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## INTERFACES MODELS BETWEEN SELF-MANAGED ORGANIZATIONS PROCESSES IN THE CONTEXT OF SYNCRETIC PROJECT MANAGEMENT METHODOLOGY

**Abstract.** *The article analyzes the models and methods used to share methodologies in projects, programs, and project portfolios. Relevant literature sources are analyzed, including project management standards and the solutions they offer. Particular attention is paid to hybrid project management methodologies. Three stages of methodology hybridization are identified. The difference between syncretic methodology and hybrid methodology is determined. Three concepts of interaction between the project portfolio management system (the core of the syncretic methodology) and the project management system are considered. A data model (for the methodology interface) that generates a project for exchange with the portfolio management system is described. A model for classifying interfaces between methodologies of individual projects (or methodologies of individual parts of one project) within the project management system of a project-oriented organization (portfolio) is proposed. The following classification criteria are proposed: by the purpose of the interface, by the degree of forecasting future changes in the external and internal project environment, by the degree of use of artificial intelligence, by the degree of universality (applicability to other types of projects and project portfolios), by the methodology of the central management system, by the flexibility of configuration, by the degree of interface automation. The most commonly used types of interfaces between methodologies are characterized by four features. A model of data exchange through interfaces within the syncretic methodology is proposed. A SWOT analysis is conducted, strengths, weaknesses, opportunities that arise when applying the proposed interface models within the syncretic project management methodology, and threats that may arise are highlighted. Areas of further research in the selected direction are formulated: formalization of industry models of interfaces of the syncretic project management methodology at the level of the corporate methodology of a self-managed project-oriented organization (for infrastructure projects); formalization of industry methods for implementing interfaces between methodologies of individual projects and the syncretic core of the project portfolio management system within the syncretic methodology (for infrastructure projects); development of models for using artificial intelligence elements in interfaces between methodologies of individual projects within the project portfolio managed by the syncretic methodology; practical testing of models and methods of interfaces between methodologies of individual projects within the project portfolio, guided by a syncretic methodology in the implementation of projects (project portfolios) of infrastructure restoration in Ukraine by self-managed organizations. Conclusions from the conducted research are formulated.*

**Keywords:** *project and program management; project-oriented organization; self-managed organizations; interfaces between methodologies; syncretic methodology*

### Introduction

Modern project and program management methodology is further developing and enriching in response to numerous turbulent environmental changes. Among the main factors of such forced development is the war caused by the aggression of the Russian Federation against Ukraine. The war has a strong impact on the

project and methodological landscape of the project and program management industry not only in Ukraine, but also in Europe and around the world.

Complex changes in project management methodology until recently were associated with the implementation and adaptation of the Agile methodology to projects, later – with the use of mixtures, mixes of methodologies and methodological hybrids. Currently,

one of the directions of development of project management methodology is the search for solutions that would meet the increasingly stringent requirements of the modern threatening and aggressive environment.

One such solution is the syncretic project management methodology proposed and developed by the authors. Its main feature is to provide the opportunity for individual parts of the project to use their own methodology for management. At the portfolio level, for example, such an opportunity may apply to each project in the portfolio. This property is of particular importance in infrastructure restoration projects, which are the proposed area of application of the syncretic methodology. Since there are a large number of participants representing different management cultures and countries, it is more difficult to persuade a project portfolio to use one methodology than to provide the opportunity to use its own methodology.

However, in this case, there is a methodological problem of interpreting the methodologies of each participant (each project team) at the level of the project portfolio management system. This problem requires the development of special models of the relationship between project management systems and the portfolio management system. We identify such models as models of syncretic methodology interfaces. This article is devoted to the development of such models.

### **Analysis of latest research**

The task of developing interfaces between different parts of the same project management methodology is a common task, the solution of which is usually contained in every project management standard on which a corporate methodology can be built. Let us analyze the most common methodologies in this context.

The most popular standard in the field of project management PMBOK proposes to establish a connection between the knowledge areas in project management through a separate knowledge area – project integration management. For such a connection, organizational (meetings, conferences) and information tools (IT systems, knowledge bases) are proposed. In the seventh edition of the PMBOK [1], a new knowledge area – tailoring – and the corresponding principle “Adapt depending on the context”, which can also be interpreted as a tool for the relationship between the components and areas of the project.

