

## EXTREME PROJECT MANAGEMENT IN BUSINESS AND INDUSTRY

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**Abstract:** The subject of the research is extreme projects in business and industry. The authors consider theoretical approaches to manning a team of developers and organizing their work in short-term conditions. In the paper, the advantages of using the digital approach in identifying the lines of project quality improvement are presented. In particular, when identifying the said focus areas, causes of complexity and labor intensity of other approaches used in management are detailed. Long-term priorities of adopting the digital approach have been found out. Grounds have been provided for transparency and coordination of extreme project management programs. The authors suggest the digital approach mechanism which can ensure not only implementation of long-term project priorities but also guarantee highly efficient fulfillment of large-scale target development programs. Recommendations on optimizing the extreme project management have been suggested, too.

**Keywords:** extreme management, project team, innovative procedure, refactoring, coaching, the Agile approach.

### 1 Introduction

In the contemporary society, extreme management is most relevant, as the developing world and digital economy create a new world and new conditions for business (Program "Digital Economy of the Russian Federation", 2017). To keep up with the times and use extreme project management, one has to focus one's entire attention on the sphere of digital technologies and ways of working with managers and leaders. The working environment demands developing new methodologies which would be able to respond and adapt to the changing conditions while also being the basis for innovations and creative thinking of project managers.

Project management of higher complexity and with a probability result to be obtained within short terms is referred to extreme project management (XPM) (Doerr, 2019). It differs from standard project management methods in being transparent, responsive to changes of the external environment, and open for customers. With XPM, it becomes possible to grant more attention to the human factor at various stages of project development instead of orienting to earlier completed projects and opting for strict formalism.

The advantage of extreme management can be gained by using IT; best of all, it is maintained by the leaders who can engage the required employees' skills in project development (DeMarco, 2016). It is essential for the company's further successful progress. To maintain competitiveness, it is important to understand how digital technologies can be applied and what drivers are behind them. To bring it into reality, managers must have an understanding of tools and methods which will bring about their company's growth in the domain of digital technologies and general success.

In 2020, due to the Coronavirus pandemic and the need of distance working, enterprises were forced to organize their employees' working in the remote mode or from their home offices. In many countries of the world, organizations have not switched back to their standard working schedule. Meanwhile, over 30% of the personnel work less efficiently, and it takes them more time to perform projects. 83% report higher fatigue due to having a bulk of e-mails to process. Currently, IT projects are difficult to manage. Survey results published in Harvard Business Review show that an average IT project has had a 27% increase of its budget (Reports of Statistics for 2019, 2021).

The developing digital economy has created new factors in adjustment of the development of IT which are used in a new way, too. At present, the ideas that all requirements can be collected before the start of development or that user-defined requirements will not change before the project completion are not an option in approaches to IT anymore. Departments of organizations are connected by the developed IT infrastructure which can accept, store, and organize data on extreme projects and then transform them into digital information. In its turn, the latter can be used for decision-making and can serve as a driving force behind project development. By using extreme project management, such systems can promote further advance of business.

### 2 Literature Review

Rapidly changing project management technologies press for work acceleration and require new approaches in the system of extreme project management. Based on these regularities, all spheres of the contemporary activity develop, and no social institution can escape the process. In this case, interests of business are no exception. However, in this sphere, the problem of non-uniformity of demand and supply arises in relation to extreme projects. This is discussed by Douglas DeCarlo (2015) in his research works; he believes extreme project management is a model having flexible and dynamic characteristics for various types of projects. In particular, it is high work performance speed and a great uncertainty of results in which failure probability is unacceptable that become the principal features for extreme projects. His book "eXtreme Project Management" is written for businessmen who take high risks for obtaining the desirable end result. The model elaborated by DeCarlo (2015) is distinguished by a set of interrelated principles, values, skills, tools, and mechanisms to form the desirable result in conditions of organizational changes and uncertainty.

