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# Model Of The Competence Description In The Mechanism Of Soft Projects Scope Planning

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## ABSTRACT
In this paper, we suggest the approach and model to describe competence as a base for planning the soft project scope. In the context of this task competence is presented as the project product as well as managerial tool of a project manager to collect requirements from several stakeholders and to define the project scope. A base for such approach and model is a developed conceptual model of the soft project scope planning mechanism.

## General Terms
Project Management, Model, Approach.

## Keywords
The project scope planning, soft project, competence, project service model, competence profile, identification model, collecting requirements, scope defining.

## 1. INTRODUCTION
The preliminary conceptual modeling carried out by us in the works [1-3] has showed that the soft projects scope planning based on a service model involves solving the problem of describing the requirements to the competence level as a part of the process of gathering requirements and the defining the soft project scope. In other words, the category of "competence" is no longer regarded in a purely educational context [4, 5], but as a management category within the framework of the project manager activity. In this context, the use of category should provide answers to issues related to the definition of a product uniqueness of the soft project (which competences and in what direction and to what level should they be changed, taking into account the sphere of their further exploitation by this person?), the rational scope of work to create a project product, the rational expenditure of time and resources for the creation of the project product etc. Today, such vision of competence is not a traditional neither for the sphere of general management nor for the sphere of project management. Therefore, despite the large amount of literature addressed to the competence issues in general (for example [6, 7]) and the management of educational projects in particular (for example [8-10]), the problem of representing competence as a tool for soft projects scope management remains relevant.

Previously, we proposed a conceptual model of the soft project planning on the basis of the service model [2], taking into account the recommendations of the work [11]. It lays the methodological vision of this process mechanism. At this stage, it is necessary to specify it and submit it in the form of a model of a lower methodological level. The identification model of the soft project scope planning mechanism will serve as such model. The section 2 of the study is dedicated to its construction and analysis. On this basis, the approach and the model for the competence description as a part of the

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processes of gathering requirements and defining the soft project scope will be proposed in the sections 3 and 4. They do not contradict the general nature of these processes that are presented in the PMBOK Guide [12].

## 2. IDENTIFICATION MODEL OF THE MECHANISM OF SOFT PROJECT SCOPE PLANNING

The construction of the identification model of soft projects scope planning involves formalizing its elements using mathematical notations. Any model is an idealization of the real-world object. According to the essence and basic rules [13], the idealization is determined by the assumptions that are used in its construction. As part of the handled problem, such assumptions should relate to the features of a competence formation. Let us consider the assumptions that will be used in the model construction.

Individuals who acquire (develop, improve, etc.) specific competence in the course of the project implementation, are the key stakeholders of soft projects. They need these competencies in order to acquire certain values during their operation. In many cases, it happens in the process of economic activities realization at the appropriate workplace. Based on this, the person on the one hand, is a carrier of a soft project product – in other words, formed competencies. However, on the other hand, the person is also a consumer of these competencies in his/her future work. This gives grounds to name the person as a project stakeholder in the future as "product-consumer" (PC).

In psychology and pedagogy the following scientific fact is established: in the learning process (learning activity) for a certain period of time you can increase the competence only to a certain level [14]. In this case this level is determined by the initial level of the competence development. If it is below a certain minimum required, it is impossible to increase it essentially by "hopping" through several levels. This scientific fact must be taken into account for soft projects, as the duration of the competence formation depends on it. And for most educational projects this duration is limited. In addition the project is also limited by the special availability of certain technologies of learning and teaching, which is determined by the financial possibilities of the project.

The next important fact is the existing requirements binding for the applicant who wants to take a particular position with the level of his/her education, which is tied to a specific qualification level of the national qualifications frameworks (for example, [15-17]). Consequently, both competences and their levels should also be tied to the levels of national qualifications frameworks.

