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**ORGANIZATIONAL STRUCTURE MODELS SELECTION  
OF THE SELF-MANAGED ORGANIZATIONS INTERACTION WITH  
THE DEVELOPMENT PROJECTS INTERNAL ENVIRONMENT**

**Abstract.** *The article analyzed the organizational models of project management and their applicability to the management of development projects of self-managed organizations. The task of choosing a model of interaction of development projects of self-managed organizations with the internal environment is set. The main organization, which includes members of the development project management team, is considered as the internal environment. A classification of models of interaction of development projects of self-managed organizations with the internal environment of such projects is proposed. Ten features of classification are defined: by the depth of management, by the type of management influences, by the type of subjects of interaction, by the type of organizational structure of the main organization, by the methodology within which interaction is carried out, by the level of quantitative complexity of interaction, by the localization of interaction, by the level of cross-culturally interaction, according to the degree of digitization of interaction, according to the interaction processing model. Identified varieties of models in boundaries of each feature of the classification. Three models of interaction of a self-managed development project management team with the main organization are proposed: A-model, in which interaction settings are carried out by the team; B-model, in which interaction settings are carried out by the main organization; C-model, within which the interaction takes place on the basis of arbitration between the settings of the team and the settings of the parent organization. Graphic schemes of the implementation of the specified models are provided, their description and characteristics are provided. A comparison of the processing models of the interaction of the project team with the internal environment was carried out. The advantages and field of application of each model are emphasized. A SWOT analysis was conducted, strengths, weaknesses, opportunities arising from the application of the specified family of processing models for the interaction of the self-managed project team with the internal environment within the scope of the syncretic project management methodology, and threats that may arise were highlighted. Formulated fields of further research in the chosen direction: formalization of models of interaction correction modules at the level of corporate methodology of a self-managed project-oriented organization, formalization of models of interaction arbitration module at the level of corporate methodology of a self-managed project-oriented organization, formalization of models of interaction of self-managed development project management teams with the external environment of such projects and the external environment of the main organization, the use of artificial intelligence elements in interaction correction modules and interaction arbitration modules within the syncretic methodology of managing development projects of self-managed organizations, practical testing of models of interaction of self-managed development project management teams with the internal and external environment of such projects within the framework of syncretic management methodology projects during the implementation by self-managed organizations of restoration projects (portfolios of projects) of the infrastructure of Ukraine. Conclusions from the conducted research are formulated.*

**Keywords:** *project and program management; self-managed organizations; syncretic methodology; organizational structure; interaction model; internal environment*

**Introduction**

The implementation of large-scale projects in Ukraine, in particular infrastructure restoration projects, in the conditions of war caused by the aggression of the Russian Federation, is a difficult practical task. Such a task

puts forward new, stricter requirements for project management systems of organizations that will participate in such projects, and for models, methods and tools that will be the basis of corporate management systems for such projects. Accordingly, project-oriented organizations are faced with the task of implementing

development projects regarding the improvement of management systems. A typical development project in this context can be the project of introducing syncretic methodology into the activities of project-oriented organizations.

Syncretic methodology is a step in the evolution of project management methodologies, which is based on the previous stages of its development and develops the concept of separate and individualized use of project management methodologies (standards) by each structural unit of the project (or each project of the project portfolio). At the same time, the methodologies of each part of the project (each project from the project portfolio) are not mixed with each other. This feature of the syncretic methodology is adequate to the conditions of implementation of modern large-scale projects, in which many different participants, representing different management cultures, and therefore guided in their activities by different standards or methodologies [1] take part. Self-managed organizations should be recognized as the best organizational conditions for the application of syncretic methodology [2], since the management democracy embedded in them contributes to the development and application of the creative abilities of team members in solving complex project tasks and applying innovative approaches to project management.

However, the question of the interaction of self-managed teams with hierarchical teams and organizations remains insufficiently researched. Therefore, the topic of research, which is devoted to models and methods of organizational interaction of self-managed organizations with the internal environment of development projects, can be considered relevant. The syncretic context of the study additionally gives greater urgency to the question.

