE STUDY (Process project management of information centers for entrepreneurs by PAPRIS)

The project Information centers for entrepreneurs (InCE) has the aim to establish the centrally managed, clearly defined network within the regional and departmental structure of the Czech Chamber of Commerce in the Czech Republic (CZChC), which will be able to provide the topical information on demand for small and middle sized enterprises (SMEs) directly, or after defining the problem by a specialized company or a respective institution.

The goal of the project is to make complex general information and departmental information accessible for entrepreneurs, and in cooperation with experts of the Chamber of Commerce to solve specific environmental situations of SMEs, i.e. by means of the nationwide network of the Regional information centers (RIC), the Departmental information centers (DIP) or by self-access internet connection to the IS. The project of the Chamber of Commerce in the Czech Republic is in line with the concept of the foreign policy of the Czech Republic. The project was supported, due to its aim to strengthen competitiveness of industry in the Czech Republic by the manager of the Ministry of Industry and Commerce (MIC) of the Czech Republic; It fulfils fundamental measures of the state assistance by increasing competitiveness of small and middle sized enterprises, and mainly by means of:

- Supporting programmes of small and middle sized enterprises, which assist entrepreneurs in implementing their entrepreneurial goals, and in contributing to the increase in their economic stability,
- Creating favorable conditions for entrepreneurship, mainly with the approach to financing and accessing information, consulting and educational services,
- Continuous updating tools and systems of support in accordance with the EU rules.

The subject of the project was the formation of the system of the Information centers for entrepreneurs (hereafter only ICE), which respects the conclusions of the carried out Analysis of the needs of SMEs. The presupposed outcome is

intensifying and improving everyday two way communication between the public administration and entrepreneurs. Initiating activity of these centers (in cooperation with all partners) and securing overall knowledge of all small and middle sized enterprises (despite the expanding use of the internet, there are still a number of small entrepreneurs in some micro-regions without more noticeable access to information) will considerably contribute to the efficiency of providing support and for increasing the absorption ability of the Czech economy.

At present, 78 regional information centers, 14 Regional coordination centers (RCC) and 18 Departmental coordination centers (DCC) are involved in the project. In the system over 27 000 answered replies are stored, which form the basis of the knowledge base of the project.

4.1 The division of the project processes

In this chapter, managerial project processes connected with the project management of the InCE project are described, as well as the with production project processes (main and supportive production processes), which cover one's technology, outputs and users' outputs (out of which 6 cover main processes of specifying the needs of the entrepreneur, the collection of requirements, its qualification and escalation, processing and distribution of results). Other production processes are defined as supportive ones and serve for the administration, development and management of particular areas of the information system.

The project managerial processes are linked with the project management and project methodology (methodologies). The sense of the methodology in relation to the project managerial processes is not in a detailed description of the steps during the IS development, but rather in the analysis of substantial factors of the IS establishment process. In the context of the IS understanding it deals with a complex process of the IS development, which is inseparably connected with the stages of the IS life cycle.

I am talking about the methodology in the singular form; in my definition I mean a set of methodologies of lower levels. So it means the application of the general methodologies in into specific ones. In this way I emphasize the acceptance of the individual partial project methodologies (e.g. IS sustainability methodology) in the overall methodology of the formation of the IS project. For the methodology to be used for the IS development in a project manner, it is necessary to define the following requirements:

The methodology:
   • Has to clearly specify the set of values, on which it is based, or which it intends to achieve (e.g. minimal IS formation costs, a short period of a solution, the inclusion of the social aspect into the solution),

- Has to determine the procedure of the solution, so that the entire process of the IS development could be planned,
- Has to determine the priorities of the solution (what and when these are crucial),
- Should recommend methods, techniques and tools, which are suitable for a use during particular stages of the project solution.

A significant aspect for determining methodologies is its users' and application's targeting. It means that methodologies are meant for specific project roles, for specific project elements.

If we understand IS methodologies as a way of securing the efficiently of the IS development, then, from the system position, it is necessary to define general principles from the viewpoint of the IS methodology. In other words, if we define the fundamental rules for specifying the procedure and contents of the IS life cycle, we will define the degree of generality with respect to the degree of specificity and variants of the given and specific solution (method, technique, tool) during the specific developmental stage.

The example of the project methodologies is the given below (the project managerial methodologies of the InCE project).

