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Exploration of the Integration Application Path of Information Technology and Computer Software Engineering

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Abstract: This paper discusses the related contents of the integration application of information technology and computer software engineering. First, it briefly expounds the concepts and integration background of information technology and computer software engineering. Then, it deeply analyzes the application status and significance of the integration application of information technology and computer software engineering in different fields. Finally, it briefly describes the specific application paths of the integration of information technology and computer software engineering, hoping to provide some valuable references for promoting the in-depth integration and development of information technology and computer software engineering.

Keywords: Information technology; Computer software engineering; Integrated application

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1. Introduction

At present, we have entered the information age, and information technology and computer software engineering have gradually become important forces promoting social development. Information technology includes various technologies such as information acquisition, transmission, processing, and storage, while computer software engineering studies how to design, develop, and maintain software in a more standardized and normalized way [1]. With the rapid development of science and technology, the integration of the two has become an inevitable trend, and this integration can bring new development opportunities and chances for various industries. In the field of education, the integrated application of information technology and computer software engineering can enrich teaching content, expand teaching forms, and provide more abundant educational resources for teachers and students, thereby effectively promoting educational reform and innovative development. In the medical field, the integrated application of information technology and computer software engineering can promote the informatization construction of medical services, effectively improve the efficiency and accuracy

of diagnosis, and enhance the effectiveness and quality of medical services [2]. In short, the integrated application of information technology and computer software engineering has important application potential and value in various fields. Therefore, in-depth research on the integration application path of information technology and computer software engineering has important practical significance.

2. The significance of integrated application of information technology and computer software engineering

The integrated application of information technology and computer software engineering has important practical significance. This paper briefly analyzes the following aspects.

2.1. Promoting industrial upgrading and improving market competitiveness

The integrated application of information technology and computer software engineering can effectively promote the transformation of traditional industries, optimize industrial structures, improve production efficiency, reduce costs, and lay a solid foundation for enterprises to achieve sustainable development [3]. Take the manufacturing industry as an example. Traditional manufacturing industries often have problems such as low production efficiency, high cost expenditure, and serious environmental pollution, making it difficult to meet the needs of social development. The integrated application of information technology and computer software engineering can effectively solve the above problems. By introducing automated production lines and intelligent management systems, manufacturing enterprises can carry out precise supervision of the entire production process of products, which greatly improves production efficiency and effectively reduces enterprise cost expenditure [4]. In addition, computer software engineering can be used to comprehensively collect and analyze data generated in the production, management, and operation processes of enterprises, helping enterprises discover problems in a timely manner and providing data support for them to take effective solutions. At the same time, the integrated application of information technology and computer software engineering can provide personalized services for enterprise production and sales. Computer software engineering can be used to collect and analyze user data and adjust production and sales plans in a timely manner, thereby effectively improving the market competitiveness of enterprises.

2.2. Improving operational efficiency and promoting the healthy development of society

The integrated application of information technology and computer software engineering can also optimize resource allocation, improve social operation effects, and promote its healthy development. In the medical field, with the help of electronic systems, big data technology, and artificial intelligence technology, doctors can be helped to quickly obtain the historical treatment data of patients, make accurate disease diagnoses, and provide them with scientific treatment plans, which can greatly improve the efficiency of disease diagnosis [5]. In the transportation field, the integrated application of information technology and computer software engineering can real-time obtain data information such as traffic flow and road conditions, and through the powerful functions of the intelligent transportation system, collect and analyze them, and scientifically adjust the duration of traffic lights and scientifically guide vehicle traffic by the intelligent transportation system, so as to effectively reduce the occurrence of traffic congestion and make urban traffic more unblocked. It can be seen that the integrated application of information technology and computer software engineering can optimize the configuration of various resources, improve their operation efficiency, and thus promote the healthy development of society.