Brian Wernham (2016), the author of the book "Agile Project Management for Government", identified the principal lines of work for the team working according to extreme project management procedures to use for completing a project successfully:

1. Seeing — this means having a clear vision of the project at the work start;
2. Creating — based on the project vision, the team must be involved into the creative process of brainstorming for generating ideas;
3. Updating — the team of project developers must be motivated to test the ideas generated through implementing digital solutions;
4. Re-assessing — the team must assess their work once again at the final project development stage;
5. Disseminating — the knowledge obtained after professional training has to be passed on to other team members and applied to the following project stages and to new projects in general.

Continuing this research, scientists (DeMarco, 2016; Doerr, 2019; Sukhodoeva et al., 2020; Yashin et al., 2020) consider conventional, agile, and extreme methods of project management; models of managing corporate projects. The well-known expert in project management, Robert Wysocki (2019) detailed the Kanban and Scrumban methodology. For implementation and use of these methods and methodologies, in the national program "Digital economy of the Russian Federation", they stipulate a number of principal objectives. Among them, the Internet service shall be provided for everyone, and 5G communication – in large industrial metropolitan cities. Meanwhile, the information of citizens, business, and the state shall be made secure. The efficiency of digital economy shall be ensured in basic industries. The said objectives include creating human resource potential for activities in the digital environment and providing for the three-fold increase of costs for the

development of digital economy, too (Program "Digital Economy of the Russian Federation", 2017; Reports of Statistics for 2019, 2021; Digital Economy of 2024, 2021).

In the contemporary world, development of digital technologies is accelerated, and a rare company can report about its success in the speed of mastering these technologies (Sukhodoeva et al., 2020; Sukhodoeva & Coe, 2014). Studies address not moving in space, though; they explore the development of such technologies as one can learn, implement quickly, and use for creating new products which are not repeated in the world. The speed and quality of creating new products go up from year to year and depend on managing extreme projects both in business and in the leading sector – industry (On National Goals and Strategic Tasks of Development of the Russian Federation for the Period of Up to 2024, 2018). However, the growth of information quantity and quality leads to narrow specialization in the professional sphere; simultaneously, phenomenality of knowledge is lost. Without considering if the organizational changes are positive or negative in nature, one still can foresee that the system of extreme project management has a direct effect on the complexity of work of any project manager who uses digital technologies of business.

This problem is discussed in the work of A. N. Pavlov (2019); he singles out processes performed when managing extreme projects. He subdivides the principal processes into five groups: the processes of planning, initiation, performance, monitoring, and completion. For enhancing the speed and efficiency of the project management process, the concept of PMBOK has been developed. It is a general guide to extreme projects where project development stages are formalized and structured, approaches to organizing the entire project management process and the concepts of managing project activity are determined, and terminological framework is created.

When new structures are created in extreme project management, business companies have to staff up professional analysts on their part – to avoid lagging behind in the use of digital technologies (On National Goals and Strategic Tasks of Development of the Russian Federation for the Period of Up to 2024, 2018). In this case, communications between a large number of analysts are getting complicated, and obtaining a joint opinion based on their individual reports becomes quite a problem. On the other hand, for resolving such situations, the external environment must have enough professionals possessing competencies in various questions of each of the business lines which are under accelerated development as of the present point. Alongside this, project managers have to have a clear view of the way the business is going to develop in the future. In particular, in terms of deadlines, extreme projects have to keep abreast of changes in the digital economy (On the System of Managing the Fulfillment of the National Program "Digital Economy of the Russian Federation, 2019). Requirements for professionals surge, as they work proceeding on basic competencies of each of the company's leading managers. It is only they who have basic extreme project management skills and can identify strategic development tasks of the business (Roganova et al., 2018).

### 3 Research Methodological Framework

The objective of the research is to suggest the extreme project management method as a tool for improving the quality of projects in business and industry.

The following tasks are set in the paper: discussing the principal approaches to manning the team of project developers and to its functioning; presenting the procedures of DSDM in project management; demonstrating the advantages of refactoring in project activity.

Methodological framework of the research incorporates both general scientific methods – analysis, synthesis, and analogy – and methods of the empirical level, e.g. observation and secondary data analysis.

