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безпекової інженерії

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«Інтелектуальні технології цивільної безпеки та
робототехнічні системи аварійно-рятувальних робіт»**



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“Intelligent Civil Safety Technologies and Robotic Systems for
Emergency and Rescue Operations”**

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Інтелектуальні технології цивільної безпеки та робототехнічні системи аварійно-рятувальних робіт 2026: матеріали I-ої Всеукраїнська конференція, Харків, 12-13 лютого 2026 р.: тези доповідей / [редкол. І.Ш. Невлюдов (відповідальний редактор)].-Харків: [електронний друк], 2026. – 192 с.

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LOW-CODE/NO-CODE WEB PLATFORMS: OPPORTUNITIES AND LIMITATIONS.

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Annotation: The work consider the concept of low-code and no-code platforms for web development as one of the relevant directions of development of modern information technologies. The main capabilities of such platforms, their advantages in the speed of creating web applications and involving non-professional users in development are analyzed. Special attention is paid to the limitations of low-code/no-code solutions, in particular the issues of scalability, flexibility, security and dependence on the platform provider. The impact of these technologies on professional web developers is considered and the conclusion is made that low-code/no-code platforms do not replace developers, but transform their role in modern IT projects.

Key words: low-code, no-code, web development, development automation, software platforms.

LOW-CODE/NO-CODE ПЛАТФОРМИ ДЛЯ ВЕБ: МОЖЛИВОСТІ ТА ОБМЕЖЕННЯ.

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Анотація: У роботі розглядається концепція low-code та no-code платформ для веб-розробки як одного з актуальних напрямів розвитку сучасних інформаційних технологій. Проаналізовано основні можливості таких платформ, їх переваги у швидкості створення веб-застосунків та залученні непрофесійних користувачів до розробки. Окрему увагу приділено обмеженням low-code/no-code рішень, зокрема питанням масштабованості, гнучкості, безпеки та залежності від постачальника платформи. Розглянуто вплив цих технологій на професійних веб-розробників і зроблено висновок, що low-code/no-code платформи не замінюють розробників, а трансформують їхню роль у сучасних ІТ-проектах.

Ключові слова: low-code, no-code, веб-розробка, автоматизація розробки, програмні платформи.

The relevance of researching low-code and no-code platforms is driven by the rapid digitalization of business, the public sector, and society as a whole, as well as the constant growth in the demand for rapid web application development. Modern organizations increasingly require flexible and cost-effective tools for creating software solutions in the context of a shortage of qualified IT professionals and the need to shorten time-to-market for products [1-10]. In this context, low-code/no-code platforms emerge as a promising tool for automating development, enabling users without deep programming knowledge to participate in creating web solutions. At the same time, the active implementation of such platforms has sparked discussions regarding their technical limitations and their potential impact on the web development profession, making this topic important from both practical and scientific perspectives.

The active digitalization of business and society has led to a rapid increase in demand for web applications, information systems, and online services [11-14]. Traditional web development requires significant time and financial resources, as well as a high level of specialist expertise. The shortage of programmers and the need for the quick launch of digital products have become the primary factors behind the emergence of low-code and no-code platforms, which aim to simplify the software development process.

According to Gartner, by 2025, 70 % of new applications in corporations will use low-code/no-code technologies [15]. Research by Forrester has shown that implementing such platforms reduces development time by 50-90 % for typical business applications and lowers initial development costs by 40-60 %. At the same time, only 23 % of projects that started on no-code platforms successfully scale without a complete rewrite once they reach 100,000+ users.

Low-code platforms are development environments that allow creating web applications with minimal manual programming, using visual builders, templates, and ready-made components. No-code platforms, in turn, are oriented towards users without programming skills and involve a completely visual approach to application creation. The main operating principle of such platforms is the abstraction of complex logic and code from the end user. Low-code and no-code platforms offer a wide range of capabilities for creating websites and web applications. Among them are visual interface design, integration with databases and third-party services, business process automation, and configuration of forms, reports, and APIs. Such platforms allow for the rapid creation of prototypes, MVPs, and internal corporate systems.

The modern market offers a wide range of such platforms with different specializations. No-code solutions, such as Webflow, Wix, and Bubble, allow for creating functional web applications completely without code, targeting designers and business users. Low-code platforms, including OutSystems, Mendix, and Microsoft Power Apps, offer more flexibility through the ability to integrate custom code and are aimed at professional developers to accelerate enterprise development. Industry-specific solutions, such as Shopify for e-commerce or Salesforce for CRM [16], combine both approaches for specific business needs.

