Research on the Web Application Development Pattern and UI Optimization Mode under Data Warehouse Environment

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Abstract

In this paper, we conduct research on the web application development pattern and the UI optimization mode under data warehouse environment. Despite the application of Web standards for Web site construction, the concept, technology, efficiency has a certain advantage, but if chose the development process of application of the Web standards, should be strictly in accordance with the corresponding specification, requirements, otherwise may have serious consequences for the entire project, even failure. Under this condition, we integrate the data warehouse environment for the basic optimization. The emergence and development of data warehouse is the inevitable outcome of the computer application to a certain stage. After many years of the computer application and market accumulation, many business enterprises have saved a large amount of raw data. Our method could enhance the performance from the perspectives of effectiveness and efficiency.

Keywords: Web Application, UI Optimization, Data Warehouse, Complex Environment.

Introduction

Open API is accompanied by the development of the general Internet technology, new ways to realize information resources sharing, and it reduces the repetitive code development work, reduced the cost of development, become the inevitable choice of more and more web site provides services. Therefore website construction based on the Web has become a problem of concern. At present papers on web pages and web sites are mostly based on a system design and implementation of the technology, the lack of website construction whole process in detail. With the advent of the era of Web2.0, Internet social networking websites, blogs and other Web applications, Web applications at the same time also in that unceasing informatization, diversification, personalization, share, and the Open API will be realizes the resource sharing inevitable choice from the following aspects.

Building a web site, first consider building site of software and hardware platform, in the aspect of hardware hosting services mainly include virtual host, server hosting, DDN special line service ways.

Website construction generally speaking is divided into three stages, the first stage is the preparation stage, including the planning project, collects data, planning, architecture, content information website structure as the second stage is the web page creation, including web production, integrated website, effect test, the third stage is the maintenance and management including the website upload, website promotion, maintenance.

When a website design is finished, we can proceed to web site development and production, production after the completion of the test, the test includes the realization of the function of the web links, etc., after the test and correct information can be released [1-3].

Data warehouse is a subject-oriented, so the first thing to determine data analysis or front the theme of the show. Theme is a higher level of data classification standards that is the user using the data

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warehouse for decision analysis focus on aspects of concern. Each topic corresponds to an analysis of field, usually associated with multiple operational information system and for example, the service groups, such as travel agency, we want to analyze a certain period of time, an area of the customer satisfaction, this can be seen as a theme which is consisted with the following components.

- **Data warehouse management system**, it is directly responsible for manage the data warehouse, and complete to extract data from the data source of heterogeneous distribution work, shield the heterogeneous data sources to the largest extent the impact on the system.
- **Preprocessing module**, data mining and its task is in cooperation with the data warehouse management system based on metadata and dimension table, to deal with the data stored in the data warehouse, generated meets the needs of user queries, and can satisfy the requirement of the data mining tool set to be processed data subset.
- **Conclusion expression module**, it will come to conclusion according to the semantic hierarchy analysis, come to the conclusion that the semantic level, and carries on the explanation, as will find that the model presented to the user in the form of visual or natural language.

![Figure 1. The Data Warehouse Systematic Architecture.](image)

In this paper, we conduct research on the web application development pattern and UI optimization mode under data warehouse environment. Analysis will be finalized in the later sections.

**Our Proposed Perspective**

**The Data Warehouse Environment.** The emergence and development of data warehouse is the inevitable outcome of the computer application to a certain stage. After many years of the computer application and market accumulation, many business enterprises have saved a large amount of raw data, and the variety of business data, these data truly reflect the business enterprise main body and various economic dynamic business environment. Due to a lack of centralized storage management, however, these data can't effectively for the enterprise statistics, analysis and evaluation to offer help. Each time the user needs a digital products of surveying and mapping, start the spatial data warehouse in the integrated data model and metadata model, drawn from surveying and mapping in the database in real time which could be reflected from the following aspects [4-5].

- The purpose of data transformation is to eliminate differences, these differences reflected in the following aspects: the space characteristics, properties, characteristics of differences, the time characteristic expression differences, data accuracy and the differences between the data overall performance, etc.
For a variety of surveying and mapping database integration management and application data extracted from spatial data warehouse, it must use the unified metadata model to describe.

A single digital products refers to the directly from the spatial data warehouse retrieved raw digital products, integrated digital products refers to retrieve from spatial data warehouse after processing of digital products is another kind of digital products.

Conceptual model design known as demand analysis, in the process of communicating with the user, to determine the information they need to access the data warehouse, this information includes the current and future and the data related with history. On the demand analysis stage operation data, the data source and some additional data, data model design is easy to understand, to complete the mapping between the query and data effectively and the characteristics of the DW can be expressed as follows. (1) Rich historical data: the traditional database system for maximum performance, tend to the store as little data as possible. Data warehouse is one of the fundamental characteristics of the historical data is stored for a long period of time, this makes data of long-term trend analysis. (2) The real-time query support, a data warehouse is for decision support and the system structure of data warehouse efforts to ensure the real-time query and basic analysis. Strong support for the query data warehouse makes the higher the efficiency of data mining, the mining process in real-time. (3) Large scale, integration and that stored in the data warehouse data from several distributed, heterogeneous information sources. From the point of the current development, support the DBMS of distributed parallel processing, computer having the capability of massive parallel processing (MPP), large scale storage institutions such as the development of technology and collaboration will make the data warehouse to practical and the real-world applications [6-7].

