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INNOVATIVE TOOLS FOR MODELING AND AUTOMATING BUSINESS PROCESSES IN IT PROJECT MANAGEMENT IN THE CONTEXT OF DIGITALIZATION

The article explores the application of CASE (Computer-Aided Software Engineering) tools for modeling and automating business processes as an effective instrument for improving IT project management in the context of digital transformation. As digital technologies evolve at an unprecedented pace, modern IT projects face complex and dynamic challenges that traditional project management methodologies and tools are no longer able to adequately address. These challenges require the implementation of innovative digital tools capable of supporting the analysis, design, and automation of business processes across all phases of the software development lifecycle. The study emphasizes the importance of integrating CASE tools with classical project management methods to increase process efficiency, ensure better alignment with business objectives, and enhance adaptability to rapidly changing environments. The article provides a comprehensive analysis of the evolution and current trends in digitalization, focusing on their impact on IT project management. It examines the key models of the software development lifecycle—such as the Waterfall, Agile, Spiral, DevOps, and Lean models—and evaluates their relevance and applicability in today's fast-changing technological landscape. The authors highlight the functional capabilities of modern CASE tools, including requirements analysis, system design, automated testing, and maintenance support, and discuss their integration into organizational workflows. Special attention is paid to real-world case studies that illustrate the practical benefits of CASE tools, including reduced development time, improved resource utilization, enhanced decision-making, and increased project transparency and control. The primary aim of the research is to propose a methodological framework for managing IT projects through the effective combination of classical project management practices and digital CASE technologies. This approach is shown to increase the overall efficiency, adaptability, and competitiveness of IT project management in the digital era, enabling organizations to respond more effectively to the challenges of digital transformation.

Keywords: digitalization, digital transformation, IT project, IT project management, CASE tools, software lifecycle models, business process modeling and automation, innovative project management tools.

Introduction. The evolution of digitalization is a multifaceted journey, driven by technological advances, changes in human behavior, and shifts in the competitive landscape, marked by major milestones and technological advances that are reshaping industries, society, and the global economy. Looking at the history of digital development, it has gone through four important stages today, and with the arrival of the fourth industrial Revolution, digital transformation has become the key to the development and survival of enterprises. Digitalization not only changes the way of production, but also puts forward new requirements for IT project management. In this context, IT project management must adapt to a rapidly changing environment to ensure that projects can respond efficiently and flexibly to a variety of challenges.

A project is a temporary task that requires the creation of a unique product, service, or outcome within a limited time and resource environment, with the aim of achieving a specific goal and purpose [1, p. 184]. IT projects are projects that utilize information technology to build products, services, or achieve specific goals by using computer hardware, computer software, and networking technologies. IT projects have become a key force driving social digitization and technological innovation, which not only optimize the operational processes of enterprises and improve the quality of decision making, but also improve People's Daily lives, making the whole society more efficient and intelligent. Its main functions include: optimizing cost structure, improving efficiency and benefit; strengthen the quality of service and upgrade the model; improving people's livelihood and quality of life; promote ecological and environmental protection actions, achieve green development, stimulate innovation and promote sustainable development. As an effective project management auxiliary tool for modeling and automating business processes, CASE (Computer-Aided Software Engineering) tools have significant advantages in IT project management. CASE tools provide an integrated environment for IT to manage the requirements, design, development, testing, and deployment phases of a project. In the requirement analysis stage, CASE tools can assist the project team to collect and sort out user requirements, display the relationship between requirements in a visual way, and ensure the integrity and consistency of requirements. In the design phase, CASE tools can help designers build models and verify the feasibility of the design. During the development phase, CASE tools help

developers write code efficiently. During the testing phase, CASE tools support automated testing to ensure software quality meets expected standards; During the maintenance phase, it provides effective change management and problem tracking to continuously improve product performance. With these capabilities, CASE e tools significantly improve the success and efficiency of IT projects.

