

KNOWLEDGE ORIENTED APPROACH TO PORTFOLIO MANAGEMENT APPLICATION

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Abstract:

Project portfolio management is the highest scope to view corporate projects. At the same time portfolios are quantifiable channels through which elements of a corporate strategy are delivered. Although there is a considerably evident path of expanding management methodologies from the ones focused on independent projects, through programmes to portfolios, application of portfolio standards is still insufficiently analysed by academia. Not only little has been revealed on the circumstances of launching project portfolio management in business environment, but there is also a gap in the knowledge on indicators of its successful implementation. On the basis of the scarce literature on the subject matter, the authors propose a hypothesis that the knowledge oriented approach toward adoption of portfolio management seems more effective than the process oriented one. The given assumptions are corroborated in the course of a case study of a company whose core business has the nature of continuous processes. However, all strategic changes into the internal and external operations are executed as projects. Thus, the company project maturity has reached the level at which the need for portfolio management methodology adoption becomes not only apparent, but also inevitable. The article has been inspired by a suggestion that there is no investigation into factors influencing fruitfulness of portfolio mechanisms introduction. It revises the existing publications on the issue and it contributes to the professional literature by giving real business examples of some of the assumptions and extending the current concepts into further hypotheses.

Keywords: project portfolio management, knowledge management, project maturity, corporate strategy

1. INTRODUCTION

In the theory and practice of project portfolios there is sufficient evidence for the benefits of implementing a portfolio management (PfM) methodology, especially when a company is already experienced at project execution and has a decent process management maturity. At some point in the course of strategic management development it occurs that processes, projects, strategic objectives and knowledge management deliver more benefits when their management is consolidated. Such consolidation demands one management plan that will set objectives to all the above mentioned components: processes, projects, single initiatives, general business goals and knowledge management. A strategic portfolio or a project portfolio, however it is named, offers taking project execution to the higher level, where you can measure the impact of project deliverables on the benefits of the whole portfolio and feed the strategic management level with such knowledge that will have the capacity to optimise or actualise it on the go.

The paper introduces the main encyclopaedias of project and project portfolio knowledge and gives a number of selected examples of how the subject literature challenges the matter in question. Further, it touches why portfolio methodologies are applied in general and what can affect its application success. Finally, there is a description of a particular situation in a company where portfolio was re-applied on the basis of an analysis of its portfolio management efficiency that revealed considerable gaps in the portfolio processes, especially at the highest level where the general strategic objectives were set. The paper is an attempt at providing arguments for raising the awareness of the significance of knowledge management. It may as well serve as the background for the potential future research into the success of the project portfolio implementation on the basis of the variables here presented: the PfM application benefits, the success factors and the two approaches to the implementation presented: the process oriented and the knowledge oriented one.

2. THEORETICAL BACKGROUND

2.1. What is project portfolio management (PfM)?

A project portfolio's major role is to be a bridge between a corporate strategy and its projects and operations. As its main components are projects, programmes, sub-portfolios, processes and single tasks a portfolio's job is to coordinate, prioritise, evaluate, initiate or terminate its components. In the so-called 3 p management (projects, programmes, portfolios) the last one is not only the broadest in the scope, but it is also the only one which, by definition, does not have a defined end. In other words, while definite beginnings and ends can be scheduled for both, projects and programmes, portfolios do not have a planned termination date. They do not share with the other two the feature of being unique (not continuous or recurrent) and focusing only on specific deliverables. On the contrary, a portfolio is like an ongoing channel carrying out projects, programmes and processes. Moreover, it changes along the way as it adjusts to "evolving organizational requirements" (Enoch, 2010, p.1). Project portfolios represent such a sphere of corporate governance that is between an executive and a strategic level. In other words, through portfolios the targets of a business model, a company strategy or its mission (or whatever you call the top objectives) are converted into functional exercises.

2.2. What are the main sources of knowledge on portfolio management for professionals?

There are a few main sources of knowledge that create a credible reference frame for discussing aspects of project portfolio implementation and management. The below listed publications function as guidebooks or knowledge archives that offer a comprehensive description of the flow of portfolio management processes, their products, requirements, roles, benefits, risks and other key aspects (Muller, 2013). The general summary of the hereby guides is that they have an explanatory or instructing role, rather than persuasive, and they are collections of best practices that constitute all-inclusive bodies of knowledge.