It is appropriate to use a fuzzy penta scale on the media "0-1" in order to identify the competence level at each level of qualifications framework [18]. Such scales have been used successfully in the projects management in the study of problems related to the interaction management, communications, risk management, evaluation etc. (for example [19-21]). We assume that an increase the soft project competence cannot be raised to more than three levels, regardless of whether these levels relate to the same level of qualification frameworks or adjacent levels. We also assume that if the initial competence level according to a fuzzy penta-scale within the framework of a certain level of the qualification framework is less than 0,1, then that PC can not participate in a soft project that provides a competence improvement according to the requirements of the qualification frameworks level. Based on the existing national framework of qualifications at each level it is necessary to use its five-point scale of the competence formation assessment. The switch to the next qualifications framework level is possible only under the condition of the competence achievement of not lower than the fourth level at the previous qualifications framework level. Let us also stipulate the condition that the upper competence level at the previous qualification frameworks level will be equal to the lower competence level of the next qualification frameworks level.

This described system of competence levels within the different levels of national qualifications frameworks allows you to develop a graphical model that reflects the accepted assumption about the possibility of competence increasing within the framework of a soft project only by three levels (Fig. 1).

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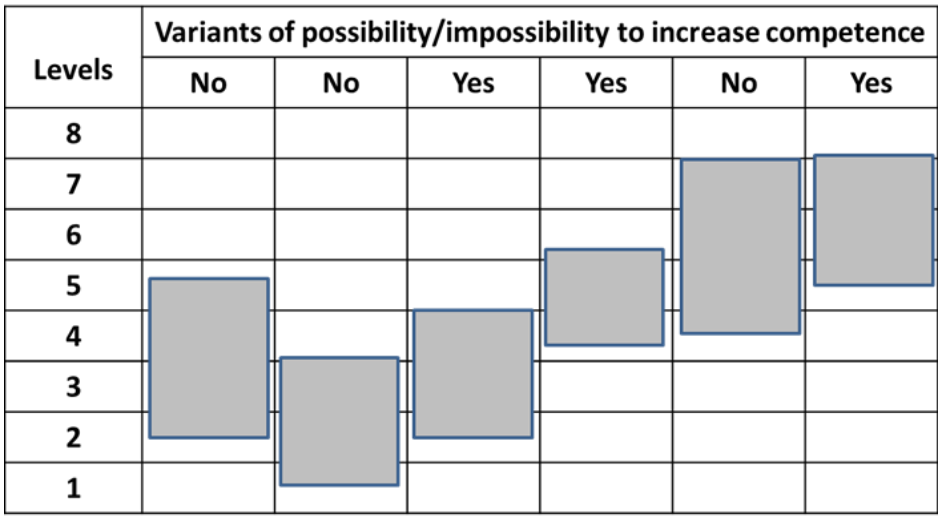


**Fig 1: Variants of possibility to increase competences for different combinations of actual initial and desired final level values**

We proceed to the construction of identification model of the soft projects scope planning mechanism.

Let's suppose we have *N* products-consumers (PC) that wish to raise their competences (Fig. 2). Let us accept the assumption that all the PC have the same set of the desired competencies Q. Here the PC has for each competency *j* its desired (required) level of its achievement ${}_{d}l_{j}^{i}$. Every *i* PC has its initial level of competence mastering ${}_{s}l_{j}^{i}$. The comparison of the desired competence level with the actual one allows to eliminate those competencies that have a gap of more than three levels, or their actual level of development is more than necessary (Fig. 1). Based on the received information, you can create a matrix of the background information on the project for a further planning of its scope ${}_{p}l_{j}^{i}$. A list of the project works with the definition of those PC for which they will be implemented in the form of WBS-structure, should become a result of processing these matrices.

Let us introduce additional conditions for the construction of the WBS-structure [12, 22] for such projects in order to take into account the peculiarities of forming a soft projects product. These WBS-structures should reflect the sequence of formation (development, improvement, etc.) of competencies at the first stage. At the second stage - the sequence of processing methods for their formation.