### Analysis of latest research

Issues related to models of organizational structures and interaction between them developed together with the development of project management standards, which in turn are a generalization of best practice. So, in particular, the PMBOK standard [3] defines, in particular, the following main types of organizational structures:

- functional (project activity and responsibility for it are not clearly allocated);
- weak matrix (the role of the project coordinator appears, but he is not responsible for obtaining the project product);
- balanced matrix (the role of the project manager appears, who is responsible for obtaining the project product);
- strong matrix (the project office appears);
- under the project (the structure is created for the implementation of a project or several projects);

– composite (combines project management according to the principles of a weak, medium and strong matrix structure);

– virtual (implies work in a virtual environment, distributed by teams, as a rule, according to a non-hierarchical model);

– project office (a specialized organizational structure or a company that manages projects to order - the customer can be both external and internal).

The interaction of such structures with the main organization (with the exception of the organizational structure "under the project", which is created for the implementation of the project, and therefore is itself the main, parent organization) is described in the PMBOK as a relationship with the main, "parent" organization, and contains only general principles

The PRINCE2 standard [4] offers several models of organizational structures, an interesting one is the model of four participants in project management (governance) - the project sponsor, the main developer, the main user and the project manager. Interactions with the core organization, as well as within the team and management committees, are detailed in the form of processes. However, the main drawback, from the point of view of our research, is focusing on exactly one methodology within which project (portfolio) management takes place.

A somewhat different approach is declared by the project management standard P2M of the Japanese Project Management Association [5]. The implementation of projects and programs within the scope of this standard is subject to the main organizational essence (according to the authors of the standard, however, it corresponds to the Japanese mentality as such) - the organization's mission. It is from this point of view that both a single project and a set of such projects in the organization (program) interact with the external and internal environment. An interesting innovation of the standard is the proposal to create a single mental space of the "ba" project. The implementation of such a space is proposed on the basis of an IT platform, where both project team members and internal as well as external stakeholders should interact. This approach is conceptually qualitative, but not formalized in terms of the processes of such interaction, as a result of which such interaction may turn out to be insufficiently effective. At least there are ways to increase it.

The standards of the ISO 21500 series [6, 7] formalize the main processes of project, program and portfolio management, they provide a general concept of such management [6], as well as a description of the management processes themselves [7]. The advantage of these standards is the lack of orientation (binding) to a specific project management methodology, the disadvantage is the lack of formalization of the process of interaction of the project team with the environment.

The field of IT projects offers a slightly different approach to the structuring of project teams and the institutionalization of the interaction of these teams with the environment. In particular, the Agile methodology [8], which has taken the dominant place among the basic standards of project management in IT companies. The analysis of one of the dominant frameworks of this methodology – Scrum [9] – formulates flexible approaches both to the structure and hierarchy in project teams, and to the interaction of teams with the project environment. In particular, constant interaction with the project customer and a separate role of the Scrum master as a task moderator in each project team (there may be several such teams in the project) are postulated. Implemented daily project status reviews, weekly or bi-weekly product reviews, etc. In addition, Agile adds a value approach that has spread throughout project management [10].

Further development of the interaction of project teams internally and with the environment was provided by the emergence of hybrid project management methodologies [11], in which Agile models and models of traditional methodologies were first mixed [12]. In this context, the scientific task of choosing an adequate project management methodology for a certain organization based on the analysis of possible methodologies and their hybrids appeared [13]. Combining agile and traditional approaches to managing teams and managing stakeholder involvement in the project, thus, acquire greater flexibility and retain the proven systematicity inherent in traditional approaches.