The first one is Harry Max Markowitz's (1959) model of efficient portfolios of securities, also called Mean-Variance Model. The model's primary aim was to help manage investment risks and it was used as so by financial institutions for years to be eventually extended onto the project management reality. The key aspects of organisational process management outlaid by Markowitz's became the very basis

for project and portfolio methodology in general, not only for managing financial risk. For example the following premise that “a portfolio analysis starts with information concerning individual securities and ends with conclusions concerning portfolios as a whole” (Markowitz, 1959, p. 3) represents the essence of the cascade structure of projects in relation to portfolios.

The 1950s were the very times when the theory of securities portfolio started to develop as there emerged the need to adjust the ideas of rationality to the conditions of uncertainty. The then ultimate objective was to create a pricing model that would allow for more diversification and lower risk when predicting the expected return. A few years after the release of Markowitz’s *Portfolio Selection*, William Sharpe published his Simplified Model For Portfolio Analysis, which was an extension of one of Markowitz’s three assumptions: the process of determining an efficient set should be approached by analysing the estimates (Sharpe, 1963, p. 277). Although the whole concept of portfolio by Sharpe was targeted exclusively at dealing with investment risk, it may be today deemed as hatching of portfolio prioritisation techniques and it laid the foundation of what portfolio efficiency means.

In 2005 Markowitz’s model became the background for creating the second main knowledge vault on project portfolios, that is the Project Management Institute (PMI) Standard for Portfolio Management (Gasik, 2001, p.1). Through the constantly growing community of professionals within and around the Project Management Institute, its standards have been gaining more recognition. As the PMI enhances the project management guild also by offering credentials, the portfolio standard has been added to the list in 2013.

The third one is the Organizational Project Management Maturity Model or OPM3® which originated in 1998 from an extensive analysis by PMI of the existing organisational maturity models (of which the most common was Capability Maturity Model). The outcomes of the investigation were aligned with the standards of the processes delineated in the Project Management Body of Knowledge (PMBok) and as a result the first edition of OPM3 was published in 2003.

The fourth main reference book is Management of Portfolios (MoP) whose sponsor is the UK Office of Government Commerce. The office’s general objective is to provide support to public sector organisations in the field of managing processes, especially those related to service delivery. Project management along with supply chain management and risk management is the pivotal industry process. The OGC recognises the importance of process efficiency that results in higher value for money for taxpayers. Thus, by the governmental advocacy of best management practices, the professional community’s process maturity increases.

There is at least one more body of knowledge issued by the Office of Government Commerce that has substantially contributed to the global collection of prime project portfolio management procedures, that is the P3O: Portfolio, Programme and Project Offices. The guide’s major target is to advise on how to organise functional teams and operational units executing projects, programmes and portfolios within a corporation. While its methodology allows for various flexible working groups structures, it endorses the rigidity of project execution processes.

Finally, the last key reference for the project management profession is the Association for Project Management Body of Knowledge first published in 1992. However, it is not as comprehensive as the other since instead of stipulating intricacies of all the processes workflow assets, inputs and outputs, it presents an overview of a series of particular aspects of all three: projects, programmes and portfolios. This BoK provides a review of the current issues in the field and also refers to particular elements of the context of PPPM (project, programme and portfolio management), such as corporate governance or the tights between projects and a strategy.

3. THE CONTEMPORARY CHALLENGES OF PROJECT PORTFOLIO MANAGEMENT. THE LITERATURE REVIEW

The project management literature has already become vast and although there still are considerable gaps in both, the research and the theory on project portfolios. On the one hand the management practice has been executed for at least six decades (Martinsuo, 2013, p. 796) and it seems there is enough matter for case studies, especially in the engineering industry or, more recently, in the IT business. However, on the other hand it is a relatively young field of study as an academic discipline” (Turner, 2013, p.7).

Apart from the above mentioned contributions that are deemed foundational to the archive of knowledge and best practices of portfolio management (PfM), there are numerous works on specific aspects of PfM in the subject literature. For the purpose of drawing proper context for the arguments in the hereby paper, the portfolio issues have been divided into categories which revolve around the concept of managing knowledge in portfolios. In order to maintain a clear track of concepts in the hereby article, there will be mentioned and briefly exemplified only a few ones that are key to the issues of portfolio application and knowledge management. They are: best practices, resource management, psychological aspects of PfM and knowledge management.