2.3. Giving birth to emerging models and injecting new momentum into the economy

The integrated application of information technology and computer software engineering has also given birth to emerging business forms such as the sharing economy and the platform economy to a certain extent. These emerging business forms break the limitations of the traditional economic model, not only creating more efficient and diverse business models but also laying a solid foundation for promoting social and economic development [6]. Take the sharing economy as an example. Matching idle resources with users in need through online platforms can not only effectively meet the diverse needs of users, but also achieve the maximum utilization of resources, avoid resource waste, and reduce unnecessary energy consumption. The platform economy, through building a digital platform, integrates the resources of the upstream and downstream of the industrial chain, thereby effectively promoting enterprise transformation and technological upgrading. Take the e-commerce platform as an example. Building a digital platform allows merchants and consumers to communicate directly, effectively reduces unnecessary expenses, and expands the market space. The emergence of these new models has injected new momentum into economic development and made important contributions to promoting social and economic development.

3. Problems in the integrated application of information technology and computer software engineering

There are also many problems in the integrated application process of information technology and computer software engineering [7]. This paper briefly analyzes the following aspects.

3.1. Challenges of technical complexity and compatibility

With the rapid development of science and technology, information technology and computer software engineering are constantly developing and innovating, each with a complex technical system. In the process of integrated application, there are often serious compatibility problems between different technical systems, which seriously affect the actual effect of the integrated application [8]. For example, different versions of operating systems and software may also be incompatible, resulting in the software being unable to open normally or be installed and run, which will affect the integrated application of information technology and computer software engineering. And with the continuous progress of technology, new software engineering technologies and information technologies will continue to emerge, and the connection between old and new technologies may also face challenges. New architectures and new algorithms may not be compatible with the old technical environment, thus limiting the integrated application of information technology and computer software engineering.

3.2. Security challenges

With the integrated application of information technology and computer software engineering, the transmission and circulation of data and information have become more frequent, which also brings more security challenges to information systems, such as data loss, data leakage, hacker attacks, etc. [9]. Once a security problem occurs, it will not only lead to the loss or damage of important data, causing huge economic losses to enterprises, but also may leak the personal privacy information of users, causing a huge impact on their legitimate rights and interests. In addition, hacker attacks may also cause huge damage to the normal operation of the entire information system, leading to the interruption of relevant business of enterprises, thus affecting the production, sales, and operation links of enterprises. Take financial enterprises as an example. Once there is a security problem in the information

system, it may not only cause serious consequences such as fund loss and tampering of transaction records but also may affect the entire financial market, causing serious damage to the stability and reputation of the financial industry [10]. Therefore, in the process of integrated application of information technology and computer software engineering, protecting information security is of great importance.

3.3. Talent supply challenges

In the context of the integrated application of information technology and computer software engineering, the talent supply is facing severe challenges. On the one hand, the market urgently needs a large number of compound talents who are proficient in both information technology and computer software engineering. However, the current professional teaching and talent training in colleges and universities often have a bias. Some teaching focuses on information technology and involves less computer software engineering content, while another part of the profession focuses on the teaching of computer software engineering knowledge and less on the teaching of information technology knowledge [11]. This leads to most of the trained talents being single-field talents, which is difficult to meet the needs of the talent market for compound talents. On the other hand, the training mechanism of enterprises is not perfect. With the increasing integration and application of information technology and computer software engineering, it is difficult for enterprises to provide more comprehensive and advanced professional training for employees, resulting in a lag in employees' literacy and ability, which is difficult to keep up with the pace of technological development. In addition, the current industry competition is increasingly fierce, talent flow is frequent, and the talents trained by enterprises often leave due to various factors, resulting in a tight talent supply situation in enterprises.

3.4. Lagging regulations and standards

At present, the laws, regulations, and industry standards for the integrated application of information technology and computer software engineering are relatively lagging. With the rapid development of science and technology and the increasing complexity of integrated application scenarios, the current existing laws, regulations, and industry standards are difficult to cover various new problems and situations in the process of integrated application [12]. In specific practice, enterprises, practitioners, etc., lack clear industry enforcement regulations and references, and it is difficult to judge the legality of some emerging integrated application models and technologies. At the same time, due to the lack of unified industry standards, there are also some problems to be solved in data sharing, technical docking, etc., among different enterprises.