You can determine the list of models of the methodological level from the proposed identification model, the combination of which should to make a theoretical and methodological basis for the soft projects scope planning (bottom of the Fig.2). These include: a model of describing the values for each PC; a model for determining the entry-level of competencies; a model of the mechanism for determining the threshold levels of competences that can be achieved in the process of the project implementation, a model of evaluation criteria of recording works into the project plan scope.

Also, the interpretations of some of its elements that are understood by stakeholders - PC follow from this model (top of the Fig.2). These interpretations are necessary for those interested parties who will implement the process of competencies formation (development, improvement). So, in terms of the project activity model, presented in the work [23] to implement the product-technological activity.

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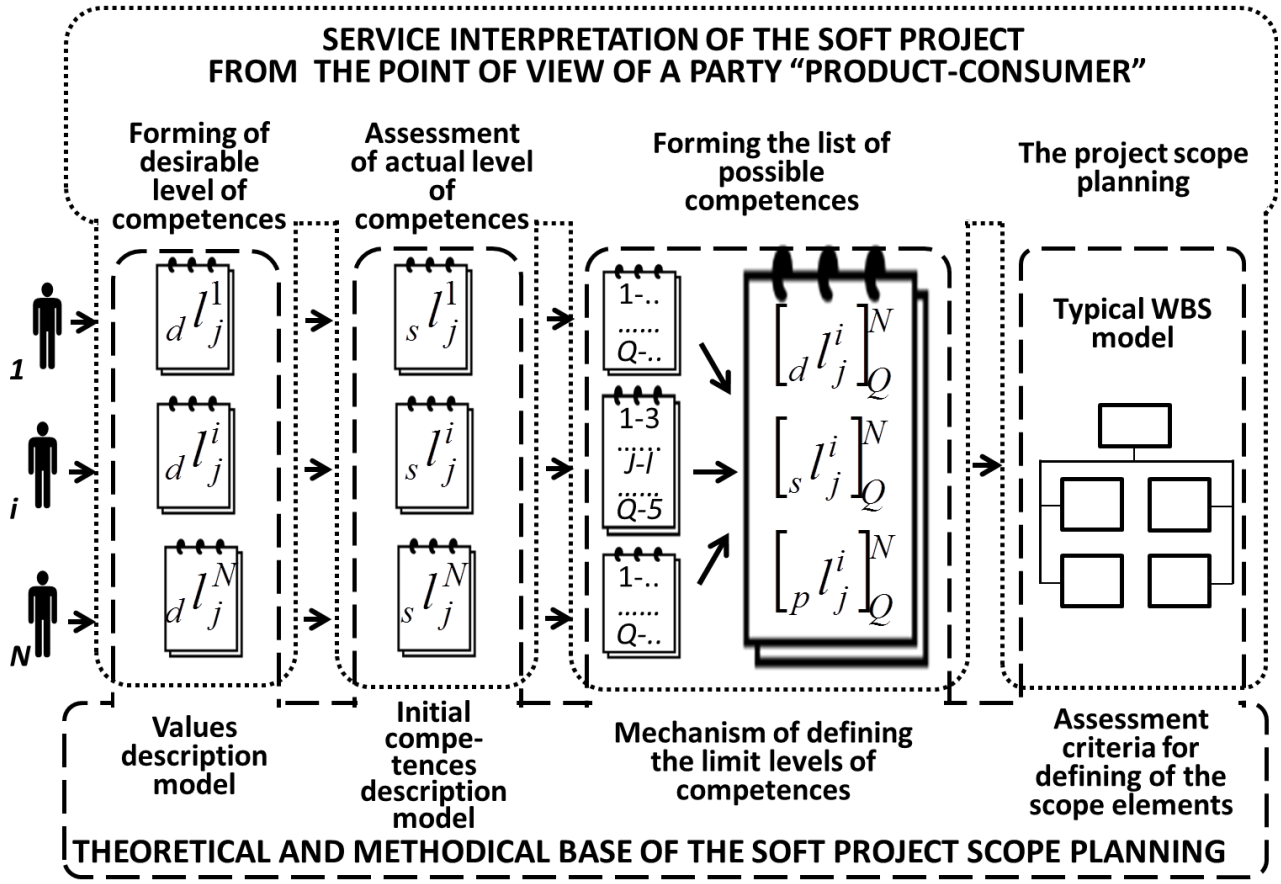