3.1. Portfolio best practices

The PfM Methodologies provide us with the tools and techniques to align and prioritise projects in a portfolio, manage risk systematically, compare the progress of the components to the overall portfolio progress curve and perform trends analysis. But, on the basis of the provision given by the methodologies that each method has the capacity of being customised and modified to a particular environment and project requirements, there are numerous best practices registered and shared by the professional community.

There are two aspects related to PfM best practices in general. One is that they all derive from the fundamental drive to optimise the executive processes. The other one is that all the best practices are the so-called knowledge items that exhibit their full potential in the mature process of knowledge management (Chen, 2009, p.1585). To put it simply, best practices play their role only when shared and enriched by the experience of other members of the PfM community, the wider the better. At the same time it is too simplistic to say that knowledge has to be shared, it will not be shared just by exposing it to the public, it needs to be managed, that is there need to be mechanisms promoting its quality, usefulness, development or prioritisation. The two major categories of portfolio best practices that represent the main trends in the subject literature are: strategic alignment and maximising its value.

When it comes to the first one, portfolio practices exceed the scope of a given portfolio both ways, to the top of an organisation's business model, and to the bottom, all the way down the corporate governance reality to the lowest levels where a corporate strategy embeddedness is tested. Such issues as a portfolio capacity, complexity and conflicts were analysed, inter alia, by Fernandes (2014) who identified improvements to the PfM processes at the level of strategic alignment (the level at which the components and general objectives of a portfolio line up with the goals of a company business strategy). The study results in creating a framework of particular project management betterments and their embedding factors. What adds value to this study of PfM best practices is that the conclusions are put against a reliable quantitative and diverse background of worldwide practitioners' experience.

Considering the value of portfolio management, Blichfeldt and Eskerodt (2008) found that such activities as initial screening, concurrent prioritisation and resource allocation do not represent a countable value. It means they are meta processes that do not bring project deliverables by itself, but may influence the value of a portfolio if there is too much management of meta processes in comparison to achieving the milestones. The concept of PfM value derives from the idea of a process efficiency, that is, how much effort and time it consumes in relation to the value of changes it in fact delivers. Best practices in this field are enriched by the vast scope of operations research. Such practices as the critical path (CPM) or the evaluation and review technique (PERT) or portfolio roadmaps for deliverables of benefits are the absolute foundations of PfM best practices. The recent trends attempting at bringing value to operations are related with measuring the portfolio earned value and forecasting either the product delivery time or prospect benefits provision.

3.2. Resource management

As projects are commonly interpreted as managing limited resources, organising man-hours is one of the major tasks of a project manager. Project team assembly patterns have long been in the centre of attention of analysts of management schemes. Portfolios in the context of resource allocation are presented as multi-projects. In other words, what is a challenge in the aspect of resource allocation in a single project, is multiplied in a portfolio (Akbar, 2014). There is the demand – supply competition

between the projects which feeds various mechanisms of human resource management and the flow of knowledge between the stakeholders.

Engwall and Jerbrant (2002) analysed one of such mechanisms, which they called “the resource allocation syndrome” and which they viewed as “the number one issue for multi-project management” resulted from severe multitasking. The author’s objectives were to see whether there are any operational issues common to portfolios and what underlying factors are their causes. It was observed that the fact that there is one source of manpower, project managers often compete for resources. As a result, such portfolio fundamentals as project prioritisation or scheduling revolve around distribution of personnel. In lack of project staff overloading, there occur the so-called firefighting steps, such as rapid resource relocation, which, according to the authors is only a temporary solution. The resource allocation syndrome results in inefficient scheduling, retroactive prioritisation, over commitment and a number of unmonitored interfaces (inter dependencies) between the projects. The analysis concludes with a generalising manifesto to address issues beyond resource allocation and to reconceptualise managerial procedures. However, no specific solutions are provided here.

