

A System to Monitor and Analyse NET Based Industrial Economic Operations

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Abstract — The industrial economy is relevant to all walks of life, from production to distribution, and its service extends to all aspects of daily life such as culture and education. With the rapid development of modern economies, industrial and economic development are facing new opportunities and challenges, such as the reforms of industrial organization and changes in industry linkages, and industry structure updates which are affecting the industry and is driving economic development at this time. The industrial economy monitoring and analysis operation is particularly critical and important. Industry-based monitoring and analysis of economic performance for the national government macro-control features is needed not only to better reflect the country's needs, but also to be more effective in promoting the standardization of industrial and economic development. This paper describes the bases of ADO.NET and ASP.NET, using browser / server architecture to carry out comprehensive economic indicators for industrial data acquisition, sending, collation, analysis and utilization, thereby giving an in-depth study of industrial economic operation monitoring and analysis.

Keywords -- Industrial Economy; ADO.NET; ASP.NET; Data Warehouse; Operation Monitoring

I. INTRODUCTION

Monitoring and analysis of economic performance for the industry to reflect the government's macro-control characteristics of the national government, but also to effectively promote industrial and economic development of standardization and long-term oriented. Industrial economic operation monitoring is an important job duties industrial economic management departments, in the current complicated international economic context, better for large-scale distributed data resources industrial economy timely and efficient analysis has important practical significance [1-3]. From the information systems integration solution based on data warehouse start of the industrial economy through information analysis and information services business process analysis, integration, and existing industrial and economic information systems heterogeneous data sources, is proposed based on the data warehouse can be effectively to achieve information integration industry economic information analysis system solution that can greatly improve the efficiency of industrial economic analysis of economic operation monitoring personnel, timely and efficient manner to provide statistical analysis of industrial economic production, efficiency, investment, prices and other dimensions of decision-makers at all levels of government and monitoring and forecasting information services [4].

Goal of this study is to achieve for the county government's industrial economic operation monitoring and analysis system. According to infrastructure, supporting platform, business applications into three levels, progressive promotion of industrial economic operation monitoring and analysis platform, use of information technology to promote

monitoring and analysis of industrial economic operation quality and momentum to build industrial enterprise economy authoritative information display platform. Through the industrial economic operation analysis and understanding of the background, the study of e-government application system construction, to the Government, the Industrial Park Administrative Committee and enterprise tripartite user contacts the software development life cycle model to follow, step by step implementation of the principles adopted by module construction. using object-oriented approach to economic indicators and economic operation analysis system subsystem analysis and design subsystems, ADO.NET and ASP.NET-based technology, using browser / server architecture and data warehousing, carried out on industry comprehensive economic index data collection, sending, collation, analysis and utilization, and thus the industrial economic operation monitoring and analysis of in-depth study, to achieve the industrial economic operation monitoring and analysis system framework designed to achieve the acquisition of enterprises comprehensive economic indicator data, send, collation, analysis and utilization, and industrial economic operation data visualization analysis and display. System to help the government faster and more direct understanding of industrial and economic development of each park, but also to promote the company's information technology and standardization, to jointly promote industrial and economic development.

II. PROPOSED METHODOLOGY

ASP.NET technology. ASP.NET is a unified Web application development platform to provide enterprise-class Web applications to generate the necessary services.

ASP.NET is largely syntax and Active Server Page (ASP) compatible, but it also provides a new programming model and structure for a powerful new generation of applications [5]. ASP.Net programming framework is built on the common language runtime that can be used to generate powerful Web applications on the server. ASP.NET technology structure shown in Figure 1.

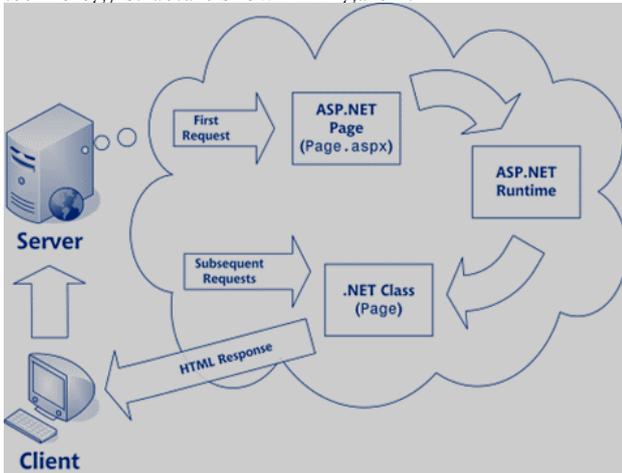


Figure 1. Structure of the ASP.NET technology.