The main advantage of low-code/no-code platforms is the significant reduction in development time for web solutions. They lower the entry barrier into the IT field, allowing business analysts and managers to participate in the creation of software products. Furthermore, such platforms reduce development costs, simplify application maintenance, and accelerate the implementation of changes. Despite numerous advantages, low-code/no-code platforms have significant limitations that must be considered when choosing a technology stack. One of the most critical problems is limited flexibility in implementing non-standard business logic and difficulties with scaling under increasing load. Since platforms are oriented toward typical scenarios, any specific project requirements often exceed the capabilities of visual builders, leading to the need to use workarounds or completely abandon the platform. The generated code often contains unnecessary abstractions and unoptimized constructs, which increases the load on servers and creates performance problems when processing large volumes of data. The possibilities for optimizing caching, load balancing, and horizontal scaling are limited by the platform's architecture, making them unsuitable for high-load web services with millions of users.

The problem of vendor lock-in creates long-term business risks, as migration to another technology becomes extremely difficult due to proprietary data formats and the unique architecture of the solution. The security of low-code/no-code applications raises serious concerns due to limited control over internal protection mechanisms and the inability to audit the generated code, making such platforms unsuitable for projects with confidential data or specific industry security standard requirements. The economic aspect also requires attention, as the pricing model based on the number of users and data volume leads to exponential cost growth when scaling the business. The accumulation of technical debt through workarounds and «hacks» for implementing non-standard functionality complicates future system maintenance and may necessitate a complete rewrite of the application using traditional technologies.

The emergence of low-code/no-code platforms has sparked debates about the potential diminishing role of professional developers. However, in practice, these technologies do not replace programmers but change their role. Developers increasingly act as solution architects, integrators, security and optimization experts, and they also implement complex logic that cannot be realized

through visual tools. In the future, further development of low-code/no-code platforms is expected, with the expansion of their capabilities and the integration of artificial intelligence elements. Such technologies will contribute to the democratization of software development while preserving the need for highly qualified developers to create complex, scalable, and secure web systems.

The appropriateness of using low-code/no-code platforms for different types of web projects is presented in Table 1.

Table 1 – The feasibility of using low-code/no-code platforms in different types of web projects

Type of web project	Feasibility of use	Justification
Landing page, promo site	High	A simple structure and design are easy to implement using templates without the need for complex logic.
Corporate website	High	Allows for quick content population and integration with CRM and feedback forms.
Startup MVP	High, but only for idea validation; before scaling, rewriting is needed.	Enables rapid testing of a business idea without significant development costs.
Internal business applications	Medium	Suitable for automating typical processes but limited in complex scenarios.
Online store with custom logic	Basic e-commerce (Shopify, WooCommerce) – High, complex – Low.	Complex business logic, integrations, and performance optimization require traditional development.
Scalable web services	Low	Limited opportunities for optimization and architecture control.
Web applications with high security requirements	Low	Limited access to internal security mechanisms and code.

Low-code/no-code platforms are strategically appropriate for projects with simple logic, stable requirements, and low risks (landing pages, corporate websites, MVPs). However, for complex, scalable, or mission-critical systems, their limitations in flexibility, performance, and security make traditional development the only viable option.

The main rule is that the low-code/no-code approach becomes less appropriate when there are high demands for unique logic, scalability, or control over architecture.

This work analyzes low-code and no-code platforms as modern tools for automating web development in the context of rapid digitalization and a shortage of qualified IT specialists. The main features of such platforms are systematized, including visual interface design, integration with databases and third-party services, business process automation, and API configuration. It has been established that the key advantages of low-code/no-code solutions are a significant reduction in development time, lowering the entry barrier into the IT field for non-professional users, and reducing the costs of creating software products. This makes such platforms particularly effective for quickly creating prototypes, startup MVPs, corporate websites, and internal business applications with typical logic.

Detailed analysis of the limitations revealed critical issues that must be considered when choosing a technology stack. It has been established that limited flexibility in implementing non-standard business logic, difficulties with scaling under increased load, vendor lock-in, and security problems render low-code/no-code solutions unsuitable for high-load web services, projects with confidential data, and systems with complex architecture. The generated code often contains non-optimized constructs, and the pricing model leads to exponential cost growth during business scaling. Criteria for the appropriateness of using such platforms for different types of web projects have been developed, enabling informed decisions regarding the choice of development approach.

The practical significance of the study lies in forming a balanced understanding of the role of low-code/no-code platforms in modern web development. It substantiates the conclusion that these technologies do not replace professional developers but transform their role, shifting the focus to architectural decisions, integrations, security expertise, and the implementation of complex logic. The results can be used by organizations to determine the optimal development strategy depending on project specifics, scalability requirements, and available resources, which will contribute to increasing the efficiency of the web application creation process and reducing the risks associated with technological choices.

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