CONSTRUCTION DATA STORAGE SUBSYSTEM FOR DECISION SUPPORT SYSTEMS AUTOMATED CONTROL PARAMETERS PERFORMANCE INDUSTRIAL aviary

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In recent years, the agricultural sector is a progressive move from small to medium to large high-performance industrial enterprises increases more and more. This is accompanied by increasing complexity of interrelated systems of technological, economic, biological and social factors. In a globalized market of agricultural products has run a highly profitable, and this is possible only if the production of competitive products, which causes the need for increased levels of automation of key processes, control and accounting of all production parameters, creating the conditions for making the right strategic decisions the administration of the agricultural enterprise. Simultaneously, the current level of capabilities of computer technology to implement powerful automated system that can be used at all levels of life cycle management. Based on these analytical systems built environment capable of "prompt" head direction of the company, which would achieve productivity growth.

Poultry belongs to one of the most important and promising sectors of agriculture. Most modern poultry enterprise automation applied to different areas of production. The essence of the problem situation is that the manufacturer is unable to conduct a comprehensive analysis of continuous parameters of the effectiveness of the poultry house.

So far in many industrial housings accumulated significant amounts of data on which is the ability to solve various analytical and management tasks. On the other hand, the problem of storage and processing of analytical information are becoming more relevant and attract the attention of professionals and organizations working in the field of information technology, which led to the formation of a full business technology market analysis.

The purpose of research - development of methods and tools for creating data warehouse structure that would allow to integrate previously disconnected detailed data contained in various traditional OLTP-systems, archives, coming from external sources into a single database, making their preliminary approval and, perhaps aggregation.

Materials and methods research. Ideally, the work of analysts and managers at various levels shall be organized so they can have access to all the information they need and enjoy the convenient and simple means of submission and work with this information. It is the achievement of these goals IT, which are grouped under the general heading of data warehousing and business intelligence.

Results. Based on Microsoft SQL Server Management Studio as a tool environment to create operational databases and data warehouses and Microsoft SQL Server Business Intelligence Development Studio as a tool for building system structure analysis are presented OLAP-cube that contains a fact table and six tables of measurements. This structure allows the replies to inquiries regarding the effectiveness of the management as a separate unit and the enterprise as a whole.

In accordance with the definition of business analysis (BI, Business Intelligence) - a category of applications and technologies for gathering, storing, analyzing and publishing data that allows business users to make better decisions. In Russian and Ukrainian-language terminology such systems are also called decision support systems (DSS).

Collection and storage of information and problem solving information and query tools effectively implemented database management systems (DBMS). In OLTP (Online Transaction Processing) - subsystems implemented transaction processing. Directly OLTP-system is not suitable for a full analysis of the information through the contradictory requirements that relate to the OLTP-systems and DSS.

In order to provide the necessary information to make decisions usually have to collect data from multiple transactional databases with different structures and contents. For example, the information is stored directly in one of the poultry houses may be submitted in the form of a relational database in SQL Server. At the same time, the industrial poultry house accounting information required for the analysis is presented,

usually 1C. The main problem with this is inconsistency and contradictions of database sources, no single logical view of corporate data.

Therefore, to unite in a single system OLTP and DSS to implement storage subsystem uses the concept of data warehousing (DW). The concept is the idea of separating the data into those used for operative treatment, and those used for solving analysis. This allows optimizing storage structures. CD allows you to integrate previously disconnected detailed data contained in various traditional OLTP-systems, archives, coming from external sources into a single database, making their preliminary approval and possibly aggregation.

Thus, the analysis subsystem can be built on the basis of:

1) Information retrieval subsystem analysis based on relational database and static queries using language SQL;

2) operational analysis subsystem; for the implementation of the technology subsystems online analytical processing OLAP, which uses the concept of multidimensional data representation;

3) mining subsystems that implement methods and algorithms for Data Mining.
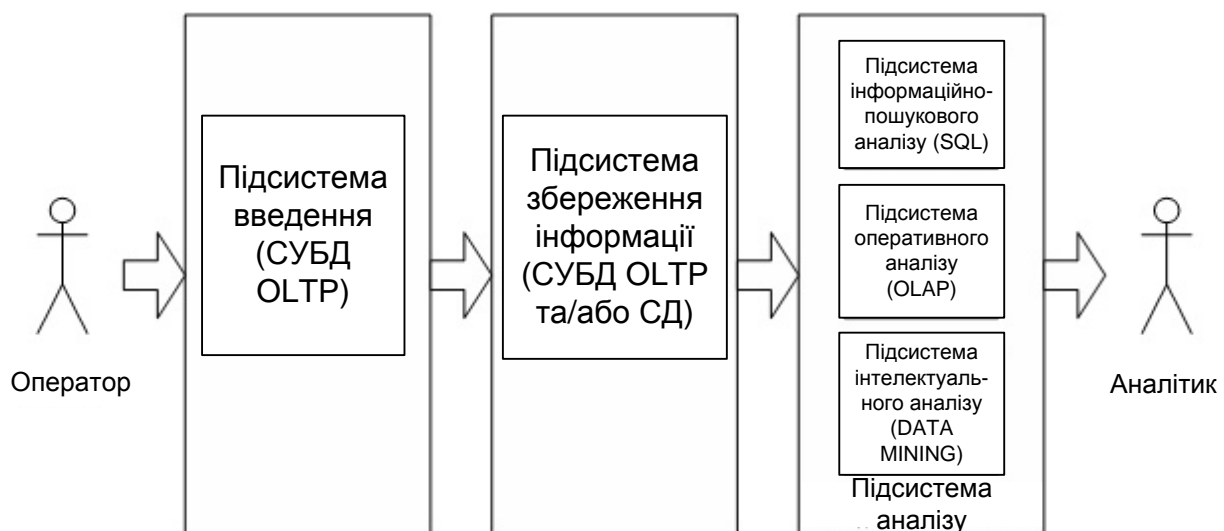
Fig. 1 shows the system architecture analysis.