ASP.NET uses a text-based hierarchical configuration system, which simplifies applying settings to your server environment and Web applications. Since the configuration information is stored as plain text, so you can apply the new settings without local management tools to help the situation. This "zero local administration" philosophy extends to deploying ASP.NET Framework applications. Simply copy the necessary files to the server, you can deploy ASP.NET Framework application to the server; even in the deployment or replace running compiled code, do not need to restart the server. ASP.NET was designed with the scalability, adds features designed to improve performance in clustered environments and multi-processor environments.

ADO.NET technology. ADO.NET data provider is a specific type of database processing class "set." Different types of data providers are a different set of classes that implement their own access to specific types of data storage function, which is optimized for a variety of ADO.NET data storage type made [6-8]. To be called a data provider must provide a set of basic functions, but special data provider can have many additional properties and methods, they are only for the type of data memory is accessed [9]. Figure 2 shows the detailed ADO.NET object model, namely System. Data namespace core components and the relationship between them. Including the six main target: Connection objects, Command objects, Data Reader Object, Data Adapter objects, Data Set objects, and Data View object. They provide a powerful data processing capabilities.

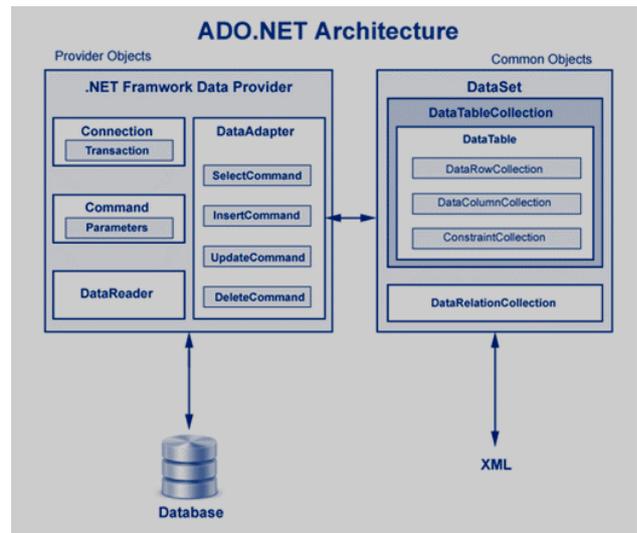


Figure 2. Structure of the ADO.NET technology.

ADO.NET Data Set is a core component of the disconnected architecture of ADO.NET. Data Set design purpose is very clear: To achieve independent of any data source data access, data collection is a local buffer of the table or off the record set connected sets. Thus, it can be used in a variety of different data sources, for XML data, or for local data management applications. Data Set contains a collection of one or more Data Table object, these objects by the data in rows and columns of data as well as primary keys, foreign keys, constraints and relationships information about Data Table object data components. Another core element of the structure of the .NET ADO.NET data provider, is a set of components including the Connection, Command, Data Reader and Data Adapter objects, including the designed purpose: to achieve data manipulation and data quickly, only , read-only access. Connection object provides the connection to a data source. Command object allows you to access to return data, modify data, running stored procedures and database commands to send or retrieve parameter information. Data Reader delivers high-performance data stream from the data source. Finally, Data Adapter provides connectivity Data Set object and the data source of the bridge. Data Adapter using a Command object to execute SQL commands in the data source to load data into the Data Set, and make changes to the data source Data Set the data consistent.

Data Warehouse. Data Warehouse has become the industrial economic management departments to support industrial and economic management decisions is an important platform. The establishment of a data warehouse based on industrial and economic operation monitoring information system can achieve a variety of industrial and economic information system integration of heterogeneous data sources, optimize the industrial economic analysis process, improve and strengthen the industrial and economic monitoring and forecasting techniques to improve the efficiency of the industrial economic operation monitoring for routine economic analysis of business industrial

economic management departments to provide decision support for industrial economic operation data acquisition, data extraction, data analysis, data modeling, OLAP and data mining and sharing provide a platform for the industry to query data and economic analysis and decision support and protection [10-11]. Data warehouse structure shown in Figure 3.

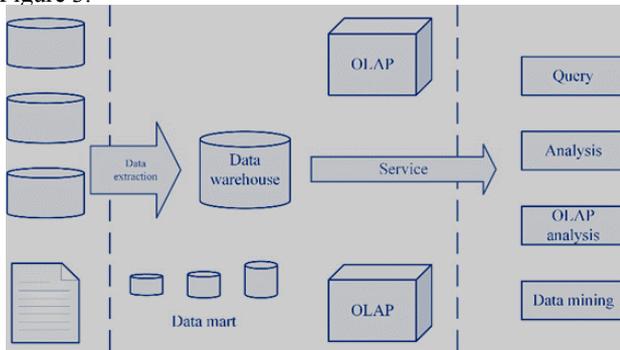


Figure 3. System structure of the data warehouse.