### 4 Results and Discussion

In industry, the principal tasks of extreme project management are as follows: ensuring the economic development of region's enterprises in general; forming the optimal structure of digital economy and its development program; ensuring social protection and improving the population's quality of life (Sukhodoeva et al., 2020). In this situation, it is the methodology of extreme project management that is the optimal procedure of software creation for industrial enterprises. For implementation thereof, a mechanism is needed that allows handing a project over on time while using the planned budget only and regulating all changes in the course of the project. In industry, this methodology of managing extreme projects is the principal one with its interrelation of strategic, tactical, and operational management. It also allows enhancing the importance of performance quality control for project sections within the project performance system in general. Here, managers get the opportunity to control the solutions execution quality not on the task completion deadline date only but throughout the project performance period (Zhiltsova & Sukhodoeva, 2011).

Each working release of a project part begins with the working group selecting the most important story cards representing some business functions of the ordered product. Based on evaluating the selection, the team can plan the release in terms of what has to be done. If the story card is too large to fit in one release, they break it down into two cards representing a business function each. The project part release is then subdivided into several sprints that are work schedules for 2-8 weeks each. The cards are distributed between sprints according to business value priorities.

The requirements are captured in the form of user story cards, i.e. users' feedback about the business functions. Large cards are broken down into smaller components representing releases; each release is then subdivided into tasks to be completed. Released tasks have the manageability feature; they also contain information on requirements set by the user with whom they are associated.

Extreme project management highlights using brief daily meetings of the team for general review of the elapsed day's achievements and setting directives for the current day. Consistent daily planning contributes to reduction of the time needed for development of the project and boosts each team member's productivity. Standup meetings are the preferable form of conducting meetings every morning as a means for information exchange among members of the team, because formal meetings can become too long and distract from priorities. The said meetings must not last for over 15 minutes. Their objective consists in resolving any dependencies between tasks and team members and in reporting achievements of the previous day.

The first sprint is used for performing any required administrative assignments. Within this time, the working group also subdivides the project into several parts or sections which they distribute among themselves. It has to be emphasized that the only tasks to be considered and developed are the ones fit for the release. Work of the first sprint is commenced and lasts for exactly this sprint. The subsequent planning cycle will be started even if not all work designated for the previous sprint has been completed.

After each sprint, the team discuss their work results for obtaining the complete information about execution of the task and for further planning of the work to be completed on time. These results are then input into the next sprint, and the work is continued, with the project management process being adjusted accordingly for meeting the deadlines.

At the sprint end or handover of a project part, the developer team sometimes has to work more than 40 hours per week for completing the job. However, it is more important for the team to maintain an acceptable work pace than to do extra work for some time. The role of managers and leaders consists in

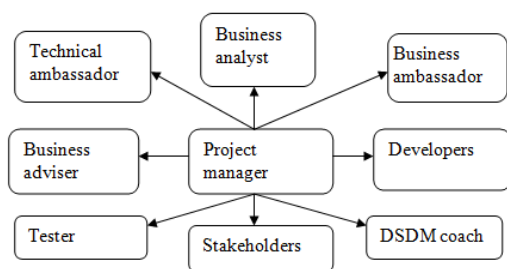
mitigating the problem by driving the team's work into a productive track and protecting the employees from external difficulties. Anyway, research shows that even though there are advantages of overtime work, the following potential problems exist, too:

- A large volume of overtime work can impair moral condition and lead to reduced productivity;
- Prolonged overtime work can result in developers' getting accustomed to working overtime and relying on this kind of work in all cases. In such a situation, reducing overtime work spans can bring them to ruin financially and turn out to be harmful for relations within the team;
- Overtime work is very expensive.

Throughout the entire time of project development and handover, many new components turn out to be integrated into the production system. With regard to this, changing requirements can lead to difficulties in maintaining the quality in the final version of the project which stem from modifications and side effects due to introducing new units into the system. Although extreme project management disposes of several methodologies enabling the working group to have some margin during project development, these do not concern quality. Meanwhile, there are several practices leaders can use to make sure the end result is a high-quality product.