4. Innovative paths to promote the integrated application of information technology and computer software engineering

4.1. Strengthening technical collaboration and standardization construction

In order to cope with the challenges of technical complexity and compatibility, technical collaboration and standardization construction should be strengthened. On the one hand, we should actively promote the communication and reasonable integration between different technical systems. Experts and enterprises in the fields of information technology and computer software engineering can be organized to share advanced research results and experience, and jointly negotiate to solve compatibility problems, so as to effectively solve technical compatibility problems [13].

On the other hand, various enterprises and institutions should negotiate unifiedly to formulate unified

technical standards and specifications. There should be clear standards for all aspects from operating systems, software development, to data transmission. In this way, it is ensured that different versions of operating systems and software can be compatible, thereby improving the efficiency and quality of integrated applications. In addition, in the process of standardization construction, we should also actively communicate with international institutions and enterprises, and always keep in line with international standards, so as to lay a solid foundation for promoting the further development of the industry.

4.2. Strengthening safety protection work

In order to effectively cope with the safety challenges in the process of integrated application of information technology and computer software engineering, safety protection work should be strengthened. For this, we can:

First, apply advanced data encryption technology. In the process of data transmission and storage, international advanced data encryption technology should be used to encrypt key data, so as to prevent security problems such as data leakage and loss. Second, a sound user access mechanism should be established [14]. Different access permissions should be set for users at different levels to ensure that their operations on the system are scientifically restricted, thereby effectively improving the security and reliability of the system. Furthermore, network security protection should be strengthened. By deploying technologies such as firewalls, intrusion detection systems, and intrusion prevention systems, network security protection work should be strengthened, and the network should be comprehensively scanned and repaired regularly to timely discover and solve potential security risks. In addition, enterprises should also formulate effective emergency response plans to ensure the specific processing procedures and division of responsibilities after a security incident. Once a security problem occurs, it can quickly respond and deal with it, thereby effectively reducing the impact on enterprises and users. Finally, personnel training should also be strengthened. Special training should be organized and carried out regularly to continuously strengthen the safety awareness of staff, thereby effectively reducing the occurrence of safety accidents.

4.3. Constructing a compound talent training mechanism

In order to effectively cope with the challenges of talent supply and cultivate more compound talents meeting the needs of the talent market, we can start from the following aspects:

First, at the university level, we should give full play to our own role in talent training [15], keep pace with the times, take the needs of the talent market as the guide, and improve the quality and effect of talent training by reconstructing the curriculum system, optimizing the teaching model, reforming the teaching method, adjusting the teaching content, and other ways, so that college students can become compound talents meeting the needs of society and enterprises. Second, in terms of enterprises, enterprises should also continue to strengthen and improve their own training mechanisms. According to the latest trends in industry development, special training should be organized and carried out regularly to help employees improve their knowledge systems and cultivate their professional literacy and comprehensive capabilities. At the same time, enterprises can also provide employees with project practice and job rotation opportunities, so that they can temper their comprehensive abilities in different scenarios, cultivate their cross-cultural abilities, and gradually train employees into the required compound talents.

4.4. Optimizing policies and industrial ecology

In order to successfully cope with the problems of lagging laws, regulations, and industry standards. The

construction of laws and regulations should be strengthened. For the problems of integrated application of information technology and computer software engineering, clear and clear legal provisions should be formulated to provide clear guidance for practitioners, enterprises, etc., to ensure that the integrated application is always carried out within the legal framework. At the same time, industry standards should also be updated regularly. Industry experts, practitioners, enterprises, etc., should be actively organized to participate together, negotiate together, and formulate unified standards to promote data sharing and technical docking among different enterprises. In addition, the government should also actively create a new industrial ecology. For example, by providing financial subsidies, tax relief, financial support, and other means, enterprises can be encouraged to participate in the research on the integrated application of information technology and computer software engineering, so as to promote technological innovation and industrial transformation.

Disclosure statement

The author declares no conflict of interest.

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