Finally, models of team interaction are also implemented at the level of a set of projects - in programs (a set of projects connected by a single goal) [14] and project portfolios [15], models and methods of such interaction are presented in the relevant standards. Another aspect of the development of the respective approaches was described in the models of spiral dynamics and the model of the "turquoise organization", which implements self-management as the main principle of creative teams, which is natural for IT and thus can be successfully implemented here. Holacracy models are related models, which are described in a more structured way [17]. The main principles of this entire class of models and methods are the following: non-hierarchical in the team, the ability of each member of the team to both define their tasks and find ways to solve them, as well as to define motivational models for themselves for successfully solving tasks, dynamic (situational) change of roles in team in response to challenges and new tasks, etc.

With regard to applied complex research in the indicated direction, it is worth noting here the works [18; 19] on the search for successful methodological

innovative designs for infrastructure projects, to which class the investigated projects of infrastructure restoration of Ukraine belong.

A general shortcoming of the standards and approaches that have been considered is the lack of a description of a syncretic approach in them, that is, the possibility of managing individual portfolio projects using one's own methodology.

On the other hand, research in the field of syncretic project management methodology [20] did not cover issues of organizing the interaction of self-managed project management teams guided by syncretic methodology with the external and internal environment of such projects. Therefore, the relevant topic of research, which will be presented in this article, can be considered relevant.

### **Purpose of the article**

The purpose of the article is the analysis of existing models of organizational structures, models of interaction of such structures with the environment, as well as the selection of models of the organizational structure of interaction of self-managed organizations with the internal environment of development projects that use the methodology of syncretic project management, and the determination of future directions of research in the context of the development of a syncretic approach.

### **The main material of the article**

Let's single out two tasks separately: 1) the task of choosing a model of interaction of development projects of self-managed organizations with the internal environment and 2) the task of choosing a model of interaction of development projects of self-managed organizations with the external environment.

Let's consider the solution of the first problem. Since development projects can be implemented by self-directed teams within an organization that is not entirely self-directed, one dimension of interaction patterns should be the response (or impact) to the non-self-managed internal environment.

On the other hand, depending on the model of the organizational structure in which the self-managed team functions (and such a structure can be, in particular, functional, matrix and project), the authority of the team can be determined by the model of interaction either with the top management of the organization, or (in the case of a strong matrix organizational structure) - with the project management office (PMO).

Taking into account the two main streams of the interaction model – reporting and management, we will propose a classification of interaction models of development projects of self-managed organizations with the internal environment of such projects.