In the Japanese standard P2M (Program and Project Management for Enterprise Innovation), as a tool for interaction, a communication IT space (“ba” platform) is proposed for communication between project participants and stakeholders [2]. Such a space can be considered as a certain interface, since it contains artifacts of the project and its participants, has flexibility and the ability to adjust. In the British standard PRINCE2 [3], a certain analogy of the integration artifact can be

considered the field of knowledge “business case”, since it is proposed in the form of an information model that digitizes the results of all fields of knowledge and project artifacts through the calculation of its investment attractiveness, which must be constantly recalculated. In the new edition of the standard, an additional ability to effective interfaces can be considered the presence of models that allow combining PRINCE2 with Agile, ITIL, Lean, DevOps and Scrum.

The ISO standard for project management, which reproduces the structure of the processes of the classic PMBOK (up to, but not including, the latest edition), offers two processes (“management practices of project”) – 7.10 “Change control” and 7.13 “Communications management” – within which the implementation of interfaces between artifacts of different nature in the project can be envisaged.

In the flexible Agile project management methodology [5], such implementation can be envisaged organizationally during the so-called retrospectives (or “retrospectives of retrospectives”), informationally – in the form of storing and transforming artifacts in an information system (for example, Jira, created and supported by Atlassian).

A somewhat different level of interaction, and accordingly other models use the so-called “hybrid methodologies” of project management [6]. This class of methodologies initially, at the first stage (or, it is more correct to speak of the first hybridization method, since the three stages did not occur strictly sequentially and overlapped one another; however, for simplicity, we will call such methods stages), included a combination of frameworks of the same flexible project management methodology Agile. An example of such a hybrid is Scrumban, which is a combination (hybrid) of the Scrum framework and the Kanban framework. Subsequently, at the second stage of hybridization, the Agile methodology was mixed with one of the classic methodologies. Examples of such hybrids are the approach that combines the Microsoft project management methodology – MSF (Microsoft Solution Framework) and the agile project management methodology Agile (MSF + Agile).

At the third stage of hybridization, any methodologies are subject to mixing. At the same time, it is not necessary that one of the components of such a “hybrid” should be Agile or one of its frameworks. An example of such a framework can be MSF+CMMI. It is worth noting that hybrid project management methodologies are also studied in the context of application to projects, which is the object of scientific research by the authors [7].

The scientific issue of choosing project management methodologies and their coexistence has been studied in many sources, both in the context of a separate scientific problem [8] and in multi-project management standards, where such methodologies

should coexist within the framework of project program management [9] and project portfolios [10]. However, the issues of their synergistic coexistence and the syncretic context of such coexistence have not been sufficiently studied, they are mostly only outlined as promising areas of further research, even in the fundamental works of project management scientists [11].

It is also worth noting that the issue of the research of the hybrid and syncretic approach in organizations and teams guided by the principles of self-management [12, 13] and holacratic management [14] is insufficient. These principles are becoming increasingly widespread in project and program management, both in theoretical and practical aspects. Therefore, their application to organizations and teams guided by a syncretic methodology (or at least a hybrid one) is an urgent practical task, and the development of appropriate models and methods is an urgent scientific task. Some studies have already been conducted by the authors in this direction [15], but they did not sufficiently cover the issue of interfaces between the methodologies of individual projects within the syncretic approach. Therefore, it can be concluded that the topic of this article, which is devoted to the development of interface models between the processes of a project-oriented self-managed organization, can be considered urgent.

### Purpose of the article

The purpose of the article is to analyze existing approaches to models for combining project, program, and portfolio management methodologies, as well as approaches to their interaction in a single corporate project management system, and, based on such analysis, to propose models of interfaces between methodologies of individual projects within the syncretic project management methodology for self-managed organizations and to identify future research directions in the context of the syncretic methodology.

### The main material of the article

The interaction between different methodologies of individual projects at the level of the project portfolio management system (within the syncretic project management methodology) should consist in finding correspondences in the artifacts of the methodologies.