Literature Review. The literature provides a broad overview of various models and their characteristics commonly applied in IT project management. The theoretical foundations, terminology, methods, and methodologies of project management are consolidated in the continuously updated Project Management Body of Knowledge (PMBOK) [1]. The P2M standard – A Guidebook of Project and Program Management for Enterprise Innovation [2] – emphasizes the specifics of managing innovative projects and focuses on creating value aligned with the mission of the program and the organization as a whole. Kooi-Akrofy, G. Y. in the scientific study [3] analyzes the unique features of IT project management, including key success factors and implementation challenges. In the paper by Matey H., Koi-Akrofi G., Koi-Akrofi J., [4], a comparison is made between traditional and Agile project management methodologies, with an analysis of industry-specific conditions that influence the choice of methodology. Nerur S., Mahapatra R. and Mangalaraj G. [5] explore the benefits and challenges of transitioning to agile methodologies in IT project management. Marinho M., Sampaio S., Lima T., Moura H. [6] examine the risks associated with managing modern IT projects under conditions of increased uncertainty. Zornitsa Y.'s research [7] investigates the impact of digital transformation on the effectiveness of IT project management, providing recommendations for modernizing outdated management approaches and implementing innovative tools.

The choice of a software development lifecycle model (SDLC) plays a critical role in IT project execution. These models differ in how they structure and adapt the lifecycle based on the specific needs and development scenarios of a given project [7].

Despite the significant progress made in refining SDLC models, the integration of digital and innovative tools—particularly those aimed at modeling and automating business processes—into the broader framework of IT project management remains an area requiring deeper empirical exploration and theoretical validation. While these tools have shown promise in streamlining workflows, enhancing decision-making, and reducing inefficiencies, their practical implementation and strategic alignment with

project management methodologies continue to pose challenges. As such, further interdisciplinary research is needed to assess the impact of these technologies on project outcomes and to develop frameworks for their effective integration into contemporary IT project environments.

Aim and scope. This article aims to explore ways to optimize the IT project management process through the analysis, modeling, and automation of business processes. The goal is to improve the efficiency and quality of project execution by integrating CASE tools into the IT project management workflow, enabling better adaptation to the challenges posed by digital transformation.

Methods. This study adopts a general scientific method, systematically collects and analyzes data, and explores the inherent laws and mechanisms of specific problems. Through literature review, the previous research achievements and shortcomings on this issue are sorted out. At the stage of data collection, various methods such as questionnaire survey, in-depth interview and field observation are used to obtain rich and comprehensive information. Through the actual case analysis, further verify and deepen the theoretical understanding. Through this series of research process, it provides a strong support for the theoretical development of related fields, and can also provide useful reference and inspiration for solving practical problems.

Результати та обговорення. The digital process has a profound impact on IT project management. In 1784, the first industrial revolution in human history emerged. The first industrial revolution used water and steam power to achieve mechanized production, greatly improving production efficiency. By 1870, the second industrial revolution emerged. The second industrial revolution used electricity for large-scale production, bringing broader prospects for human development. In 1969, the third industrial revolution emerged with the automation of production through electronic information technology. The concept of Industry 4.0 was proposed at the Hannover Fair in 2011 [8]. The fourth industrial revolution is building on the third industrial revolution, the digital revolution that has been taking place since the middle of the last century. It is characterized by the fusion of technologies, blurring the boundaries between the physical, digital, and biological spheres.

The driving factors of digital development mainly include three aspects: technological progress, changes in human behavior and competitive landscape.

1.Technological advance. In the near future, digital technologies with hardware, software, and networks at their core will be able to diagnose diseases more accurately than doctors, apply large data sets to change

people's decisions, and complete many tasks that were once thought to be only human-capable. The rapid development of technologies such as the Internet, artificial intelligence, big data, and cloud computing has provided strong technical support for the digitalization process, making digitalization the only way for all industries to transform and upgrade [9].

The Internet is a vast interconnected network of computers and other devices that enables global communication, information sharing, and collaboration. As a digital infrastructure, it facilitates data transmission and allows users to access, exchange, and interact with large amounts of information. The Internet runs on a series of protocols such as TCP/IP and has become an indispensable part of modern life, connecting individuals, businesses, and society around the world. As of 2023, 67% of the world's population (or 5.4 billion people) are now online. It is estimated that by 2026, connected consumers will interact with digital data once every 18 seconds (5,000 interactions per day) on average [10]. The rapid development of Internet technology has not only changed people's lifestyles, but also had a profound impact on the global economy, society, culture, and other fields. As other technologies continue to mature, the application scenarios of the Internet are becoming more and more diverse, and it has become an indispensable part in communications, e-commerce, education, and other fields.