1. By depth of management:
    - management without feedback;
    - control with simple negative feedback;
    - management with a complex transformation of data from the management object to management influence from the management entity.
  2. By type of management influences:
    - analytical influence - providing the object with the results of observing the object in the form of analytics and analytical conclusions;
    - methodological impact – providing the object with methodological assistance regarding management (contextually – management of the development project) within the framework of the used methodology;
    - advisory (advisory) influence – provision of advisory assistance to the object, which is advisory (non-mandatory) in nature;
    - direct management – giving the object direct instructions that are mandatory.
  3. By type of subjects of interaction:
    - self-managed team and self-managed organization;
    - self-managed team and organization with elements of self-management;
    - self-managed team and hierarchical organization;
    - hierarchical team and hierarchical organization (this type of interaction is outside the scope of our study).
  4. By type of organizational structure of the main organization:
    - functional structure;
    - weak matrix structure;
    - balanced matrix structure;
    - strong matrix structure;
    - composite structure;
    - structure "under the project";
    - "project office" type structure;
    - another structure.
  5. According to the methodology within which the interaction is carried out:
    - classical methodology;
    - Agile methodology;
    - hybrid methodology;
    - the company's specialized methodology;
    - syncretic methodology.
  6. By level of quantitative complexity of interaction:
    - simple interaction (number of interaction subjects - up to 10);
    - interaction of minor quantitative complexity (number of subjects of interaction – from 10 to 50);
    - interaction of medium quantitative complexity (number of subjects of interaction – from 50 to 200);
    - interaction of significant quantitative complexity (number of subjects of interaction – from 200 to 1000);
  - extremely complex interaction (the number of subjects of interaction is more than 1000).
  7. By localization of interaction:
    - face-to-face interaction within one country;
    - face-to-face interaction within several countries;
    - face-to-face interaction within several continents;
    - interaction exclusively in a virtual environment;
    - combined interaction (both virtual and face-to-face).
  8. According to the level of cross-cultural interaction:
    - monoculture projects;
    - projects combining two management cultures (mentality);
    - projects that combine many management cultures (mentalities).
  9. According to the degree of digitalization of interaction:
    - non-digitalized interaction;
    - partially digitized interaction;
    - fully digitized interaction;
    - fully digitized interaction with the integration of the appropriate module into the organization's unified information system.
  10. According to the interaction processing model:
    - direct interaction;
    - interaction according to the A-model (setting of interaction is carried out by the team);
    - interaction according to the B-model (setting of interaction is carried out by the main organization);
    - interaction according to the C-model (interaction takes place on the basis of arbitration between the settings of the team and the settings of the main organization);
    - interaction according to another model.
- Let us consider in more detail the last feature of the proposed classification, in particular in part A, B and C of interaction processing models.
- The results of the comparison of all interaction development models are shown in the table. 1 (comparison was carried out expertly). According to the results of the analysis, it can be noted that the fastest processing model is direct interaction, but it has many disadvantages, in particular, the lack of systematicity, the impossibility of supporting flexible methodologies, and the inability to syncretism. At the same time, the effectiveness and accuracy of interaction remains low.
- The A-model, like the B-model, pre-processes (prepares) the interaction. The advantage of the B-model over the A-model is the greater suitability of the B-model for the implementation of syncretic management.
- According to the results of the analysis, the C-model should be considered the best model due to its greater systematicity and efficiency compared to other models. The C-model better implements flexible

methodologies and has more opportunities (is more convenient) for the implementation of syncretic management. However, it loses in the speed of implementation of interaction and has greater complexity in implementation, which are its disadvantages, but it does not deny that it is better according to the list of criteria that were considered.

Let us present the proposed A, B and C interaction processing models and describe them.

*1. A-model of development projects interaction processing of self-managed organizations with the internal environment of such projects.*

In this model (in contrast to the model of direct interaction, when such interaction is carried out directly by team members with representatives of the main organization), an organizational and informational element of the model is provided in the form of an interaction correction module. Organizationally, this can be implemented in the form of the role of manager of interaction with the internal environment, which is assigned to one of the existing team members in parallel with the performance of other functions in the project. A best case scenario, appropriate for large projects and/or large teams, is when the team allocates a single specialist to perform the specified functions. In any case, the manager of interaction with the internal environment must systematize, categorize, order the interaction by

time, content and participants, as well as interpret information in both directions, present it in a form that is acceptable to the acceptors of information exchange.

Informationally, such a function must be supported by a certain IT system that implements communication support. Such an IT system can be in the form of a separate IT solution (Jira, Skype, messengers) or in the form of an integrated subsystem of a separate supersystem (Office 365, Google ecosystem, ERP system, etc.).

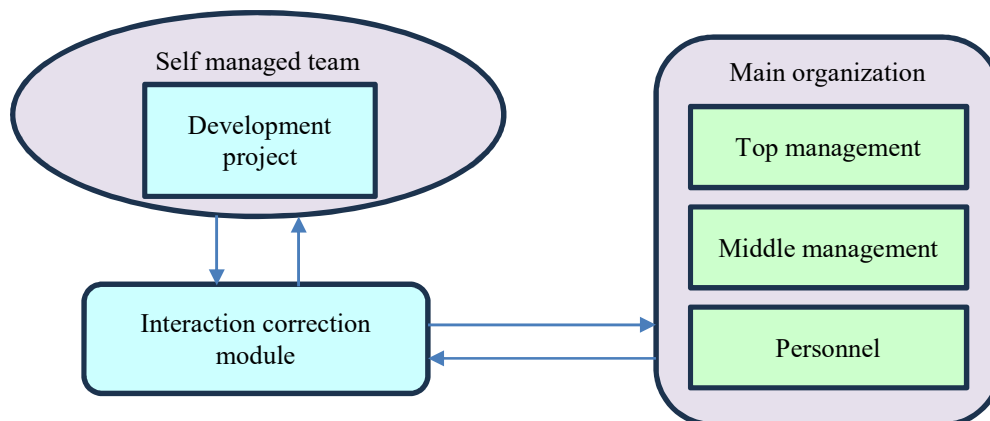
The A-model is characterized by the fact that the team of the development project is the leader in organizing communications with the environment. This gives more flexibility to the project, because the initiative and interpretation is on the side of the team.