Let us consider three concepts of interaction between the portfolio management system (the core of the syncretic methodology) and the project management system.

#### 1. Data exchange.

Such a concept may exist when using a portfolio office of the “Watchtower” type (another name is “Weather Station”), when data circulates mainly in one direction – from the portfolio projects to the portfolio management system. The reverse data flow is limited to

periodic (but not frequent) provision of project target indicators from the portfolio management system.

#### 2. Methodological support.

Such a concept may exist when using a portfolio office of the “Strategic Program” type (another name is “Methodology Tower”), when data also circulates mainly in one direction – but in the opposite direction (unlike the previous type of project office) – from the portfolio management system to the portfolio projects. The reverse data flow is limited to the periodic (but not frequent) provision of actual project indicators to determine the effectiveness of the methodology used by the project.

#### 3. Direct management.

Such a concept may exist when using a portfolio office of the “Control Tower” type, when data circulates in two directions – from the portfolio projects to the portfolio management system, data on project performance is received, the reverse data flow from the portfolio management system regularly contains management impacts (corrective impacts) and, periodically, target performance indicators.

For the most fully functional, third option (direct management), we will describe the data model (for the methodology interface) that generates a project for exchange with the portfolio management system:

$$D^p = \langle M, T^{par}, A^{mod}, A^{met}, H, S, R, G \rangle \quad (1)$$

where  $D^p$  – a data of the project included in the portfolio;  $M$  – the methodology used in the project (a set of essential characteristics of the methodology);  $T^{par}$  – a set of target project parameters (time, cost, quality, etc.);  $A^{mod}$  – a set of artifacts of management models used in the project within the project methodology;  $A^{met}$  – artifacts of management methods used in the project within the project methodology;  $H$  – a set of characteristics of the project’s labor resources;  $S$  – a set of project stakeholders and their expectations (values that they expect to receive from the project);  $R$  – a set of project risks;  $G$  – a set of project targets (strategic indicators, project plan indicators, KPIs, etc.).

We will also propose a model for classifying interfaces between methodologies of individual projects (individual parts of one project) within the framework of the project management system of a project-oriented organization. We will highlight the characteristics of the classification and types of interfaces within each such characteristic.

#### 1. By the purpose of the interface:

- interface of models and methods;
- interface of indicators;
- interface of roles in the management structure;
- interface of the structure of the managed project;
- interface of the structure of the managed project portfolio (managed set of projects).

The characteristics of the most commonly used types of interfaces according to four parameters, obtained by expert means (using the expert assessment method), are given in Table.

Table – Characteristics of the most common types of interfaces between methodologies

№	Interface type	Degree of difficulty	Versatility for use in other organizations	The feasibility of using artificial intelligence	Degree of likely future variability
1	Interface of models and methods	+++	+	+++	++
2	Interface of indicators	+++	++	++	+++
3	Interface of roles in the management structure	++	++	++	+
4	Interface of the structure of the managed project	++	+++	+	+
5	Interface of the structure of the managed project portfolio (managed set of projects)	+	+++	+	++

2. By the degree of forecasting future changes in the external and internal project environment:

- reactive interfaces;
- interfaces with elements of proactivity;
- proactive interfaces.

3. By the degree of use of artificial intelligence

- without the use of artificial intelligence;
- using elements of artificial intelligence;
- built on artificial intelligence.

4. By the degree of universality (applicability to other types of projects and project portfolios):

- for specific types of projects;
- for industry projects (a specific industry);
- universal interfaces.

5. By the methodology of the central management system:

– based on one classical methodology;

– based on one flexible framework of Agile methodology;

– based on a hybrid of Agile frameworks;

– based on a hybrid of a Agile framework and classical methodology;

– based on a syncretic methodology.

6. By flexibility of configuration:

- non-configurable interfaces;
- partially configurable interfaces (some parameters can be configured for a specific control system);
- fully flexible interfaces.