2.Changes in human behavior. In the context of the rapid development of modern infrastructure such as the Internet, transportation and logistics, human behavior and the way people meet their needs are undergoing profound changes. Today, the average British person goes online for 24 hours a week, 20% of adults go online for up to 40 hours, and people aged 16 to 24 go online for an average of 34,3 hours a week. The average British person checks their smartphone every 12 minutes, and American teenagers spend an average of more than 7 hours a day looking at screens [11].

Over the past 10 years, the number of internet users in China has increased from 648,75 million in 2014 to 1 092 million, representing a growth rate of 68,3% [12]. This trende not only reflects the vigorous development of China's Internet industry, but also reflects the Chinese people's strong pursuit of and increasing dependence on digital lifestyles (Fig. 1).

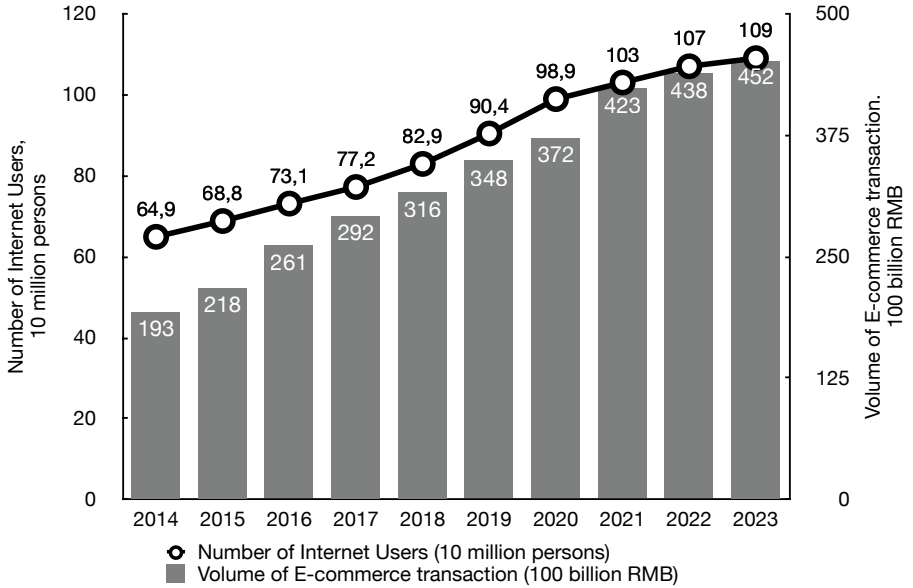

Figure 1. China's E-Commerce Transaction Statistics
Source: compiled by the authors based [12]

Digital technology has change not only changed how we consume, transmit information and socialize, but also reshaped our work and lifestyles. The huge change in consumption patterns has gradually replaced traditional physical store shopping with online shopping. In the past, people were accustomed to offline shopping in fixed sales places such as supermarkets and vegetable markets, and used cash payment and other traditional lifestyles. With the popularization of the Internet and the high-speed circulation of goods, people can buy the goods and services they need anytime and anywhere through e-commerce platforms. According to the e-commerce transaction volume data released by the National Bureau of Statistics of China, China's e-commerce transaction volume in 2022 will increase from 21,792.2 billion RMB in 2015 to 43,829.9 billion RMB, a growth rate of about 101.2% [12].

3. Competitive landscape. In the digital age, competition has become one of the key drivers of development. According to data released by the National Bureau of Statistics of China, China's software and information

technology services industry has shown strong growth momentum in the past few years (Table 1).