In the contemporary conditions, extreme project management is becoming most relevant. Projects are developed in a dynamic environment which is difficult to forecast; they are pushed against time and have to be managed under continuously changing circumstances, requirements, and conditions of execution of the project sections. So, when working on a project, the trial and error situation occurs frequently. To decrease the quantity of mistakes, a skilled team of developers and managers is required for both individual sections of a project and for the project in general. This is the principal difference of standard project management from the extreme one where it is professionals and not the process of their activity that matters (Roganova et al., 2018). Figure 1 presents a model of extreme project management team in business. The model takes into account both standard focus areas of project managers' activity and innovation management procedures.

Figure 1 Extreme project management team for business. Model



Source: author's own processing

In extreme project management, stakeholders become necessary. To them, sponsors, shareholders, partner companies, and customers are referred, i.e., all active participants of the particular project and all others who can influence the project without directly participating in it. This promotes faster completion of projects and enhance their innovative character for consumers. For methodological support of work, coaches are also essential. A coach does mentor's duties for the project developers; coaches can identify their personal objectives and find internal reserves for achieving them. Currently, this applies to software and digital technologies. Here, the system which is frequently used in practice is the DSDM.

DSDM (Dynamic Systems Development Method) is an innovative procedure of software creation for handing a project over on time while using the planned budget only and regulating all changes in the course of the project. DSDM aims to take an

active part in the project use process. It incorporates the classical Agile approach to software development. The contemporary Agile has the following formal criteria of use:

1. The customer participates and interacts with project managers at all stages of the project development.
2. There are objective uncertainties in requirements for the software product at the initial stage of development.

Extreme project management focuses on so-called just-in-time development methodologies which imply using only the immediate requirements necessary for the current release. Flexibility of the developed modules can be affected by limitations; in case the future development was not taken into account. These problems are solved by extreme project management – by means of refactoring which consists in revising earlier completed modules to adapt them to the new business functions. Refactoring involves continuous creation of a replacement code to work with the new one, while functioning faster, better and costing less. In case the team adopts such a standpoint, they create a test sample quickly, regardless to the result, experiment with alternative speed modes, and improve memory requirements or the system of relationships. What they get in the end is better results which cost less for saving and continuing the work.

After the process of refactoring is completed, all modules are subject to testing for the user to find out their workability. Testing is the most important step in identifying the product quality. Testing is performed according to two different procedures: testing against requirements and acceptance by the user. Testing against requirements is conducted by the working team according to the previously set requirements. Acceptance testing is conducted by the potential customer undertaking responsibility from the accepting party. The said tests are conducted at the end of each sprint and at the project handover; they are the bottom-line to identifying how well the work has been done. Many working teams opt for some testing software for automating the tests and using it repeatedly.

## 5 Conclusion

In business and industry, procedures of extreme project management are used as a response to challenges of the contemporary times that are associated, first of all, with the process of historical time acceleration and the company's needing to promptly respond to any change in its external macro-environment.

It has to be noted that in the described methodology, key attention is paid to manning a team of project developers and to its functioning. Organizational structure of extreme project management allows introducing specialization of the employees and ensures clear division of duties in the project development and implementation system. So, developers are united in small working groups, and tasks are identified for them which are solved by various methods:

1. administrative methods are used by the enterprise's owners; they perform the economic function in project management directly or with the help of third-party experts;
2. economic methods are used by managers of the enterprise; they are responsible for both control and economic functions;
3. digital methods are used by specialists performing their tasks with the help of Internet-based technologies and software;
4. the formal logical method is used by the service personnel; they ensure the quality of works under the influence of economic methods.

At various levels of project management, integration is a challenging task having different objectives and subordination levels: the company's manager, the manager of a project, managers of individual project parts.

In business and industry, within extreme project management, it is expedient to apply the innovative procedure of DSDM; at present, it is quite seldom used in project management but extensively used in software development. This technology allows accelerating the project management process at the expense of involving the customer into the design process and borrowing some approaches and methods of human resources management from the IT sphere. The use of code refactoring, i.e., re-designing of the code, allows modifying the project quite promptly and efficiently, in case any particular drawbacks or deviations from the customer's assignment are found. So, this approach allows spotting the flaws quickly and modifying a part of the project – without having to remake the entire project.

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