7. By the degree of interface automation:

– non-automated interfaces (at the level of regulated processes);

– partially automated interfaces (require the participation of specialists not only for configuration, but also for operation);

– automated interfaces (require the participation of specialists only for configuration);

– self-configuring interfaces.

The model of data exchange through interfaces within the syncretic methodology is shown in Fig. 1.

According to the given model, data of models and methods from the project portfolio management system (Di) is supplied to the data router, which distributes them across project management industries (U). Further, such

data is interpreted into data of models and methods of each industry through interpreters (I).

After that, the data is processed in the models and methods of the project portfolio management system and the data is transferred back from it to the management systems of each project. To aggregate the data of industry models and methods and direct them in the reverse direction, a data translator to the project (T) is used. Therefore, we can conclude that in this model the interfaces are bidirectional. In this case, data is exchanged between different project methodologies and the interpretation of such data by the portfolio management system in such a way that the language of exchange is the language of the methodology that each project is managed by.

Let's conduct a SWOT analysis of the given model of data exchange through interfaces, which is used within the syncretic project management methodology. Let's highlight the corresponding strengths, weaknesses, opportunities that arise when using such a model, as well as threats that may arise.

#### *Strengths.*

S1. Providing the syncretic methodology with the ability for each project to be guided by its own methodology when managing a project portfolio.

S2. Systematizing the interaction between portfolio project management systems and the portfolio management system, providing the basis in the form of formalization for the digitalization of such interaction.

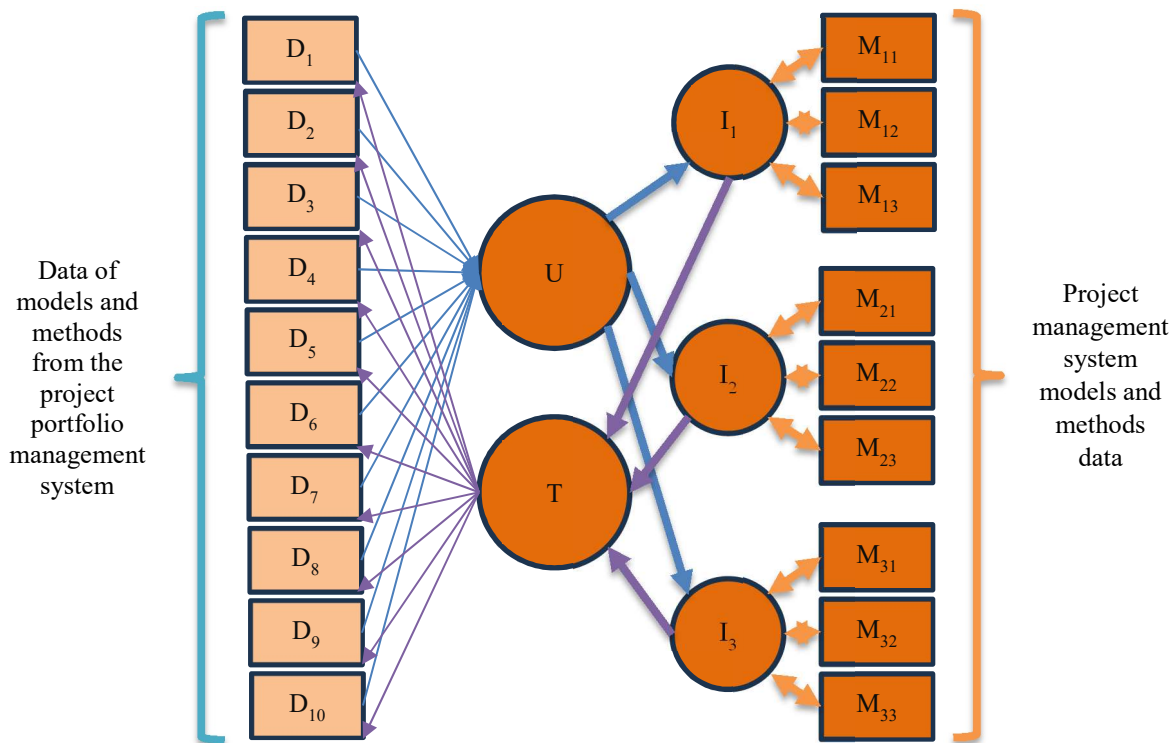
S3. Consistency of the model with the project activities of project-oriented organizations, its relevance for increasing the efficiency of such activities.