Table 1. Income of IT sector in China

Indicators	2019	2020	2021	2022	2023
Software Income	720,7	815,9	955,1	1077,9	1232,6
Software Products Income	208,6	210,5	229,7	248,6	267,2
Income from IT Service	435,8	525,9	626,9	705,9	802,7
Information Safety Income	13,1	12,9	13,9	14,7	16,1
Embedded System and Software Income	63,3	66,5	84,4	108,6	132,5
Software Export, 10 billion USD	5,69	6,21	6,29	6,43	6,57
Number of Legal Entities, Information Transmission, Software and Information Technology, million unit	1,05	1,29	1,49	1,75	1,98

Note: Cover enterprises with revenue from principal business of over 5 million yuan of software and IT service etc. All data are in 100 billion yuan, except where otherwise indicated.

Source: compiled by the authors based [12]

From the data, we can see that in recent years, software business revenue has continued to grow, the trend of digitalization is accelerating, and the IT industry has developed vigorously. At the same time, there are more and more software and information technology companies, and the competition is becoming more and more fierce. The development of digitization process has led to the maturity of project management system. The Project Management Institute of the United States has developed a knowledge system for the professional scope of project management, which includes a description of the knowledge, skills and tools required for project management [1, p. 183]. The sixth edition of the Project Management Guide summarizes the knowledge areas commonly used by most projects into ten areas, including project integration management, project scope management, project schedule management, project cost management, project quality management, project resource management, project communication management, project risk management, project procurement management and project stakeholder management [13].

Technology companys committed to developing an efficient resource management system based on market demand, or building a powerful e-

commerce platform to provide users with a convenient and smooth online shopping experience [14, p. 4–5]. Their main functions of IT projects include optimizing cost structures and improving efficiency and effectiveness; strengthening service quality and achieving model upgrades; enhancing people's well-being and improving their quality of life; promoting environmental protection actions and achieving green development; stimulating innovation vitality and promoting sustainable development.

1.Optimize cost structure and improve efficiency and effectiveness. Successfully implemented IT projects, with their outstanding capabilities, not only optimize the enterprise's decision-making process and improve the efficiency of business operations, but also significantly promote a leap in organizational productivity. By cleverly using IT technology, enterprises can achieve efficient processing of decentralized decisions, optimize cumbersome business processes, and directly promote a huge increase in organizational productivity, thereby achieving the dual goals of reducing costs and improving efficiency [15].

2.Strengthen service quality and achieve model upgrade. With the implementation of advanced IT projects and the combination of emerging information technology, enterprises can significantly improve customer satisfaction, optimize service quality and strengthen customer relationship management, thereby consolidating their position and achieving sustainable growth in a fiercely competitive business ecosystem [16].

3. Improve people's well-being and quality of life. E-government IT projects has enabled citizens to handle various services online through the Internet or telephone, which has not only improved the efficiency of government services, but also enabled citizens to enjoy government services more conveniently. These services cover education, medical care, transportation and other aspects, directly improving the quality of life of the people.

4.Promote environmental protection actions and achieve green development. Global warming has made environmental problems increasingly serious. Green environmental protection has become a core issue in today's society. In 1992, the concept of green IT emerged [17]. As people's awareness of environmental protection increases, IT projects are playing an increasingly important role in promoting green environmental protection. By applying information technology, environmental resources can be more effectively monitored and managed, promoting sustainable development and the realization of a green economy.

5.Stimulate innovation and promote sustainable development. With the rapid development of information technology, IT projects have become an important force in optimizing service quality, strengthening customer relationship management, improving people's livelihood and promoting industrial upgrading. They are like a stream of clear springs, injecting new vitality into all walks of life and driving the continuous development of the entire society.

However, the characteristics of software project management are different from those of traditional construction and other industries. The characteristics of software implementation type IT project management include complexity, innovation, specialization, customer demand orientation and continuous optimization and upgrading.

Complexity is a core challenge that must be faced in order to successfully implement a project. The multifaceted complexity challenge includes the complexity of the project itself, the complexity of the project environment, and the complexity of project risks [18].

Innovation is another prominent feature of software implementation project management. With the continuous development of technology and the changing market demand, software implementation projects need to innovate continuously to adapt to these changes. This innovation is reflected in three aspects: technological innovation, business innovation and management innovation.

