

# Thoughts on the Development of Information System Integration

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## Abstract

At present, the society has entered the rapid development stage of scientific and technological modernization. Many industries use advanced scientific research technology to make their industries develop more rapidly. Under the background of the vigorous development of information technology, the construction of information integration system has become a key factor to solve the current industrial production and improve the efficiency of information utilization and processing. At the same time, it has also become an important field to determine the development of information technology and the process of industrialization in China in the future.

## Keywords

Information system; System integration; Development.

## 1. Introduction

With the rapid development of China's overall economy and the continuous improvement of people's living standards, with the development of the information age, information system integration technology has achieved rapid development in China, and its application fields are becoming more and more extensive. It has made remarkable achievements in industry, agriculture, construction and e-commerce. However, in the development process of information system integration technology, there are still a series of problems worthy of our attention, Starting from the concept of information system integration and combined with the actual development of China, this paper analyzes the current and future development trend of information system integration in China, in order to promote the further development of China's information industry.

## 2. Overview of Information System Integration

### 2.1. The Concept of Information System Integration

Integration is the organic combination of independent parts. Information system integration is to integrate the separated hardware equipment (computer system), software system and data information into the interrelated and unified system by means of software and hardware technology. Thus, each part can operate coordinately and efficiently, give full play to the overall benefits of each part in the system, and realize resource sharing. Its form is the interconnection and interworking of software and hardware. Its essence is the reorganization of information organization structure, the reconstruction of process and the interconnection and interworking of computer communication technology, so that all parts can cooperate with each other and operate efficiently, so as to maximize the overall interests. It includes hardware integration, software integration, data and information integration, technology and management

integration, and human organization integration. There are many technologies of information system integration, mainly including application integration, representation integration and data integration. With the development of the information age, information system integration has developed very rapidly and is widely used in most e-commerce enterprises and application integration between enterprises.

## **2.2. Characteristics of System Integration**

The biggest feature of system integration is to maximize the organic composition of the system, which has the characteristics of good integrity, effectiveness, flexibility, compatibility, scalability and maintainability. Just because it integrates multiple systems, it inevitably has the characteristics of bulkiness and complexity. On the one hand, it integrates many systems that were originally dispersed with each other to make the whole system more portable, make all system data compatible and interconnected, and make the work more convenient; On the other hand, its bulkiness and complexity make the development and maintenance of the system very complex. Because of these characteristics, system integration is favored by more and more people and is playing a higher and higher benefit.

## **2.3. Advantages of Information System Integration**

Information system integration uses its various components to combine the advantageous resources of each part and the specialized projects in various fields, so as to create conditions for the enterprise to build a reasonable and superior information system, realize data sharing and seamless connection between various units, speed up the timely exchange of information and the information reflection ability of the enterprise, and make the environment, quality, time, service and cost, with the help of information system integration technology, No longer isolated from each other, but organically and closely combined with each other, at the same time. Through the integration of external information, various diversified and heterogeneous information organizations are combined with internal information to eliminate information islands and realize the smooth flow of external and internal information. It helps to improve the service quality, service content, operation ability and decision-making ability of enterprises.

## **3. Problems and Deficiencies in the Development of Information System Integration**

### **3.1. Pay More Attention to Construction Than Maintenance**

In the process of information construction, the phenomenon of paying more attention to construction than maintenance is very obvious. The investment cycle of early construction is short and effective; The investment cycle of later maintenance is long and the effect is not obvious. This is the main reason why many units pay more attention to construction than maintenance. In the short term, the early construction investment is large and the later maintenance investment is small, but in the long run, the later maintenance funds often exceed the cost of the early investment layer. This also discouraged many units. With the passage of time and social development, some systems invested in the early stage are gradually eliminated due to neglect of maintenance, or the system is backward, or the data function is not up to the development of the unit, and the function can not gradually meet the actual needs of the unit.

### **3.2. Lack of Uniform Standards**

Information system integration has a huge "body", followed by its huge standard system, including the database type, data interface and various data structures of each system. Different standards will bring many problems. On the one hand, there is a lack of unified standards in the process of information system integration and development, and each has its own data standards. As a result, the information interaction between the information system integration

is difficult, the compatibility is not strong, and the scalability is reduced in the later stage. On the other hand, the standards of various subsystems within the information system are inconsistent, resulting in weak interaction of the information system and low utilization of system functions, which can not effectively give full play to the advantages of information system integration.