However, the issue of organizational normalization of responsibility for communication with the project on the part of the main organization must also be fixed organizationally. Namely, among middle-level specialists (recommendable middle-level), an official should be identified who will be responsible (from the point of view of the role in the project) for communication with the project team through interaction with the person responsible for the team's communication with internal stakeholders.

Visualization of the A-model is shown in fig. 1.

*Table 1 – Interaction models comparison of self-managed organizations development projects with the internal environment*

№	Comparison parameter	Interaction model			
		Direct interaction	A model	B model	C model
1	Speed of interaction	+++	++	++	+
2	Systematic of interaction	–	++	++	+++
3	Effectiveness of interaction	+	++	++	+++
4	Complexity of interaction	+	++	++	+++
5	Support of classical methodologies in the model	++	+++	+++	+++
6	Support of Agile methodologies in the model	–	++	++	+++
7	The ability of the model to syncretism	–	+	++	+++



*Figure 1 – Interaction A-model of self-managed organizations development projects with the internal environment*

2. *B-model of development projects interaction processing of self-managed organizations with the internal environment of such projects.*

In this model (unlike the A-model), the interaction correction module is the responsibility of the main organization. Therefore, the establishment of rules, principles and standards of interaction with the development project is determined by the main organization, the initiative here is precisely on its side. In this case, interaction with the development project can be institutionalized in the main organization not only in the form of a role (when a middle-level manager, in parallel with the performance of basic duties, performs tasks related to interaction with the project), but also allocated as a separate position in the organizational structure.

Thus, an analogy can be made that the A-model is associated with a weak matrix organizational structure, while the B-model is associated with a balanced matrix organizational structure.

Instrumentally (in terms of processes and IT tools used), A-model and B-model are similar.

Visualization of the B-model is shown in fig. 2.

3. *C-model of development projects interaction processing of self-managed organizations with the internal environment of such projects.*

This model provides two-level coordination of interaction between the development project team and the main organization. At the first level, both interaction coordination modules are implemented - both from the side of the development project team (as in the A-model) and from the main organization (as in the B-model). In addition, a model of arbitration between the two previous models is assumed at the second level of coordination.

There are three possible organizational implementations of the arbitration model: 1) through the

parent organization's project management office, which can be compared to a strong matrix organizational structure; 2) through a team of external consultants (one consultant), who will conduct independent arbitration; 3) through the conclusion of a contract for the performance of the functions of the project management office with a separate independent company (on the terms of outsourcing). The specified arbitration is intended to improve the interaction between the development project team and the main organization, to minimize conflicts of such interaction, for independent examination of such interaction. Systematization of such interaction in the form of described and automated business processes will be an advantage.

Visualization of the C-model is shown in fig. 3.