The implementation of software IT projects involves a large number of professional positions, which are divided into management, technical, and design categories, such as project managers and project assistants in the management category; software engineers, front-end development engineers, back-end development engineers, test engineers, database administrators in the technical category; and UI designers, UX designers, interaction designers in the design category. The existence of these professional positions requires software implementation projects to have highly specialized knowledge and skills.

Demand refers to the core requirements and capabilities that a product, service, or result must achieve under a specific agreement or other binding specifications. In software implementation projects, the actual needs of customers are the starting point and end point of project implementation, the prerequisite for project success, and the basis for the scope of work required to be completed by the project. In-depth understanding and effective resolution of the actual needs of customers are of vital importance to the

overall success of the project. Customer needs run through the entire life cycle of a software project, from initial project planning to final delivery, and are the core of the project team's work.

The success of any software product is not achieved overnight, but requires continuous improvement and upgrading. In software implementation projects, factors such as technological updates, changes in the application environment, and higher customer usage requirements all require software products to be continuously optimized and upgraded. Optimization and upgrading are not only a reflection of technological progress, but also a positive response to user needs and expectations. With the rapid development of science and technology, software products need to go through a process of continuous iteration and improvement from design to release to subsequent maintenance.

From the perspective of software engineering, the software life cycle can be formed by associating the phases of requirements analysis, design, coding, testing, deployment, and maintenance. These stages may be carried out in sequence, iteratively, or overlapping [1, p. 213].

In the history of software lifecycle models, numerous models have emerged, such as the waterfall model, rapid prototyping model, agile development model, and spiral model. These models introduced various changes to the software lifecycle to adapt to different needs and software development scenarios. The software development lifecycle model serves as a foundational framework and roadmap for the software development process. It enables development teams to systematically organize and manage their activities, thereby enhancing the overall efficiency and quality of the software produced. Additionally, the model facilitates improved forecasting and control of costs and risks associated with software development, contributing to more predictable and successful project outcomes.

The Waterfall model is a foundational and classical approach in the software development lifecycle. Its principal concept involves the sequential refinement of software requirements and design through a series of structured stage reviews, thereby ensuring the quality and stability of the development process. This model delineates the software lifecycle into six fundamental phases: planning, requirements analysis, software design, implementation (coding), testing, and operation and maintenance [19]. These phases proceed in a linear, top-down manner, where the initiation of each phase is contingent upon the completion of the preceding one, analogous to

the cascading flow of a waterfall, which inspired its nomenclature.

The Rapid Prototyping model is a software development methodology emphasizing the expedited creation of functional prototypes to satisfy customer requirements through iterative feedback and continuous refinement. This approach prioritizes responsiveness to user needs by rapidly producing and evolving prototypes, thereby progressively aligning the product with actual user expectations [20]. The model effectively mitigates the limitations inherent in the Waterfall model, particularly by reducing risks associated with ambiguous or evolving software requirements. Consequently, it is well-suited for projects where initial requirements cannot be fully specified at the outset.

The Agile development model constitutes a people-centered, iterative, and adaptive framework that facilitates rapid responsiveness to change. Within this model, projects are segmented into multiple short-duration iteration cycles, each encompassing a complete set of development activities, including coding, testing, and optimization. This iterative cycle fosters enhanced flexibility, allowing project teams to promptly address emerging challenges and incorporate customer feedback into subsequent cycles. Continuous iteration enables progressive product refinement towards an optimized solution. Empirical studies indicate a significant increase in the adoption of Agile methodologies, with the proportion of Agile-based projects rising from 9% in 2010 to 25% in 2019 [21].

The Spiral model, introduced by American software engineer Barry Boehm, integrates the iterative prototyping aspects of rapid development with the systematic, phased structure of the Waterfall model. It is distinguished by its emphasis on continuous risk assessment and management throughout each phase of the project lifecycle, thereby enhancing the probability of successful project completion [22]. This model facilitates a risk-driven approach, enabling developers to identify, evaluate, and mitigate risks proactively as the project progresses.