Barbro Anell (2000) addressed the issue of “adapting to fluctuations in demand” between projects and within one organisation. The author also challenges the concepts of complexity and uncertainty versus standardisation and modelled routines. While a portfolio’s complexity and uncertainty are partly controlled by such methodological tools as a communication plan or a risk log, flexibility of a project shall not fall below a particular level (Muller, 2008, p.31). There is a hypothesis that the highest efficiency of project processes are achieved at a particular level of formal flexibility that on the one hand is low enough to manage risks effectively, and on the other hand is high enough to feed team creativity and engagement. What Anell points out, *inter alia*, is that the challenge of managing portfolio is to minimise the gaps and the heaps, that is, the lack of resources and the knowledge and the overdrafts when the manpower is not sufficient. The way human resource and performance indicators converge with knowledge management is the notion that “systematic evaluation of the portfolio’s balance creates the feed-back necessary for learning”.

3.3. Psychological aspects of PFM

Modern organisations need professionals not only with technology and business process experience, but they openly admit that they also look for team players with particular soft skills (Bouraad, 2008, p.74). There is abundance of publications on behavioural psychology influence in the theory and science of management. When considering or initialising adoption of project portfolio management, it has become a common practice to support the process of change by it has become a good practice to support the process of change by getting hands also on the common source of uncertainty: the human resources (Creasy, 2013). Indeed, opportunism of the personnel is frequently listed as a project portfolio risk. Bouraad (2008) identified a set of competencies that the operations manager shall exhibit. They are, among others: particular mental attitudes or a specific personal identity, that in general might be referred to as “how to be”.

There is nothing inventive in the notion that a specific mental / emotional character is required from a professional team player. It only should be emphasised that the attempts to predict, measure or programme the “how to be” part or a corporate role have become as formalised as the “know what” part: knowledge of methods, practices or solutions. It has become particularly true in organisations that exhibit a relatively higher level of project portfolio maturity, when the roles in the executive process are divided into functional competencies and authorities (Enoch, 2010, p.15). When the level of the project maturity rises, there is greater awareness of the intangible factors. The reason for that is that “organizations want to use the assessment as a tool to identify specific areas of improvement” (Pennypacker, 2005, p. 31) and in the course of these improvements they realise the value of both, having more frequent time intervals of performance assessment and attempting at more sophisticated human resource methods (Pennypacker, 2005, p. 31).

4. PFM APPLICATION

4.1. The reasons.

Before looking into factors that can make application of a project portfolio methodology successful, one should first consider the motives for initiating the process. The common reasons that an organisation get to the point in its development to decide on adopting the highest level of portfolio management are tightly related to the benefits of PFM. In other words, portfolio management benefits are synonymous to the reasons it is introduced and they are listed below:

1. Operationalise a corporate strategy. PFM may be regarded as a means of organising practical, measurable steps that facilitate execution of business objectives; it is a response to the need to track and map processes / tasks / objectives to the strategy,
2. Prioritize the right change initiatives. Change the content or the priority of various investments in a way that makes it possible to revise the operational goals against the strategic objectives as a continuous process,
3. Analyse projects from the perspective of their benefits, not only their deliverables, measure the impact of changes / report on performance strategic operations beyond a particular project (Sicotte, 2008),
4. Manage risk better. Having an extended view on the projects' trends enables managers to take corrective steps and create contingencies earlier,
5. Allocate resources more efficiently and in a more flexible way that allows for moving people between projects, reacting to issues faster and lowering the impact of resource or data gaps (Unger, 2014),
6. Get more efficient and effective, that is provide more with less input. Apart from resource allocation this idea applies to budgets and time that is not wasted, especially on managing meta processes that, as mentioned above, do not create value directly (Garcia, 2003),
7. Strengthen embedment of corporate governance, partly by integrating resources, knowledge and tools, and partly by having to maintain focus on the practical and doable aspects of a corporate vision; pass on strategic objectives and priorities down (Kostelac, 2012),
8. Empower the top management with more objective decision means. They will not have to rely merely on declarative feedback from various project managers, but will be able to validate the data from a number of perspectives (top-bottom, bottom-top or across the portfolio components),
9. Get to the higher level of an organisational maturity, especially thanks to raising the level of knowledge management. PFM application influences the corporate culture in various ways (there is more integration, process management becomes leaner, there is more management by objectives than by an organisational structure) (Edwards, 2009, p.118),
10. Enable achievement of considerable business sustainability. Regardless of diverse definitions of what sustainability means for particular businesses, on the basis of the notion that such achievements as sustainability or competitive advantage are of a very permanent nature and need constant reevaluation and confirmation, PFM application provides data (statistics) and knowledge (best practices) to forecast the future directions of the business model and the performance of the strategic operations.

