ALGORITHMS FOR MANAGING REQUIREMENTS FOR IT PROGRAMS AND STRATEGIES THROUGH BRM INTEGRATION INTO THE SOFTWARE DEVELOPMENT AND MANAGEMENT LIFECYCLE

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Software development in modern conditions is a complex and multifaceted process that requires the integration of a large number of factors, such as growing customer requirements, limited resources, deadlines and the need to quickly adapt to market changes. A particular difficulty is the need to constantly align strategic business goals with technical aspects of development, which requires effective communication between business units and IT teams. In this context, the concept of Business Relationship Management (BRM) plays a key role as a tool for improving interaction between these parties. Traditional management approaches, such as Waterfall, are often unable to provide the necessary flexibility in decision-making, while Agile and DevOps focus on the speed of development, neglecting strategic alignment of goals. The growing complexity of IT products and the growing requirements for their functionality necessitate the development of new approaches to project management.

According to a study by the Standish Group (2023), only 35% of IT projects are completed successfully, that is, within the planned budget, deadlines and with all requirements met[1]. The rest of the projects face budget or deadline overruns, and 19% fail altogether. The main reason for failures in 47% of cases is ineffective requirements management, which leads to a mismatch between customer expectations and development results. In addition, according to the PMI report (2022) [2], conflicts between business needs and technical constraints are the cause of more than 40% of delays in software development. They arise due to insufficient interaction between business and IT teams, which complicates the decision-making process and often requires significant resources to correct initial design errors.

BRM offers an effective approach to solving these problems by ensuring transparent communication between business stakeholders and technical teams[3]. This not only aligns strategic goals with technical capabilities, but also reduces the number of requirements changes in the later stages of development. According to a study by Gartner (2023) [4], organizations that implemented BRM were able to reduce budget overruns by 23% and shorten development times by 17% due to a clearer integration of business goals into development processes. The novelty of the BRM approach lies in the use of iterative algorithms that provide flexibility and rapid adaptation to changes in requirements or market conditions. Such algorithms allow you to constantly monitor the status of the project, quickly identify problems and adjust plans.

The main challenges in requirements management are requirements volatility, resource constraints, poor communication between business and IT teams, insufficient consideration of changing priorities. In addition, the implementation of

new technologies is often complicated by the lack of agreed integration and management mechanisms.

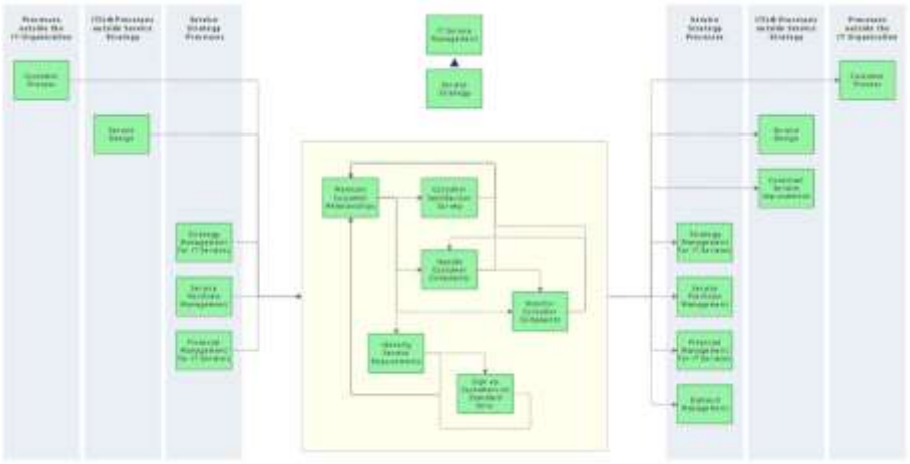

Fig. 1 – ITIL business relationship management diagram [5].

The requirements management process, enhanced by the Business Relationship Management (BRM) approach, is a systematic method for ensuring that developed software products fully meet business needs. This process includes several key stages that are closely related to each other.

At the initial stage, detailed information about the customer's needs is collected. This is achieved through interviews with key employees, organizing joint work sessions (workshops) and analyzing existing documentation. The data obtained is carefully analyzed in order to identify key requirements for the future software product. An important aspect of this stage is the integration of requirements with the company's overall business goals. This ensures that the development is aimed at achieving the strategic goals of the organization. After the requirements are defined, an assessment of the resources required for their implementation is carried out. Available human resources, financial resources and technical resources are analyzed. Based on the data obtained, a detailed resource utilization plan is developed, which ensures the effective use of each resource. Not all requirements have the same importance. Therefore, the next step is to prioritize them. For this, various methods are used, such as cost-benefit analysis and stakeholder voting. Prioritization allows you to focus efforts on the most important requirements and optimize the development process. A development plan is formed based on prioritized requirements and available resources. Modern approaches to software development involve the use of adaptive methods, such as Agile. This allows for flexible response to changing requirements and ensures rapid delivery of value to the customer. The development plan is divided into iterations, each of which has clearly defined goals and completion criteria. The development process is iterative. At each stage, progress is assessed, feedback from stakeholders is collected, and necessary adjustments are made to the plan. This ensures that the product being developed is exactly what the business needs.

Fig. 2 – Strategic House with Business Relationship Management [6].

Integrating BRM into the software development process allows you to achieve significant results in improving product quality, reducing costs, and ensuring strategic alignment between business and IT. Thanks to BRM integration, the development process becomes more business-oriented, which allows you to create higher-quality products, bring them to market faster, and reduce the risk of project failure. Adaptive requirements management algorithms that underlie BRM provide process flexibility and allow you to quickly respond to changes in the business environment.

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