The DevOps model represents a contemporary approach that bridges software development (Dev) and IT operations (Ops) to accelerate the delivery pipeline while maintaining high quality and reliability. It emphasizes automation, continuous integration (CI), continuous delivery (CD), and collaboration among cross-functional teams [23]. DevOps fosters a culture of shared responsibility, enabling rapid and reliable software releases, reducing time-to-market, and improving operational stability. By

integrating development, testing, deployment, and monitoring into a unified workflow, DevOps addresses the challenges of modern software systems requiring frequent updates and scalability.

Originating from Lean manufacturing principles, ***Lean Software Development*** focuses on maximizing value while minimizing waste within the software development process. This model advocates for eliminating non-value-adding activities, optimizing workflows, delivering early and often, and empowering teams to make decisions [24]. Lean development enhances efficiency and quality by promoting practices such as just-in-time development, continuous improvement, and fast feedback loops. It is particularly effective in dynamic environments where resource optimization and rapid adaptation to customer needs are critical.

The Scaled Agile Framework (SAFe) is designed to extend Agile principles to large-scale enterprises, enabling coordination and alignment across multiple teams and departments. SAFe integrates Agile, Lean, and product development flow principles to facilitate synchronized planning, delivery, and governance at scale. It introduces layers of roles, artifacts, and ceremonies that help organizations manage complex portfolios, programs, and teams, thereby improving transparency, collaboration, and delivery predictability in large-scale software development environments.

The process of IT project management is not smooth sailing, it is like a ship sailing on the sea, it is difficult to avoid various waves and reefs. IT project management faces unique challenges that are different from traditional project management. These problems and risks may hinder the success and efficiency of the project. Common problems are mainly reflected in scope creep, insufficient risk management, resource allocation problems, and communication barriers [25].

Scope creep is the uncontrolled expansion or change of project scope without corresponding adjustments in time, resources, or budget. Scope creep is one of the most pervasive problems in project management and can quietly derail projects, leading to cost overruns, schedule delays, and reduced project quality [26].

Inadequate risk management is an often overlooked but extremely important aspect of IT projects. When risk management is inadequate, projects may face unforeseen challenges and difficulties that could have been avoided or mitigated with proper planning and management. Risk management plays a vital role in IT projects, involving multiple aspects such

as project stability, time, cost and quality. The main reasons for inadequate risk management include lack of risk identification, poor risk assessment, lack of risk response plans and insufficient monitoring and control.

Resource allocation involves the efficient allocation of available resources, such as time, money, equipment, and personnel, across the various tasks and phases of an IT project. Resource allocation problems can arise from poor planning, insufficient understanding of project requirements, or unexpected project changes, which can severely impact project efficiency, leading to delays, reduced quality, and budget overruns [27].

The rapid development of digitization has also brought about the innovation of CASE technology. CASE (Computer-Aided Software Engineering) technology is a method that uses computer technology and tools to assist software development. CASE technology covers all stages of software development, including requirements analysis, design, coding, testing, and maintenance, and aims to improve development efficiency, reduce development costs, and improve software quality [28]. In IT project management systems, the implementation of CASE technologies can help project managers optimize business processes, improve project management, and increase the efficiency and quality of project development.

Project management tools such as Microsoft Excel, Microsoft Project, and Zentao can help project managers develop project plans, allocate resources, track project progress, and manage project budgets to ensure the achievement of project goals.

Diagramming tools are used to create data flow diagrams, entity relationship diagrams, and other graphical representations that aid in the planning and analysis phases of software development. Microsoft Visio and ProcessOn are popular diagramming tools that are widely used in IT project management to visualize, create, and document complex processes, systems, and data flows.

Axure RP and Modao are two widely used prototyping tools that play a vital role in the design and development phase of IT project management.

An Integrated Development Environment (IDE) is an essential tool for developers that provides a comprehensive workspace, such as Eclipse, IntelliJ IDEA, and PyCharm.

Quality Assurance (QA) and testing are key components of successful IT project management to ensure that the software meets its specified requirements and operates effectively in real-world scenarios. Selenium and JMeter are two popular tools that are widely used during the testing phase of

software development projects.

The Smart City Project aims to build a smart city management system, covering government data collection, urban emergency management and more. In order to ensure the smooth progress of the project, the IT company adopts the waterfall model for project development. At every stage of project implementation, the company applies a variety of innovative tools and project management theories to improve the efficiency and quality of project management.