A data warehouse is a subject-oriented, integrated, relatively stable, reflecting the historical changes of data collection through data from different sources for uniform treatment and management, to support management decisions through flexible method of presenting. Data warehouse by snowflake star model and model organizational data, changing data by reflecting the history of the development process of the industrial economy and future trends to make quantitative analysis and forecasting. To achieve the various sectors, regions and key enterprises industrial production, efficiency, investment, import and export, raw material prices and other topics of real-time monitoring data, the use of multi-dimensional data modeling and analysis tools, multi-level and multi-dimensional analysis of the data on the industrial economy and data mining, operational conditions and trends reflected in a timely and efficient industry, region and other dimensions of the industrial economy, to provide comprehensive industrial economic management policy decisions, timely and accurate information.

III. DEMAND FOR INDUSTRIAL ECONOMIC OPERATION MONITORING AND ANALYSIS SYSTEM

The establishment of a comprehensive indicator system reflects the scientific concept of development is conducive to promoting sustainable development of the industrial economy, promote industrial upgrading and structural adjustment, improving the level of development. Because of the design only value system reflects the current economic situation, but also highlight compare and contrast economic developments. So the selected system index is particularly important, need to absorb the latest research results and practical experience related to the field of academia and industry, but according to the actual situation of economic and social development, in close connection with the status quo for their own development zone enterprises to form long-term development requirements of the system.

According to the main functions of economic and information management sector, we believe that the industrial economic operation monitoring system should include data collection, data query, data statistics, early warning, and data dissemination. The main function modules of the system for the system of economic indicators show investment platform subsystems and subsystem modules. Functional block diagram is shown in below Figure 4.

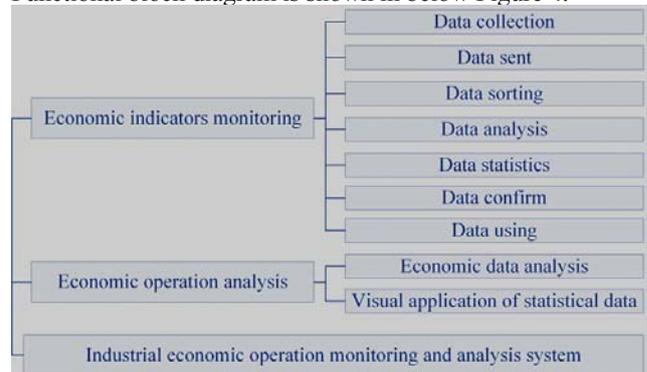


Figure 4. Function module of industrial economic operation monitoring and analysis system.

Data acquisition. To meet the complex economic environment, the scientific development of energy-saving emission reduction targets and programs, the need to diversify from multiple sources to gather information, from the time, it should include economic performance over the years related data and energy data; it is from the region, should both this region, but also national and other provinces data; from the content, it includes both the production and operation and energy consumption data, statistical data officially released, commissioned Bureau business data, including research reports, policy literature, etc; from the source point of view, including enterprise reporting data, commissioned Bureau to share data, and the data obtained from the website and articles.

Data query capabilities. In order to meet the country's economy and information technology management department of industrial economic operation status monitoring and forecasting of requirements, the need at any time within the area and main economic indicators and the country's energy consumption data. The system should provide a simple query and in accordance with a combination of industry, index, energy breed, region and other inquiries.

Statistical functions. In order to facilitate the leadership to grasp the situation and make decisions, the system should provide by industry, according to indicators, according to the statistical functions energy breed, statistical results, including statistical data of the month, when the accumulated statistical data, as well as up and MoM growth rates, etc., statistics Results In addition to the traditional way to show the form, it should also with pie charts, bar charts, line charts and other graphics display.

Warning forecasting. In order to support scientific decision-making play a supporting role, the system should provide early warning capabilities of key indicators, based

on historical data and predictive algorithms, by comparing the current actual data and forecast data to determine economic trends and energy consumption situation. Prediction algorithm should be customized.

Data publishing. In order to support the daily business of economic and information management and research needs, the system should provide customization fixed reports, data analysis and custom reporting capabilities; in order to facilitate the public to know about the macroeconomic and energy consumption information, the system should provide for Government Internet portal of information publishing. Since industrial economic operation of macroeconomic indicators are likely to change every year, warning algorithm may also be with the economic situation and changes in consumption trends change, the system must provide easy data customization tools for users, so that users can be based on changes in demand flexible customization.