Fig. 1. System architecture analysis

In addition to the opportunity to work with a single source of information managers and analysts should be easy visualization of data aggregation, search trends

forecasting. Despite the variety of analytical work, we can distinguish typical data analysis technologies, each of which corresponds to a specific set of tools. Together with the data warehouse, these tools provide a complete solution for automation of analytical and corporate information-processing system.

Data warehouse - is the foundation OLAP (Online Analytical Processing) - technology which in turn is the technology online analytical processing using methods and tools for data collection, storage and analysis of multivariate data to support decision-making processes.

The main purpose of OLAP-systems - support analytical work, arbitrary user requests analysts. The purpose of OLAP-analysis - test hypotheses.

Data Warehouse, which is the basis for OLAP, using multidimensional data model, allowing to perform complex analysis and special requests in a short period of time. They borrow some aspects of navigation and hierarchical databases that are faster than relational databases, which is very important in the management process in real time. Results OLAP-queries are submitted in the form of matrices, where measurements up rows and columns, and the matrix is size. The core of the decision support system is the idea of OLAP-cube (multidimensional cube, or hypercube). OLAP-structure established by the working data called OLAP-cube. It consists of numerous facts (measures) averaged the measurements. Usually cube is created using a spreadsheet using the scheme "star" or scheme "Ldinka." In the center of the "stars" is a table that contains key facts on which requests are made. Multiple measurements of the table annexed to the fact table. These tables show how can be analyzed aggregated relational data. The number of possible ahrehatsiy determined by the number of ways that the original data can be hierarchically displayed.

Thus, to build a system analysis or DSS must first build a data warehouse.

Llya implementation monitoring subsystem and decision support developed a relational database, which is implemented in the poultry house №4 State Enterprise "Teaching-Research Bird Breeding Plant. Frunze NAU "NUBiP Ukraine, located in the village Frunze of Saki region of Crimea. The information sent to the database is stored

for five years (since 2008). This is a significant amount of data and therefore it was decided on the basis of this database to develop a data warehouse.

Based on the fact that the relational database was implemented among Microsoft SQL Server 2005, data warehouse environment rozroblyuvalosya in Microsoft SQL Server Management Studio. To do this, a new database called ASCMap, which is imported from a database table ASCDB, used in the abovementioned poultry house, namely:

• Table FODDER_HOUR - stores information on the cost of feed in the poultry house every hour;

• Table POWER_DISCHARGE_HOUR - stores information on the cost of electricity every hour;

• Table WATER_DISCHARGE_HOUR - stores information on the costs of water every hour;

• Table TEMPERATURE_HOUR - stores information on thermal behavior inside and outside the poultry house;

• Table WATER_DISCHARGE_HOUR - stores information about the values of humidity inside the poultry house;

• Table Eggs_Day - stores information on the number of eggs per day demolished.

Fact table is a table Eggs_Day. All other tables are used as measurements.

Among Microsoft SQL Server Business Intelligence Development Studio project was created ASCMap, which defines the data source (Ascmap.ds), presentation of data (Ascmap.dsv), designed cube ACCube.cube) and certain dimensions. Fig. 2 shows the project window ASCMap.

As can be seen in Fig. 2, in addition to these tables, measurements added another dimension table - Time.dim. This so-called temporal dimension that will receive data for day, month, year and more.
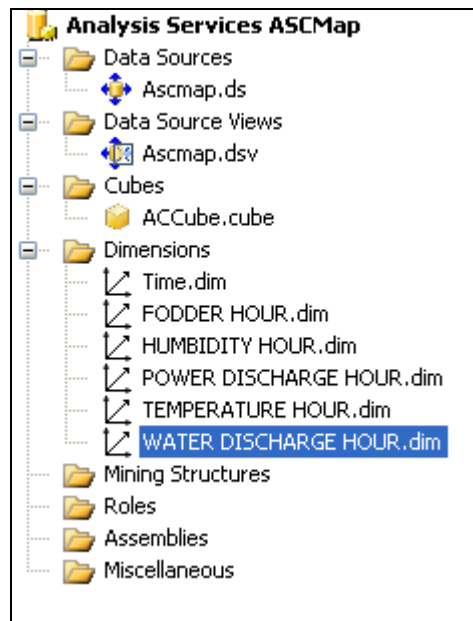
Fig. 2. Project Window ASCMap