At the beginning of the project, the IT company developed a detailed project implementation plan and risk register using Microsoft Excel and tracked and managed issues through ZenTao software.

Requirements analysis stage. In the requirements analysis phase, mind mapping is used to help the project team collect user requirements and sort out the relationship between requirements. The fishbone diagram tool was used to analyze the requirements. For each function point, H represents high, M represents medium, and L represents low to determine the priority of the requirements, thereby improving the understanding and mastery of the requirements of the project team (fig. 2; 3).

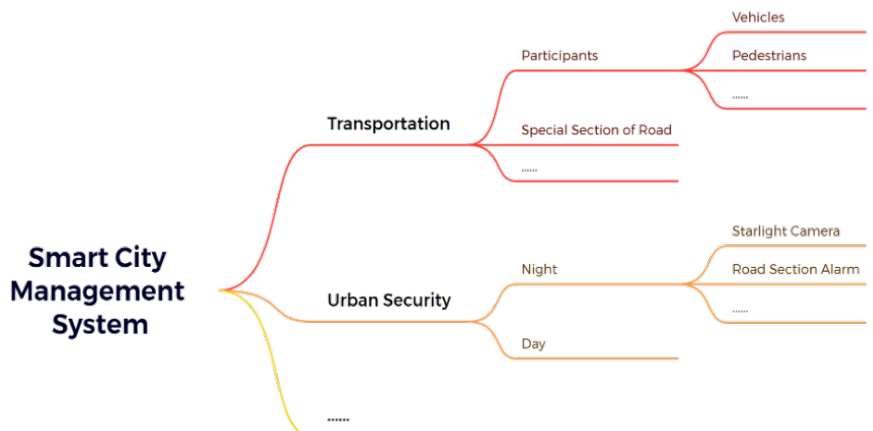

Figure 2. Mind Map for organize requirements
Source: compiled by the authors using XMind Software

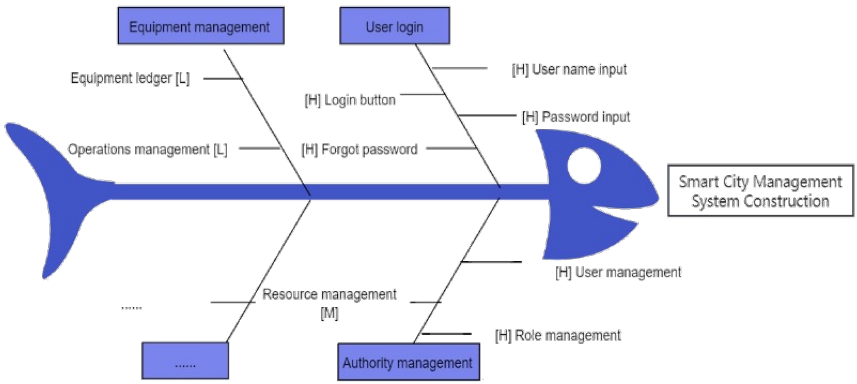

Figure 3. Fishbone diagram for demand analys.
Source: compiled by the authors using ProcessOn Website

Design phase. In the design phase, the various business processes of the system are modeled using flowchart tools so that team members can better understand the operation mechanism of the system. According to the result of demand analysis, the prototype design is carried out by using the Modao software, and the prototype of the system is made.

Coding phase. According to the technical characteristics of the project, the IntelliJ IDEA integrated development tool is chosen as the main code development tool, Git version control system is used to manage the project code. Testers use Microsoft Excel to write test cases, improving test comprehensiveness and accuracy.

Testing phase. In the system testing phase, testers perform tests according to test cases and record test execution results for each test case, using ZenTao software to manage system defects. For the performance test of the system, the tester uses JMeter software to conduct the performance test and evaluate the stability and load capacity of the system.

Operation and maintenance phase. After the system is put into operation, the Zabbix monitoring system is used for operation and maintenance management to ensure the stable operation of the system.

Smart city management system project, using innovative tools, was completed on June 30, 2023, within budget at 13.2 million RMB.