4.2. The success factors.

Judging on the basis of the fact that the development of project portfolio methodologies as the ultimate level of deciding on strategic changes in a company is quite recent when compared to the development of the methods of the portfolio of financial risk management, the overall impression of the authors of this paper is that PFM implementation leaves a lot of room for improvement.

Indeed there are numerous authors who emphasise that there is not enough justification in the matter in question and that its practical aspects have not been sufficiently investigated and definitely characterised. Maizlish and Handler (2005) report that it is frequent that PFM is adopted but not actively executed (fewer than 20% companies) and that the realm is still too obscure and has not gained a decent number of its advocated in the professional community. Levine (2005) "states there is a desire in organisations to implement PFM capability, even tough, in some instances they have little interest in project management itself" (Enoch, 2010, p.2). The common reality of corporate portfolio management is that the methodological schemes are incomplete or the management tools, such as operationalization criteria are not exhaustively defined. It may particularly apply to those organisations

where some portfolio approach is executed when it comes to taking financial decisions, but not to delivering the whole collection of a company's strategic objectives. So what influences the success of PFM application?

The professional literature suggests there is a number of criteria that indicate whether implementing portfolio management has been successful. The criteria are listed as follows:

1. Project portfolio complexity,
2. The source and direction of the adoption incentive. The involvement of sponsors / top management,
3. Negative / positive external reinforcement. Negative: high cost of low performance,
4. Prior experience in IT project management whose evaluation methods were advanced. Fluency in applying criteria and measuring performance progress at lower organisational levels makes operationalization of portfolio objectives more doable. It is easier to see that the change is a matter of scaling up,
5. Unavailability of resources,
6. Higher financial risk of projects,
7. Greater external market uncertainty,
8. Greater level of strategy embeddedness,
9. Higher level of organisational maturity.

However, regardless of the above telling examples of scientific evaluation, indicators of portfolio management implementation success lack exhaustive research and consequently the issue of evaluating effectiveness of the management system adoption still remains unresolved (Korhonen, 2014). Nevertheless, there appears the room for the hypothesis of this paper, namely that there is some ground for justifying the assumption that the knowledge-oriented approach brings better results than the process-oriented one (Gasik, 2007).

5. HOW CAN PFM BE APPLIED THROUGH KOPM APPROACH? WHAT IS THE CASE?

5.1. Company

A strategic company on the Polish energy market whose core operations are gas transmission and infrastructure development. It hires over two thousand employees and has divisions within a range of the whole country. It has a considerable number of project initiatives although running projects is not a goal in its business model. Projects here are mainly vehicles of executing investments and major changes to its processes.

5.2. Challenge

Although a particular project methodology, also a PFM methodology, has been implemented, there was identified a gap between the level of strategic management and the level of single projects deliverables (Harries, 2009, p.19). The gap resulted from the fact that in the course of time and along project methods development various divisions of the company have specialised or customised the methodological standards. In consequence various project portfolios were not unified either in the aspect of the formal standards (management methods, reporting formats, evaluating criteria etc.) or in the sense of having one point, a single perspective at the level of the strategic alignment that would make it possible to derive full benefits of PFM implementation (listed in point 4.1. of this paper).

At the heart of the challenge here there was the situation that on the surface the company had all the necessary elements of a portfolio methodology, but in fact, the lack of their consolidation devalued portfolio processes performance. Hence the paradox that portfolio management had to be re-implemented although it had already been quite advanced at lower levels of the corporate structure. The greatest challenge to face here, however, was how to reorganise workflows and practices of a number of teams habituated to their own ways and, what is more demanding, the ways that from the teams' perspective work flawlessly.

5.3. Solution

Process oriented approach is implementing a change or executing a project on the basis of process management criteria. Thus, in the main focus here will be measuring the quality and time requirements of particular processes and advocating the potential change by statistical data. If a project team is process oriented, they focus on complying with the process demands more than on the benefits that usually occur after a process is completed.

