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DEVOPS METHODOLOGY FOR RISK MANAGEMENT OF IT PROJECTS

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Abstract. In the conditions of rapid technological development and growing competition, effective risk management becomes critical for the success of IT projects. DevOps offers new approaches to ensuring software quality and security.

Keywords: devops methodology, information security, risk management, information systems, infrastructure.

Security management is the process of ensuring the security of the organization, its employees, assets and information. Information is not just a collection of data, but a strategic resource that determines the success of society and individuals in the 21st century. Its value lies in its ability to generate knowledge, innovate and create new opportunities. DevOps, a methodology that promotes collaboration between development and operations teams, inherently incorporates risk management principles. By automating processes, fostering continuous delivery, and emphasizing a culture of shared responsibility, DevOps significantly reduces the likelihood of risks and minimizes their impact.

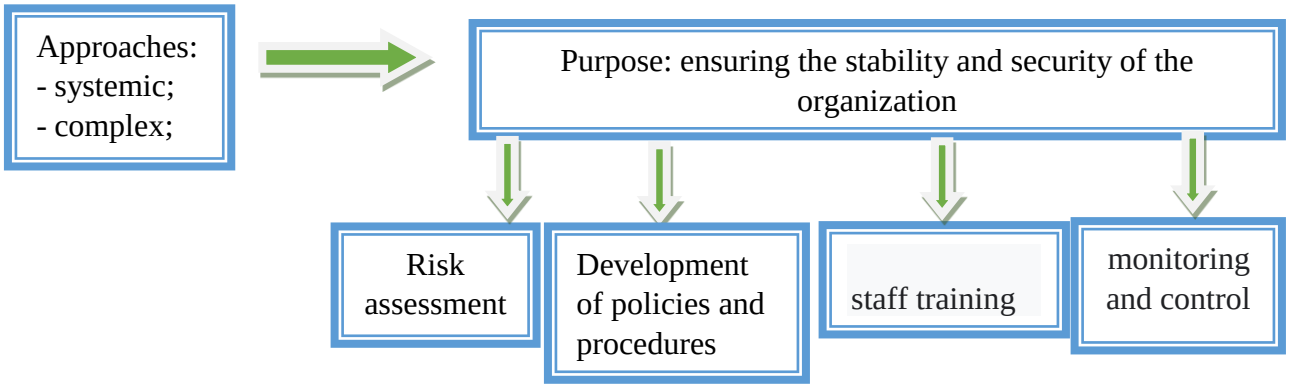

Figure 1 Security management scheme

DevOps is a methodology that combines software development and software maintenance (operations). The main goal of DevOps is to shorten the development cycle, improve the quality of the software product and ensure its continuous delivery. Implementing DevOps can significantly improve software development and delivery processes, but it also comes with a number of challenges. DevOps requires close collaboration between developers and operations professionals, which can be difficult to achieve in traditionally structured organizations.

Table 1 Principles of DevOps

Principles	Characteristic	Advantages
Automation	As many processes as possible are automated, from code assembly to	Thanks to automation and close team collaboration, new features and fixes are delivered faster.

	production deployment. This reduces manual operations that can lead to errors	
Team work	Developers and operations professionals work together as a single team. It improves communication, understanding and accountability	Continuous integration and testing help identify and fix bugs early in development.
Continuous integration and delivery	Code changes are continuously integrated and delivered to the production environment. This allows for faster detection and correction of errors	Automated processes and monitoring help ensure stable operation of systems.
Monitoring	Systems are constantly monitored to identify problems and improve performance.	DevOps allows you to quickly adapt to changing business requirements.
Infrastructure as code	The infrastructure is described in code, making it easy to create, modify and scale.	Teams can effectively collaborate on infrastructure code using version control systems.

Infrastructure as code is an approach to IT infrastructure management in which it is described using code. It allows you to automate the creation, configuration and management of resources such as servers, networks and storage. Migrating existing systems and data to a new infrastructure can be a time-consuming process.

Specific Risks and Mitigation Strategies:

- Optimize code and infrastructure for performance
- Implement load testing to assess system capacit
- Automate deployment processes to reduce human error
- Implement strong security practices, such as encryption, access controls, and regular security audits.

So, infrastructure as code is a powerful approach that allows you to increase the efficiency and reliability of the IT infrastructure. The automation, versioning, and other benefits of IaC make it an indispensable tool for modern developers and system administrators. DevOps is not just a set of tools and practices, but rather a cultural transformation in software development. Implementation of DevOps principles significantly increases the level of security and stability of IT systems, minimizing potential risks. DevOps shifts the focus from responding to problems to preventing them. Thanks to automation and continuous monitoring, risks are detected in the early stages, which allows you to quickly take the necessary measures. Rapid detection and resolution of problems with automated tests and monitoring tools significantly reduces system downtime. Continuous integration and delivery allow you to produce software products of higher quality with fewer defects.

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