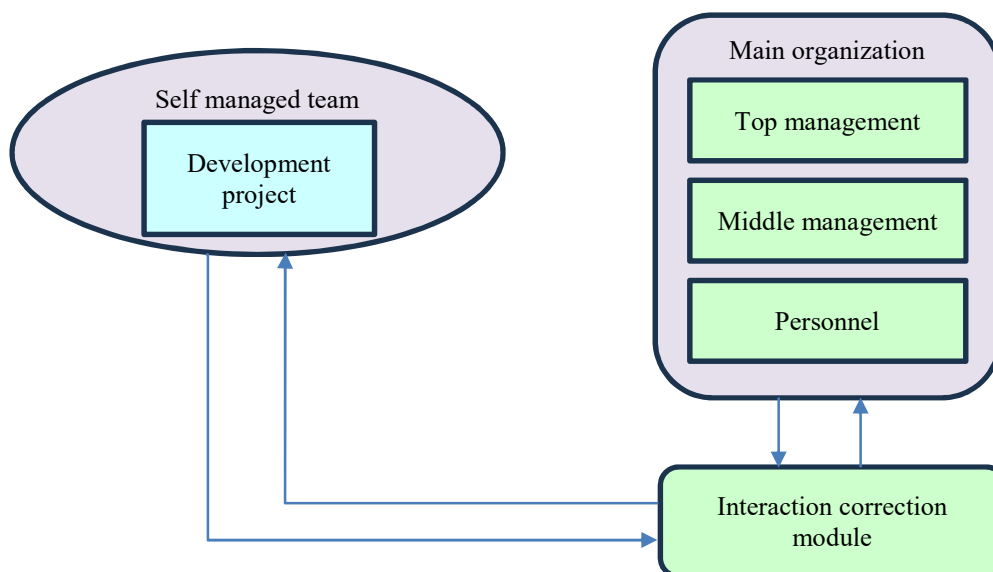
Let us conduct a SWOT analysis of the proposed set of models of interaction of development projects of self-managed organizations with the internal environment for use by self-managed organizations in infrastructure restoration projects. Let's highlight their strengths, weaknesses, opportunities arising from their application, and threats that may arise.

*Strengths.*

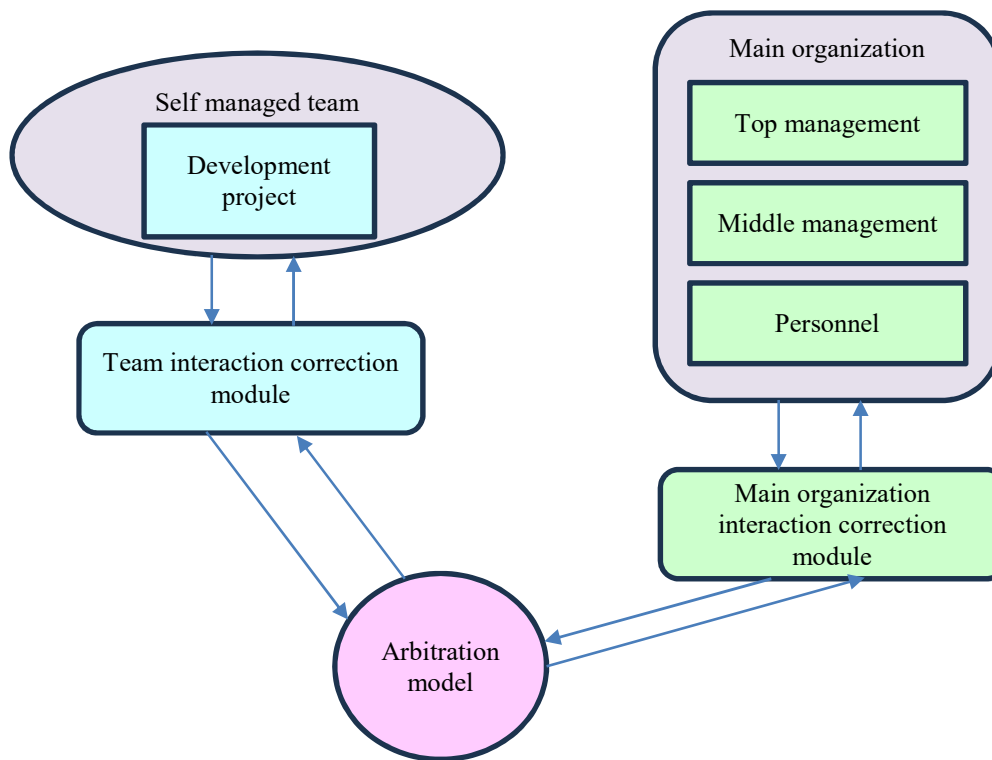
S1. Ensuring rapid interaction between the team of development projects and the main organization, minimizing conflicts of such interaction.