#### *Weaknesses.*

W1. Relative complexity of implementing a digitalized format for the interaction of the project and portfolio management system.

W2. Relatively long duration of the management system reconfiguration in the event of a fundamental change in the portfolio management methodology (adding new areas of knowledge, etc.).

W3. Insufficient number of existing case studies of implemented projects for practical testing of the proposed model, which makes it impossible to use best practices when creating the first management system in an organization that will be built on the proposed model.



**Figure 1** – Data exchange model in syncretic methodology through interfaces U – router (by industry), I – industry interpreter, T – data translator to the project

#### Opportunities.

O1. Possibility of implementing the syncretism principle for any number of methodologies used by portfolio projects. The limitation arises due to the number of methodologies themselves that can be used (tested and developed in the project world).

O2. The possibility of involving other methodologies in the corporate management system (thanks to interfaces between methodologies), which are managed not only by the project-oriented organization itself, but also by other project participants (project portfolio) and stakeholders.

O3. The possibility of scaling and adjusting the management system to implement different types of project portfolios of a project-oriented organization.

#### Threats.

T1. The threat of imbalance of the interface system (the threat of instability) in cases of a highly turbulent environment (highly intensive, long-term and multi-vector impacts on the management system).

T2. The threat of difficulties in adapting interfaces when a new project management methodology (new methodologies) appears, which would radically differ from existing ones (an example of such a discrepancy could be the difference between flexible and classical methodologies). Then the interpretation of data in the interfaces may require more complex settings.

T3. The threat of incorrect configuration of the parameters of the syncretic model, in particular interfaces

to individual methodologies, as a result of which the methodologies may be mixed, or the impact of the core of the syncretic management system on individual projects will not be effective enough. There is also a related threat of inaccuracy of forecasts that will implement syncretic methods in portfolio management, as a result of which the effectiveness of the syncretic methodology methods will be reduced, which may lead to refusal to use it and/or portfolio projects going beyond the limits set by customers.

According to the results of the SWOT analysis, it can be concluded that using the capabilities of the proposed models of syncretic methodology interfaces, it is possible to overcome the threats that may arise, and their strengths outweigh the weaknesses.

Let us formulate the prospects for further research in the chosen direction based on the results of the research:

1. Formalization of industry models of interfaces of the syncretic project management methodology at the level of the corporate methodology of a self-managed project-oriented organization (for infrastructure projects).

2. Formalization of industry methods for implementing interfaces between methodologies of individual projects and the syncretic core of the project portfolio management system within the syncretic methodology (for infrastructure projects).

3. Development of models for using artificial intelligence elements in interfaces between

methodologies of individual projects within the project portfolio managed by the syncretic methodology.

4. Practical testing of models and methods of interfaces between methodologies of individual projects within a project portfolio guided by a syncretic methodology in the implementation of projects (project portfolios) of infrastructure restoration in Ukraine by self-managed organizations.

### Conclusion

The development of an effective methodology for the implementation of complex modern projects and project portfolios with many participants is a relevant scientific task. This task is particularly relevant in the restoration projects of a infrastructure of the Ukraine, since such projects are subject to increased requirements for the speed of their implementation, while maintaining the appropriate level of quality, and additional difficulties are added to implementation during the war caused by the aggression of the Russian Federation. The large number of participants in such projects makes it necessary for the methodology to have such an opportunity that would provide each participant with the ability to use the habitual project management methodology or part of the project for the implementation of which the participant will be responsible. Such tasks are designed to be solved by the syncretic project management methodology. Its main instrumental component should be the interfaces of methodologies - such interpreters that would transform data from the methodologies of each project for their interpretation in the universal language of the core of syncretic project portfolio management.