IV. INDUSTRIAL ECONOMIC OPERATION MONITORING ANALYSIS SYSTEM DESIGN

Industrial economic operation monitoring system frame design. Data content industry economic operation monitoring system, the system functions and display the form will be more abundant, information support for industrial and economic development and energy efficiency will be more significant. In the information technology support, the government response to the economic situation changes and the ability contradiction between economic growth and resource consumption will be significantly enhanced. Used to develop technology based on .Net, .Net technology as build large, complex distributed information systems mature route in all walks of life in business applications has accumulated a wealth of success stories. System is divided into infrastructure, and business applications supporting platform three levels of progressive levels of realization of economic data collection, send, organize and analyze the process clear and technically feasible. The overall framework of the industrial economic operation monitoring system is mainly composed of the data layer, public service layer, application layer, user layer, as well as infrastructure, security system, security system operation and maintenance, standards system, shown in Figure 5.

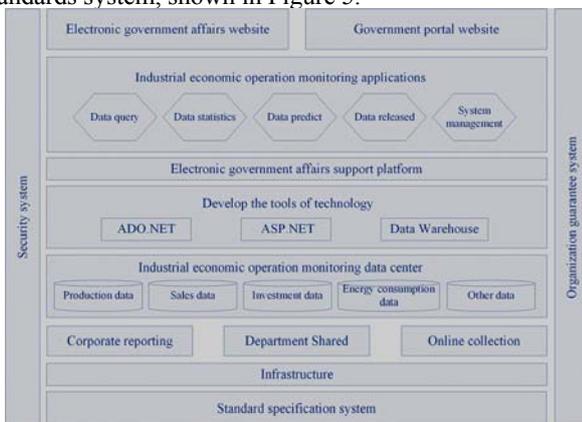


Figure 5. Framework of the industrial economic operation monitoring and analysis system.

Data layer. Data layer is the core of the system is the basis for system construction and normal operation. Data layer from the collection of raw data, after treatment, usually stored in the system in the form of a plurality of thematic data tables. In addition to business data, the data layer is also saved for system operation and management of log data, user data.

Public services layer. Public services layer can provide reliable operation and development environment for application development and business logic implementation, to help users flexible, efficient development and integration of complex application software. The interconnection between the various business applications, interoperability, mutual sharing, interactive support, provide a synergistic mechanism of heterogeneous data, and heterogeneous software and hardware platforms, it is not only to support business applications, but also the realization of the business system information sharing and interconnection between channels.

Application layer. Application layer built on public service layer and service layer based public services, packaging and systems needed to achieve business logic.

User level. User layer is provided for each user of the service system of the face, the industrial economic operation monitoring system described herein release to the public via the Internet industry of economic performance data, provide information, statistics to internal government through e-government network, analysis and reporting and other functions.

Infrastructure. Infrastructure is the physical foundation of the whole system, providing environmental support for the operation of the system, including network infrastructure, host server systems, storage backup systems and systems management software, database systems.

V. CONCLUSION

This paper mainly addresses monitoring and analysis of government actions on industrial economic performance and setup close links to industrial parks. It builds the government's industrial economic operation monitoring and analysis system for government-led development. It aims to promote the whole county economic development to provide a strong guarantee, and to help the government do more effective decision-making and supervision of business development for each park. It is also of importance to enterprises in the park to help them develop more information technology, standardization and maturity. While the public facing page shows open industrial economy to promote public communication business with government departments, it does publicity for the enterprise development and guidelines for the overall economic development of industrial districts to provide real help.

This paper work completed, including through in-depth analysis of the work of government departments and economic indicators information system industry, for now cloud technology and visual analysis technology and other advanced technology research to determine the economic indicators and economic operation analysis of two modules. Using object-oriented analysis and design methods, using a

layered architecture system architecture design, the use of .Net development technology, in strict accordance with the design principles of safe and effective database design database, to meet the system requirements of high coupling. Through the system, the relevant test to verify the relative performance of high reliability, high security, high scalability of the system.

Implementation of the system to solve the industrial economic operation monitoring and analysis of government departments, but there are some problems. Due to problems of time and energy, etc., some of the design and implementation of the system need to improve. Really applied to the real work will have practical problems to be addressed. System for processing real data is reliable and accurate, the system only provides network monitoring and analysis of the industrial economy, in order to further improve the government and corporate communication and guidance, should increase direct exchange of business and government, the Government, through the display of system data provide guidance and advice to help businesses, enterprises can also seek help and solutions to the government through system, so then they have to increase information exchange platform, which is the follow-up of the system's main job.

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