S2. Providing a variety of models used in the management of development projects of self-managed organizations, for many levels of complexity of the management system and many types of projects.

S3. Innovativeness, simplicity, but, at the same time, high relevance of the described models, their systematicity in the context of using syncretic project management methodology.



**Figure 2**– *Interaction B-model of self-managed organizations development projects with the internal environment*



**Figure 3** – Interaction C-model of self-managed organizations development projects with the internal environment

*Weakness.*

W1. Insufficient development and formalization of relevant scientific developments.

W2. Insufficient level of practical approval of the proposed models within the syncretic methodology.

W3. Relative complexity (perhaps excessive) for implementation by small self-managed teams and organizations.

*Opportunities.*

O1. The possibility of self-adjustment (adaptation) of interaction models due to the use of artificial intelligence elements in the arbitration module and/or in the interaction correction modules both on the part of the team and on the part of the main organization.

O2. The possibility of changing the management approach, which can be implemented by choosing one or another model (A, B or C) for different projects and under different conditions of the external and internal environment.

O3. The possibility of increasing the skills and general competence of project management participants in a self-managed organization. What will provide the foundation for increasing the efficiency of the management system for each subsequent project (portfolio).

*Threats.*

T1. The threat of methodological confusion in case of choosing an inadequate model of interaction due to an incorrect assessment of the external and internal

environment and corresponding changes in portfolio projects.

T2. The threat of incorrect settings of the correction modules and/or the arbitration module, as a result of which the interaction between the development project team and the main organization may not be effective enough.

T3. The threat of insufficient flexibility of formalized interaction processes, which can lead to the loss of self-management by the project team and/or development projects going beyond the limits set by the main organization.

According to the results of the SWOT analysis, it can be concluded that when using the capabilities of the proposed family of models in the context of using a syncretic development project management methodology by a self-managed organization, it is possible to overcome the corresponding threats, and the advantages outweigh the corresponding disadvantages.

We formulate the prospects for further research in the chosen direction based on the results of the conducted research:

1. Formalization of models of interaction correction modules at the level of corporate methodology of a self-managed project-oriented organization.

2. Formalization of interaction arbitration module models at the level of the corporate methodology of a self-managed project-oriented organization.

3. Formalization of interaction models of self-managed development project management teams with the external environment of such projects and the external environment of the main organization.

4. The use of artificial intelligence elements in interaction correction modules and interaction arbitration modules within the syncretic methodology of managing development projects of self-managed organizations.

Practical testing of models of interaction of self-managed development project management teams with the internal and external environment of such projects within the syncretic methodology of project management during the implementation of projects (portfolios of projects) of infrastructure restoration of Ukraine by self-managed organizations.

### Conclusion

The implementation of development projects of project-oriented organizations, which partially or fully carry out their activities on the principles of self-management, requires the use of new approaches and methodologies. One of such methodologies can be syncretic project management methodology, which allows individual parts of projects to be implemented using separate (isolated from other) methodologies. This may be the case for projects within project portfolios, where each project is managed by its own methodology, and these methodologies are not intermingled at the portfolio management level. Applying this approach to

portfolios of infrastructure restoration projects, where individual projects may be managed by participants from different countries (having different management cultures and using different methodologies) is practically valuable.

However, there are methodological gaps in the set of models and methods accompanying the functioning of the syncretic methodology. In particular, this applies to models of interaction of self-managed teams that manage development projects with the main organization to which the personnel of such teams belong.