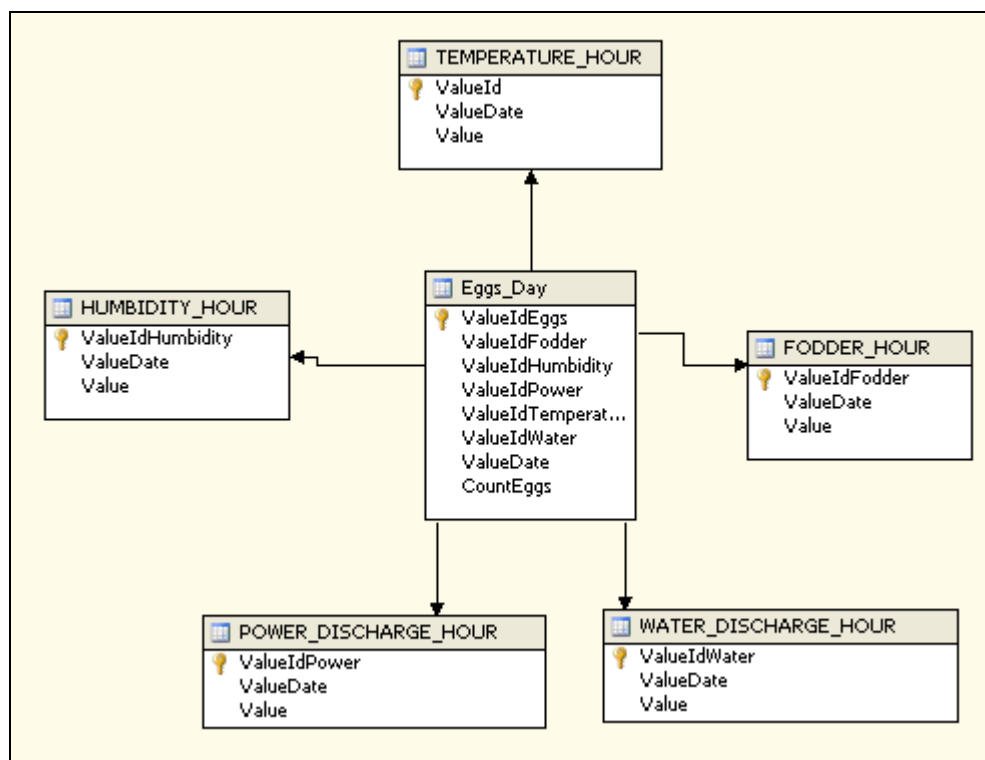Fig. 3 shows the structure of the developed cube.

Fig. 3. The structure of the cube

As can be seen in Fig. 3, the cube contains one fact table Eggs_Day, which through the column ValueIdFodder, ValueIdHumbidity, ValueIdPower, ValueIdTemperature, ValueIdWater, ValueDate associated with related tables-dimensions. Such relationships between tables allow Cuba to respond to such requests

management: number of eggs obtained for a day, week, month, year; are recorded at the same temperature, humidity; how much was spent electricity, water, feed and so on.

Building a data warehouse also provides the ability to perform more complex analytical queries. You can add to calculate the cube to be dynamically executed on user demand. For example, you can add a calculation that will determine the profit poultry house for the day, month and so on. At that price indices will not be stored in the cube, and each time will come out.

Among Microsoft SQL Server Business Intelligence Development Studio is the ability to calculate key performance indicators (KPI), which means a calculated quantitatively measure business success. Simple object KPI consists of basic information, objectives actually achieved values mentioned condition, the value trend and folder where you can review the key performance indicator.

The next steps related to special technology - Data Mining In English language, the term is defined as "knowledge discovery". Knowledge derived from data contained in databases and data warehouses in large volumes. In practice, the law is triggered philosophy of "transition amount of new money."

Conclusions

1. Recent years have seen the rapid development of automated systems management in the agricultural sector. This makes it possible to say that there is accumulation of large amounts of information to be developed based on system analysis.

2. To combine in one system operational databases and systems analysis applied the concept of data warehousing. Last is the basis of OLAP-technology which in turn is the technology online analytical processing using methods and tools for data collection, storage and analysis of multivariate data to support decision-making processes.

3. The proposed Microsoft SQL Server Management Studio as a tool environment to create operational databases and data warehouses, and Microsoft SQL Server Business Intelligence Development Studio as a tool for building system analysis.

4. The composition of OLAP-cube that contains a fact table and six tables of measurements. This structure allows the replies to inquiries regarding the effectiveness of the management as a separate unit and the enterprise as a whole.