**Fig 2: Identification model of soft project scope planning**

## 3. APPROACHES TO A FORMALIZATION OF REQUIREMENTS TO THE COMPETENCE LEVEL AS THE BASE OF THE REQUIREMENTS GATHERING AND THE SOFT PROJECT SCOPE DEFINING

You need to coordinate thesauruses of the product and technological activity's performers and the project management team to be able to control the soft project. Let us consider this problem using the example of the requirements formation to the necessary competence level on the part of the PC.

Today the method of assessing the applicant according to his correspondence to a so-called competence profile has become the most popular at hiring. The competence profile is regarded as a list of competencies (no more than 12-15) with a precise definition of their manifestations level, related to a specific position [24].

Today there is no a single approach to building the competence profile. However, two components - the general and professional competences [25] can be emphasized in the profile almost in all approaches. In addition, for each of the components it is necessary to build their competence profiles, each of which contains up to 15 elements. The practice of recruiting companies' activity shows that 4-6 levels are usually used for assessing the competence level of [26, 27].

Graphical models in the form of radar diagrams are usually used as a way of presenting the competence profile [28]. These diagrams allow us to show the desired and actual levels for each competence, and thus holistically estimate, if a particular applicant complies with the competence profile.

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From the above-mentioned data it is clear that "competence", "competence level", "competency profile" are the general terms for the project management team and the product and technological activities' performers. At the same time there is practically no such term as "value" in the product and technological activities, which is one of the leading ones in modern project management methodology.

The research, conducted by the Centre "Development of CSR" of the laboratory "Business and Universities" [29], has showed that the main non-financial values for students are as follows: the opportunity to make a career (89 %), the official work (88 %), the possibility for training and development (85 %), the presence of social package (70 %), flexible working hours (44 %). Also, more than a half of respondents put a salary as a value at the first place.

As we can see, the most of these values are more connected with the work specifics of a particular enterprise, than with the workplace specifics. That is why today specialists who implement the product and technological activities, need to develop a catalog of the most sought-after professions in the future, and to develop a typical competence profile for each of them. Then the potential PC, based on their understanding of the value from their future professional activity, will choose one or another profile. At the same time, he as a carrier of information about the demand features for specific values in the cultural (national) environment, where it is supposed to work, must coordinate the requirements for the competence level. As a result you will receive a required competence profile for a particular potential PC.

The main difficulty in building the competencies profile is connected with a finding a universal description scale of the various competencies. The analysis of various competence profiles' descriptions [30-32] has shown that they have the character of poorly structured descriptions, for which the terms are used that are difficult to identify verbally. For example, the following phrases are used to describe five competence levels (1-5) "Development of other employees" in the work [30]: genuinely interested, provides a stimulating feedback, looking for opportunities to expand and develop the skills and so on. In the work [32] the following phrases are used to describe four competence levels (incompetence, development, experience and skill), for example, "Mentoring": has the desire, has a desire and good theoretical knowledge, has a sufficient experience, etc. These descriptions could theoretically be used to assess the competence on the basis of information obtained during a long collaborative work. But this approach is not applicable for the requirements formation for the competence level, which is necessary to form.

## 4. COMPETENCE DESCRIPTORS FOR REQUIREMENTS GATHERING AND DEFINING THE SOFT PROJECT SCOPE

It is suggested to use descriptors on five distinguishing features in the requirements description, which can be identified in the National Qualifications Framework (NQF). Table 1 provides a sample of describing such competence as "ability to manage your time". This description is done by a professional in the field of recruitment Tamara Polishchuk on our proposed pattern. As you can see, the resulting description completely logically covers all the qualification levels of Ukrainian national qualifications framework [17].