This article proposed a classification of models of interaction of development projects of self-managed organizations with the internal environment of such projects, and also formalized three models of interaction of development projects of self-managed organizations with the internal environment of such projects (A, B and C models). A SWOT analysis of the proposed set of models was conducted, which confirmed their innovativeness and effectiveness.

The implementation of these models in projects and portfolios of infrastructure restoration projects of Ukraine (as well as in general the syncretic project management methodology within which they are developed) will allow to increase the efficiency of such projects, reduce time and costs, with a greater probability of ensuring that projects are invested in strict design constraints, that are inherent in the conditions of wartime.

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## ПІДБІР МОДЕЛЕЙ ОРГАНІЗАЦІЙНОЇ СТРУКТУРИ ВЗАЄМОДІЇ САМОКЕРОВАНИХ ОРГАНІЗАЦІЙ ІЗ ВНУТРІШНІМ ОТОЧЕННЯМ ПРОЄКТІВ РОЗВИТКУ

**Анотація.** Проведено аналіз організаційних моделей управління проектами та їх застосовність до управління проектами розвитку самокерованих організацій. Поставлено задачу вибору моделі взаємодії проєктів розвитку самокерованих організацій з внутрішнім оточенням. Як внутрішнє оточення розглянуто головну організацію, до якої належать учасники команди управління проектами розвитку. Запропоновано класифікацію моделей взаємодії проєктів розвитку самокерованих організацій з внутрішнім оточенням таких проєктів. Визначено десять ознак класифікації: за глибиною управління, за типом впливів управління, за типом суб'єктів взаємодії, за типом організаційної структури головної організації, за методологією, в межах якої здійснюється взаємодія, за рівнем кількісної складності взаємодії, за локалізацією взаємодії, за рівнем кроскультурності взаємодії, за ступенем диджиталізації взаємодії, за моделлю обробки взаємодії. Ідентифіковано різновиди моделей в межах кожної ознаки класифікації. Запропоновано три моделі взаємодії самокерованої команди управління проектом розвитку з головною організацією: А-модель, в якій налаштування взаємодії здійснюється командою; В-модель, в якій налаштування взаємодії здійснюється головною організацією; С-модель, в межах якої взаємодія відбувається на основі арбітражу між налаштуваннями команди і налаштуваннями головної організації. Надано графічні схеми реалізації зазначених моделей, проведено їх опис і надано характеристику. Проведено порівняння моделей обробки взаємодії команди проєкту із внутрішнім оточенням. Підкреслено переваги і галузь застосування кожної моделі. Проведено SWOT аналіз, виокремлено сильні сторони, слабкі сторони, можливості, що виникають при застосуванні зазначеного сімейства моделей обробки взаємодії самокерованої команди проєкту з внутрішнім оточенням у межах синкретичної методології управління проектами, і загрози, що можуть виникнути. Сформульовано галузі подальших досліджень у вибраному напрямі: формалізація моделей модулів корекції взаємодії на рівні корпоративної методології самокерованої проєктно-орієнтованої організації, формалізація моделей модуля арбітражу взаємодії на рівні корпоративної методології самокерованої проєктно-орієнтованої організації, формалізація моделей взаємодії самокерованих команд управління проектами розвитку із зовнішнім оточенням таких проєктів і зовнішнім оточенням головної організації, використання елементів штучного інтелекту в модулях корекції взаємодії та модулі арбітражу взаємодії в межах синкретичної методології управління проектами розвитку самокерованих організацій, практична апробація моделей взаємодії самокерованих команд управління проектами розвитку із внутрішнім та зовнішнім оточенням таких проєктів в межах синкретичної методології управління проектами при реалізації самокерованими організаціями проєктів (портфелів проєктів) відновлення інфраструктури України. Сформульовано висновки з проведених досліджень.

**Ключові слова:** управління проектами та програмами; самокеровані організації; синкретична методологія; організаційна структура; модель взаємодії; внутрішнє оточення

### Link to publication

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