Project performance analysis via earned value method showed actual cost at

13.2 million RMB, with EV equal to the 15 million RMB budget. CPI (Cost Performance Index) was 1.14, indicating actual cost below budget. SPI (Schedule Performance Index) was 1, showing progress on track with no delays.

Innovative tools modeling and automation of business processes were effectively used throughout project stages, including requirements analysis, design, coding, testing, and operation and maintenance. CPI and SPI demonstrated good performance, with cost below budget and progress meeting expectations, highlighting project management's effectiveness and efficiency. Tools like mind mapping, fishbone diagrams, flowcharts, Modao software, IntelliJ IDEA, Excel, Git, Zabbix, and ZenTao software contributed to improved accuracy, design, coding efficiency, quality assurance, and centralized defect management, enhancing overall project management.

Applied innovative tools and management theories to smart city project, enhancing project management efficiency and quality. These tools helped manage project complexity and ensured timely, budget-friendly, and quality project completion.

Conclusions. Under the tide of digitalization, IT project management faces both opportunities and challenges. The research shows that the application of CASE tools in all stages of IT project management significantly improves efficiency and quality, and provides method support and experience reference for practice.

Practical cases show that CASE tools for modeling and automation of business processes can improve the success rate and efficiency of IT projects in various stages of requirement analysis, design, development, testing and maintenance, verify its value in digital IT project management, and provide practical basis for wide application.

Digital IT project management requires changes in organizational structure and talent skills, shift to agile organizations, strengthen team collaboration, and improve communication, collaboration, project management and digital technology knowledge.

The application and progress of CASE tools in IT project management forms industry standards and best practices, covers the whole process of project management, provides norms and templates, promotes experience sharing and learning among enterprises, optimizes project management, and improves success rate and benefits.

Looking forward to the future, IT project management should continue to introduce advanced management methods and technologies, optimize

processes, improve the ability to cope with digital challenges, promote the development of project management to be efficient, intelligent and accurate, and help the digital transformation and sustainable development of enterprises.

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ІННОВАЦІЙНІ ІНСТРУМЕНТИ МОДЕЛЮВАННЯ ТА АВТОМАТИЗАЦІЇ БІЗНЕС-ПРОЦЕСІВ В УПРАВЛІННІ ІТ-ПРОЄКТАМИ В КОНТЕКСТІ ЦИФРОВІЗАЦІЇ

У статті розглядається використання CASE-засобів для моделювання та автоматизації бізнес-процесів з метою підвищення ефективності управління ІТ-проєктами в умовах цифрової епохи. Сучасні ІТ-проєкти стикаються з безпрецедентними викликами, зумовленими стрімким розвитком цифрових технологій. Традиційні підходи та інструменти управління вже не відповідають динаміці змін ринку, що вимагає застосування нових засобів для аналізу, моделювання та автоматизації бізнес-процесів на всіх етапах життєвого циклу програмного забезпечення. Обґрунтовується доцільність і ефективність впровадження CASE-засобів в практику управління ІТ-проєктами. Автори аналізують можливості поєднання цих інструментів з класичними методами управління проєктами для досягнення кращих результатів і адаптації до нових умов, продиктованих цифровою трансформацією. Розглядаються ключові етапи цифровізації, еволюція моделей життєвого циклу програмного забезпечення, актуальні проблеми, що виникають в управлінні ІТ-проєктами, а також особливості сучасних CASE-засобів, їх функціонал та потенціал інтеграції у процеси управління проєктами. На основі аналізу практичних кейсів продемонстровано приклади ефективного використання CASE-засобів у процесах збору та аналізу вимог, проєктування, тестування та супроводу програмного забезпечення. Метою дослідження є надання ІТ-менеджерам нових підходів та інструментів для вирішення актуальних викликів і підвищення ефективності бізнес-процесів в управлінні ІТ-проєктами в умовах цифровізації.

Ключові слова: цифровізація, цифрова трансформація, ІТ-проект, управління ІТ-проектами, CASE-інструменти, моделі життєвого циклу програмного забезпечення, моделювання та автоматизація бізнес-процесів, інноваційні інструменти управління проєктами.

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