The Web Development Pattern. Web standards is not a certain standard, but a collection of the regulations and standards as is formulated jointly by the world wide Web consortium and some other organization for standardization, its purpose is to solve different platforms in the Web application, technology and developers, the incompatibilities of ensure the smooth and complete Web information circulation. Because static site technical level is relatively backward, so in operating and production, will produce a lot of problems and if need to involve a lot of information, the traditional site cannot meet this requirement, the serious influence the working efficiency. So many ASP technology to the combination of database technology website gradually established, obtained the very good use, so as to improve the efficiency of the people to search and work.

![Figure 2. The Web Development Pattern Demonstration.](image)
Portal frame generated should be independent of the website system, page layout or data changes will not affect the stability of other systems to update the system information should have independent management and the corresponding standards could be summarized as the follows.

Performance standard language mainly includes the CSS. CSS standards replace HTML table type is the purpose of CSS layout, frame and other performance of the language. A pure CSS layout combined with structured XHTML can help designers separate appearance and structure, make the Web simpler while the structure is more clearly, make the site visit and maintenance easier.

Behavior standard mainly includes the DOM, it is a kind of interface with browsers, platforms, languages, it is easy to access to the entire document scripting language structure, content and the related corresponding performance.

Standard language structure mainly includes the XML and XHTML. Although XML data transformation ability strong, can completely replace the HTML, but most of the sites have been adopted by the HTML.

The UI Design. For interface design, in the development of software has not been valued. We usually use "graphic design" by the staff. In fact, the software interface design with industrial product modeling design is the same, to be able to become the selling point of products. A good interface design can bring the enjoyment on the vision to the user, to shorten distance between man and the computer that make the software more likely to win the user's favorite [8].

We should follow the principle of UI design. (1) simplicity principle, interface simple, let the user easy to understand and operation, and effectively reduce the user selection error possibility; (2) the user language, should be used in the interface can reflect the language of the user, not the designer's language; (3) to the user's familiarity with the user when using the interface to existing knowledge to operate, and doesn't happen the way; (4) clear principle, the interface on the visual effect to facilitate users to understand and use; (5) the consistency principle, the structure of the interface must be consistent and clear, and consistent style want to and the content of the game.

Beautiful interface will bring people comfortable visual enjoyment, close the distance between a man and a computer, create a selling point for businesses. Interface design is not a pure art, it needs to consider the user, use environment, use method, and finally realizes the design for the user, is the art of the pure scientific design. The criterion for testing an interface is neither project team leadership opinion also is not the result of project members to vote, but the end user's experience, so closely integrated and user interface design to study, in the end for users to design a satisfactory visual effect.

The Internet Data Security. Data encryption technology, can only delay the time of computer network security is defeated, if the corresponding network security vulnerabilities, that computer operating system vulnerabilities are not blocked, so be hacked to encrypt the data, through certain decryption technologies, often can obtain the true plaintext encrypted. Data encryption technology as an important computer security technology, the progress of technology and effective application in security, will be one of the effective means to solve the problem of computer security. Below is from the factors of the current computer security hidden danger, to specific analysis of the computer data encryption technology in the application of computer security.

For the countermeasures of the security, we should consider the following issues. (1) Network Trojan is leaky computer network system and software vulnerabilities in a hidden way invasion server or client computer viruses. Network Trojan have change the computer configuration information, modify the registry, delete files, copy files, steal resources such as the hazards. (2) Have certain targeted denial of service attack, the main is the use of continuous service request control server to provide service for the user resources, not with network communication, forcing the server crashed. (3) P2P with openness, anonymity and extensibility, some criminals use the Internet to the physical network structure built by the logical network attacks, destroy the network system, such as viruses,
trojans, and worms camouflage become hotspot in information to the network node allows users to download, the user is easy to be controlled in the unconscious.

The Web Application Development Suggestions. Build a Web application can solve various problems, especially for those trans-regional organization, can use a Web application by using the INTERNET network manage conveniently, breakthrough the limitation of time and space. Therefore, the establishment of the Web application has become the direction of information management.

Interaction, the communication between the user and the Web application system, mainly refers to the system according to the user's request, implementation and dynamic data exchange between users. In interactive Web applications, the contents of the Web page is not static, but dynamic change, namely the information in the Web page with dynamic request of the user and the system dynamic state change. Application system based on Web development methods concerned mainly reflected in the Web application system development and the significant differences of traditional software development, the traditional software engineering methods and techniques applied to the system based on Web development, ragged. In the development of complex Web based system, in order to avoid the crisis of the Web, that achieve greater success, urgently needs a strict procedure and new methods, new tools to develop, publish, and evaluation system based on Web.

For the suggestion, we propose the RMM methodology. RMM is a kind of to design, build, and the maintenance methods of Intranet and Internet Web system. Its fundamental goal is to reduce dynamic database driven Web site maintenance costs. It advocates the system visualization, said so in the design of the debate. It is an iterative process, including the Web page visual elements of basic decomposition, and these elements and the relationship database entity. RMM is a kind of scheme for dynamic Web site to create and maintain.

Conclusion
In this paper, we conduct research on the web application development pattern and UI optimization mode under data warehouse environment. Summary of the application of Web standards development process in accordance with the specification requirements of the general software engineering and development process is generally divided into requirements analysis, design, coding, testing, four phases, considering the particularity of the website system, summarizes the website construction practical experience, to explore the application of Web standards in the website construction general development process. Under this basis, this paper proposes the data warehouse integrated web further development principle that will be meaningful.

References