This article analyzes the models and methods used to share methodologies in projects, programs, and project portfolios. Relevant literature sources are analyzed, including project management standards and the solutions they offer. Particular attention is paid to hybrid project management methodologies. Three stages of methodology hybridization are identified. The difference between syncretic methodology and hybrid methodology is determined. Three concepts of interaction between the project portfolio management system (the core of the syncretic methodology) and the project management system are considered. A data model (for the methodology interface) generated by the project for exchange with the portfolio management system is described. A model for classifying interfaces between methodologies of individual projects (or methodologies of individual parts of one project) within the project management system of a project-oriented organization (portfolio) is also proposed. The most commonly used types of interfaces between methodologies are characterized by four characteristics. A model of data exchange through interfaces within the syncretic methodology is proposed. A SWOT analysis of the given model of data exchange through interfaces, which is used within the syncretic project management methodology, is conducted. A conclusion is made regarding its potential effectiveness. Areas of further research in the chosen direction are formulated.

The development of interfaces of the syncretic project management methodology, their effective application for the implementation of restoration projects within the syncretic approach to management, can increase the probability of success of such projects, bring closer the prosperity of Ukraine after the victory.

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### МОДЕЛІ ІНТЕРФЕЙСІВ МІЖ ПРОЦЕСАМИ САМОКЕРОВАНИХ ОРГАНІЗАЦІЙ У КОНТЕКСТІ СИНКРЕТИЧНОЇ МЕТОДОЛОГІЇ УПРАВЛІННЯ ПРОЄКТАМИ

**Анотація.** У статті проведено аналіз моделей і методів, які впроваджуються для спільного використання методологій в проєктах, програмах і портфелях проєктів. Проаналізовано відповідні літературні джерела, зокрема стандарти в галузі управління проєктами і рішення, що в них пропонуються. Особливу увагу при цьому було приділено гібридним методологіям управління проєктами. Ідентифіковано три етапи гібридизації методологій. Визначено відмінність синкретичної методології від гібридної методології. Розглянуто три концепти взаємодії між системою управління портфелем проєктів (ядром синкретичної методології) і системою управління проєктом. Описано модель даних (для інтерфейсу методологій), що генерує проєкт для обміну зі системою управління портфелем. Запропоновано модель класифікації інтерфейсів між методологіями окремих проєктів (або методологіями окремих частин одного проєкту) у межах системи управління сукупністю проєктів проєктно-орієнтованої організації (портфеля). Ознаками класифікації пропонуються такі: за призначенням інтерфейсу, за ступенем прогнозування майбутніх змін зовнішнього та внутрішнього проєктного середовища, за ступенем використання штучного інтелекту, за ступенем універсальності (застосовності до інших типів проєктів та портфелів проєктів), за методологією центральної системи управління, за гнучкістю налаштування, за ступенем автоматизації інтерфейсу. Наведено характеристики найбільш уживаних типів інтерфейсів між методологіями за чотирма ознаками. Запропоновано модель обміну даними через інтерфейси в межах синкретичної методології. Проведено SWOT аналіз, виявлено сильні сторони, слабкі сторони, можливості, що виникають при застосуванні запропонованих моделей інтерфейсів у межах синкретичної методології управління проєктами, і загрози, що можуть виникнути. Сформульовано галузі подальших досліджень у вибраному напрямі: формалізація галузевих моделей інтерфейсів синкретичної методології управління проєктами на рівні корпоративної методології самокерованої проєктно-орієнтованої організації (для інфраструктурних проєктів); формалізація галузевих методів реалізації інтерфейсів між методологіями окремих проєктів і синкретичним ядром системи управління портфелем проєктів у межах синкретичної методології (для інфраструктурних проєктів); розробка моделей використання елементів штучного інтелекту в інтерфейсах між методологіями окремих проєктів у межах портфеля проєктів, що керується синкретичною методологією; практична апробація моделей і методів інтерфейсів між методологіями окремих проєктів у межах портфеля проєктів, що керується синкретичною методологією при реалізації самокерованими організаціями проєктів (портфелів проєктів) відновлення інфраструктури України. Сформульовано висновки з проведених досліджень.

**Ключові слова:** управління проєктами та програмами; проєктно-орієнтована організація; самокерована організація; інтерфейси між методологіями; синкретична методологія

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