### 3.3. The Development Cycle Is Long and The Benefit Prediction Is Difficult

Information system integration involves a wide range of technologies, strong professionalism and great development difficulties, including many professional fields such as network integration, data sharing and artificial intelligence, resulting in large investment and long development cycle. General system development needs to go through system planning stage, system analysis stage (demand analysis, logic design, etc.), system design stage (physical design), system implementation stage, system acceptance stage, etc. each stage is connected with each other and involves the compatible interaction of each subsystem. The whole development cycle is very long. Due to the complexity of system integration, when demonstrating and analyzing information system integration, it can not accurately predict the benefits of information system integration. In addition, there is a certain uncertainty whether the expected functional effects can be achieved after system integration, which leads to the lack of expectation and motivation of enterprises for information system integration, which restricts the development of information system integration to a great extent.

## 4. Future Development of Information System Integration

### 4.1. Top Level Design Information System Integration

The top-level design network integrated information system comprehensively integrates various business service systems, unifies data resource storage standards and data conversion and exchange mechanisms and standards between different systems, establishes an operation mechanism of data exchange, information sharing and business linkage between departments, standardizes data resource management from system standards and institutional mechanisms, solves compatibility problems between different systems, and promotes management specialization, informatization Standardized and scientific development. Network integrated information system generally includes integrated database, operation and maintenance management system, security protection system and integrated information service platform (information system integration diagram).

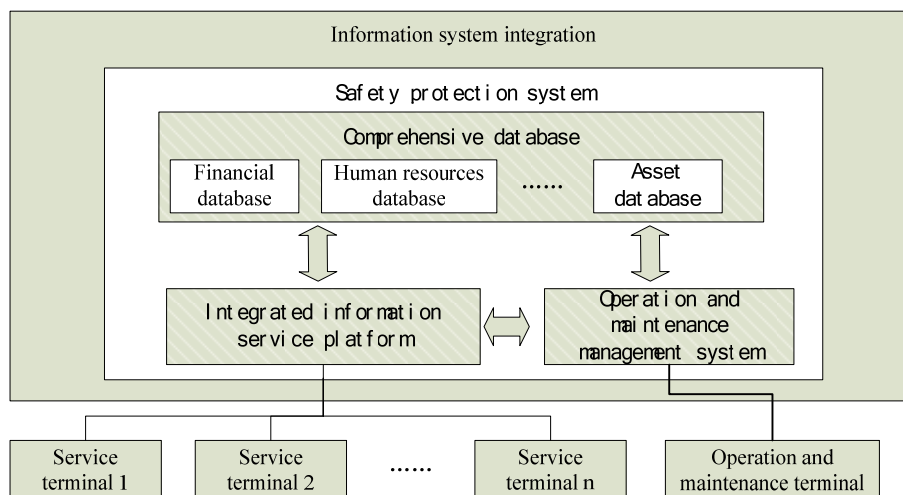


Figure 1. Schematic diagram of information system integration

Unified basic information coding and standards are the guarantee, and an open construction mode of sharing and jointly building data resources; Based on the principles of unified leadership, unified planning, unified standards and step-by-step implementation, integrate and upgrade the original systems to form a unified and scientific business application system.

#### 4.2. Extensive System Integration Content

The primary of information system integration is data integration. The fundamental purpose of system integration is to improve the efficiency of data development and utilization. Any system integration Chengdu will provide an extensive, standard and unified integrated database to effectively integrate all kinds of enterprise data. The integrated database directly interacts with each business system and reads and writes data through the business system. This requires the unified standard, standardized format, data integrity and information security of the integrated database.

The second is the integration of various applications. Application integration is the basic way and method of system integration and efficient application, including finance, human resources, assets... All kinds of applications are integrated in the integrated information service platform. The integrated information service platform can realize multiple subsystem functions on different terminals and interact on the integrated system.

#### 4.3. Unified Management System

With the development of system integration, enterprise management has also changed accordingly. A new unified management system will be gradually established. According to the business management requirements, build the corresponding evaluation index system, evaluate the business performance of system integration based on this, and constantly adjust and optimize the system performance; Dynamically adjust the business process to adapt to the new external environment and finally achieve the goal of the enterprise; Optimize the utilization of enterprise data resources and improve the efficiency of enterprise management.

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### References

- [1] Yitao Huang. Development and construction of hospital information integration platform based on HL7 standard [J]. Information technology and informatization, 2017, 23 (12): 20-22.
- [2] Weilie Wang. Restful + OData: a concise way of enterprise information system integration [J]. Computer applications and software, 2017, 34 (12): 147-153
- [3] Xin Li. Research and application of information system integration based on Web Services [J]. Information and computer (theoretical Edition), 2017, 17 (23): 138-139.
- [4] Ming Gu. Discussion on the application of project management in computer information system integration [J]. Scientific and technological innovation and application, 2022,12 (10): 177-180.
- [5] Enlong Zhou; Rong Li. Research on Problems and Countermeasures in large-scale information system integration project management [J]. China management informatization, 2022,25 (04): 108-110.