Table 1. **InCE project methodologies**

The name of the document	Record	Place of a deposit	Time of a deposit	Related documentation/ Remark
The methodology of emergency mode		ICE (Information center for entrepreneur)	10	In the electronic form
Training methodology		ICE	10	In the electronic form
Control methodology		ICE	10	In the electronic form
Methodology of allocating resources for the project		ICE	10	In the electronic form
Administration methodology of commercial services		ICE	10	In the electronic form
Accreditation rules of RIC (Regional information center), and DCC (Departmental coordination center for entrepreneurs) (+ project and protocol)		ICE	10	In the electronic form

The name of the document	Record	Place of a deposit	Time of a deposit	Related documentation/ Remark
Operation methodology of RCC (Regional coordination center)		ICE	10	In the electronic form
Methodology of accounting operations of RCC		ICE	10	In the electronic form
Operation methodology of RIC, RC		ICE	10	In the electronic form
Accounting methodology of RIC operations		ICE	10	In the electronic form
Operation methodology of DCC		ICE	10	In the electronic form
Accounting methodology of DCC operations		ICE	10	In the electronic form
Methodology of the handbook formation		ICE	10	In the electronic form

4.2 Project production processes

The main aim of this project stage is identifying the key production processes of the public information system of InCE by means of the object analysis of the users' project outputs. At the same time, it is necessary to secure their inner structure and activities, which are provided by them, with mutual relations, external circumstances, inputs and outputs and owners. The outcome of the project activities is a well-arranged system of the production processes, which is the core of the project formation of the public information system project.

In the project of Information centers for entrepreneurs, the following main (key) production processes have been identified
  Process 1 – specification, formalization, contacts, links
  Process 2 – detection and collection of requests
  Process 3 – qualification of the request
  Process 4 – escalation of the request
  Process 5 – processing of the request
  Process 6 – distribution and processing of results

In a more detailed way, the main production processes (owner, activities, inputs and outputs) are characterized in the following.

Table 2. **Main production processes**

No.	Owner	Carried out by	Activities	Inputs	Outputs
1	Department of InCE	Entrepreneur RIC operator	A specification of the problem A specification of the profile A comparison of the problem with the mission of InCE A contents revision of the problems solved	Problem/ need	Straight requirement Extranet registration
2	Department of InCE	Entrepreneur on the internet Contact person Central helpdesk	Contacting, entrepreneur - RIC –telephoning, visit, internet, email A comparison of the requirement with the database of life situations and standard IR topics solved A specification of the requirement by means of the internet form	A requirement considered and specified by the entrepreneur	A reference to the similar requirement o r life situation previously solved Specifications of the required background research - A new requirement (form)
3	Department of InCE	Call center operator Call center analyst	A control comparison of the requirement with the database of life situations and topics solved The allocation of the analyst The consideration of the content compliance of the requirement with the content of InCE A consideration of labor content A modification of comprehensibility Acceptance/rejection	A new requirement	A rejected requirement with the reason (reference) „Approved" – qualified and specified new requirement.
4	Department of InCE	Call center analyst	The division into partial tasks and solvers' delegation Escalating partial tasks	An approved requirement	The submitted requirement for solving (with the allocation of partial tasks of DCC)

No.	Owner	Carried out by	Activities	Inputs	Outputs
5	Department of InCE	DCC expert Call center operator RCC operator	A check of dates A change of assigning solvers A definition of the solution Aggregation of partial solutions	Settlement days Escalated qualified requirement Partial instructions for the solution (fulfilling partial tasks)	A requirement of the solution (a change of the solver) The consolidated instruction for the solution (text, references, contact, info, paid services offer.)
6	Department of InCE	Automatic system RIC/ DCC according to process 2	The documentation of the result Contacting the entrepreneur Handing over the result	The consolidated instruction for the solution Specified background research	Background research sent The consolidated instruction for the solution of the requirement sent Publishing into guaranteed information (GI)

In the following project stage, it is necessary to identity the supporting production processes of the public information system, which comes from the necessity of the project activities aimed at securing the general information and technology activity of the system, the relation to the inner information sources and also to the security requirements for the stored data and resources administration.

In the InCE project, the following supporting production processes have been analyzed:

Process 7 - administration and development of knowledge base

Process 8 – administration of information resources

Process 9 – interface administration for the external system

Process 10 – administration of IT infrastructure and data security

Process 11 – administration and management of material, financial and human resources

CONCLUSIONS

The methodology of the PAPRIS (PAPRIS – Process Approach-Public and Regional Information System) is based on the procedural category, described procedural elements in the methodologies of project management, from general principles and characteristics of the procedural approach to the project management, information systems, and of the principle of the system of categorization. It is primarily the methodology of incorporating elements of the procedural approach to managing public IS projects. The main category for the procedural structure of the IS projects is to explain and understand the production and non-production processes and defined process sections.

It can be generally stated that the initial hypothesis that procedural approach in project management information systems does comply with the procedural principles formulated, and on which it is based on. Procedural methodology is the efficient way to the management and implementation of project activities of the information system projects.

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