Recently during hiring the applicant is evaluated not only in terms of competence, but also by the presence of defects and natural physical limitations that are not valid for a particular profession [33]. However, you can select some basic disadvantages that are inappropriate for any profession in the modern developing company. These disadvantages are most often manifested in the statements of employees [34]. It is therefore proposed to build a profile of these disadvantages and make its assessment, along with a competence profile. Then, the tasks concerning the removal of these disadvantages should be included in the soft project scope.

## 5. CONCLUSION AND FUTURE WORK

The proposed in the article identification model of the mechanism of the soft project scope planning gives a complete picture of what models should be developed in order to create a theoretical and methodological basis for soft projects scope planning. The advantage of this model is that it allows a clear understanding of PC by stakeholders, what actions

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they need to perform in the process of the soft project implementation and what consequences might be at each stage, depending on the received personal results. The introduced system of indicating the model elements (the number of PC, the number of competencies that PC want to change in the course of the project, the initial and the desired competence level, the planned competence level) takes you to the formalization of the problem of determining the project scope, taking into account of the accepted limitations.

**Table 1. Descriptors of the competence description «Ability to manage time» for different levels**

| Development level | Behavioral characteristics | Descriptors | | | | |
|---|---|---|---|---|---|---|
| | | **1 Activity self-regulation** | **2 Level of task complexity** | **3 Typicality of situation** | **4 Information availability for decision making** | **5 Time length of planning** |
| 1 (2 NQF) | The ability to distribute simple typical tasks under the direction in a short period of time (1-3 days) in typical situations | under the full direction | typical simple tasks | typical situations | full information is available | short time length (less than one week) |
| 2 (3 NQF) | The ability to distribute typical simple tasks in nontypical situations in a short period of time (up to 7 days) using tools of time management and work under the terms of the plan drawn up | under the part-time direction | typical simple tasks | small part of novelty | full information is available | short time length (less than one week) |
| 3 ( 4 NQF) | Ability to set priorities for tasks in unusual situations and plan individual training tasks in a short period of time (up to 1 month) | under the part-time direction | nontypical simple tasks | small part of novelty | small degree of uncertainty | small time length (less than one month) |
| 4 (5 NQF) | Possession a wider range of time management tools, the ability to allocate typical individual tasks in a short period of time (up to 1 month) in terms of a team interaction with elements of unpredictability | independently | complex typical tasks | medium part of novelty | small degree of uncertainty | small time length (less than one month) |
| 5 (6 NQF) | The ability to distribute complex nontypical tasks in the field of professional activity or in the process of learning during a medium-term time lengths (up to 1 year) under conditions of uncertainty | independently | complex nontypical tasks | medium part of novelty | medium degree of uncertainty | mid-term planning (up to one year) |
| 6 (7 NQF) | Mastering new technologies of efficient strategies construction for the implementation of research and / or implementation of innovative activity, the planning a team work during the medium-term time length (up to 1 year) under the conditions of incomplete information and conflicting requirements | independently | complex nontypical tasks | big part of novelty | medium degree of uncertainty | mid-term planning (up to one year) |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 7 (8 NQF) | Strategic thinking, developing long-term strategies (up to 5 years) during the implementation of innovative complex projects and researches in the field of the professional activity, planning a team work under the strategic plan, real-time correction in terms of constant changes and uncertainty of the situation | part-time self-regulation | complex tasks | nontypical situations | large degree of uncertainty | long-term planning up to 5 years |
| 8 (9 NQF) | forms a vision based on a long-term forecasting of the social development and long-term (starting from 5 years) strategies of solving socially important systemic problems in interdisciplinary areas complete autonomy during their implementation | complete self-regulation | complex tasks | nontypical situations | absence of adequate information | long-term planning more than 5 years |

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