Knowledge oriented approach as a management style in general, not only the project portfolio one, includes the whole collection of intangible and unmeasurable facets of an activity that influence business operations although cannot be directly linked to the business results. It is focusing on the whole processes and single tasks not only through the prism of objective numeric values they deliver, but also of their subjective interpretation and the indirect meaning they may have on the process of the corporate maturity development (Kwan, 2003, p.208).

To express the difference between the two, the process and the knowledge oriented attitudes, it might be said that the first one provides answers to such questions, as when?, who?, how?, how much?, how efficient?, while the second one is about such questions as: so what?, how do I know?, what can I do with this piece of data?, how can I help deal with the potential future issues with what I know today?, what does the process deliver apart from the defined list of deliverables?

In order to illustrate how it was decided to apply the solution through the knowledge approach not the process approach, it needs to be mentioned that such awareness occurred or such a need was defined after an attempt at optimising project processes. An assessment of process maturity was performed and although it revealed that there was a lack of a common interface for project processes and the strategic directions, it did not deliver a satisfactory argument that would convince portfolio managers about the burning need to adjust their mechanisms to a unified model.

It was only after an assessment of the maturity of knowledge management when it turned out that declarative feedback of the strategic goals execution is of little value and poses a considerable threat to the top management (Hedlund, 1994, p.7). Moreover, the real value of the so-called knowledge items (in other words knowledge assets, entities, objects or products – individual sources of knowledge that can be recorded, monitored and managed) can be realised only if ingrained in their original context and preferably personalised or customised. It means that process (a project process or an operational process) performance statistics do not provide much merit out of its context (Jackson, 2008). To simplify, according to the process oriented approach you may deliver a project in a perfectly correct method that will not be beneficial in the global view. While according to the knowledge oriented approach, regardless of its ambition to maintain meaningful and worthy above all, it also drives at introducing a change to the level of an organisation's maturity regardless of the ultimate results of a project. What does it mean in practice? It means that when you manage projects through processes you cannot elevate your knowledge to the level where you might see there is need to cancel a project, for instance. From the perspective of a process such a decision equals failure, however from the perspective of project portfolio knowledge, the step equals optimising or prioritising.

5.4. Results

There were a few stages in the process of implementing the change in the portfolio management. It has to be emphasised that such a change touched not only the components of the portfolio, but also process management in general, knowledge management and the content of the corporate strategy.

At the first stage, the key elements of corporate governance were assessed, which proved the need for the suggested here betterment. Then, in the somewhat automatic instinct of eliminating risk at the level of strategic management, the strategic objectives were first actualised and then operationalised, that is translated into specific measurable actions along with registering the requirements towards its knowledge items. Project knowledge repositories have been located, consolidated and assigned their owners whose task was to activate them and measure their usefulness accordingly. Finally, there was measured embeddedness of the strategy, the awareness of its scope and the level of identification with its objectives at various levels. However, the full picture of the results will be visible from the perspective of time and after performing an in-depth preferably quantitative analysis.

6. CONCLUSION

The paper offers a retrospection of the leading concepts within the scope of project portfolio management, reasons for its adoption and its success indicators and the basic differences between knowledge and process oriented way of addressing the issue of introducing portfolio management. The review becomes the background for the case study that occurs to be an example of aforementioned assumptions. Although the example seems to corroborate the thesis that the knowledge oriented approach to implementing project portfolio management brings better results than focusing purely on processes, it definitely calls for further investigation for numerous reasons. The first reason is that by no means can the company be representative for other firms, because on the Polish market there does not exist its competitor. The second is that the inner culture of a particular company, encompassing its unique corporate governance, maturity level or a business model, cannot be easily compared to another on a one-to-one basis. In order to make an attempt to do so one will have to extract an element of the culture by singling out a specific process and if possible confront it with a sufficient number of similar processes in various business environments (Teller, 2013, p.42). But still, by creating such artificially purified conditions for a scientific analysis, there is created additional risk to the credibility of the conclusions. Indeed, the corporate project and knowledge management reality in general and is of such nature that the ceteris paribus clause cannot be applied without adding doubt to the conditions of the study. There are too many intervening agents among which the intangible elements of knowledge or the behavioural aspects of human performance have the greatest impact. For these reasons it would be of considerable value to put the presented here assumptions to a qualitative test and challenge them from the perspective of time. That would be the final recommendation of the authors of the case study to the potential analysts of the implemented portfolio management methodology in the future.

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