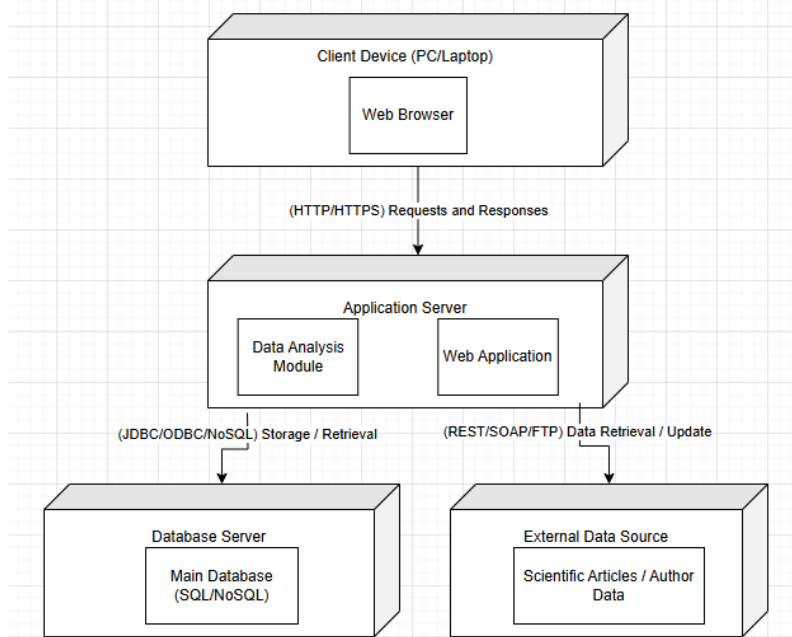


SOFTWARE FOR THE DATA ANALYSIS SYSTEM OF SCIENTIFIC ARTICLE AUTHORS

M.M. Retamoso

In modern science, there is a significant increase in the volume of publications, which complicates their effective analysis. Traditional methods of information processing, such as manual review and systematization, are becoming less effective when working with large datasets. Existing analysis systems often have limitations, including insufficient adaptability to the specifics of scientific data and the complexity of integration with various sources of information. The purpose of this work is to develop software for the comprehensive systematization and analysis of scientific articles. This system should provide the identification of connections between authors and publications, the evaluation of the scientific impact of individual studies, and the classification of articles by topic.

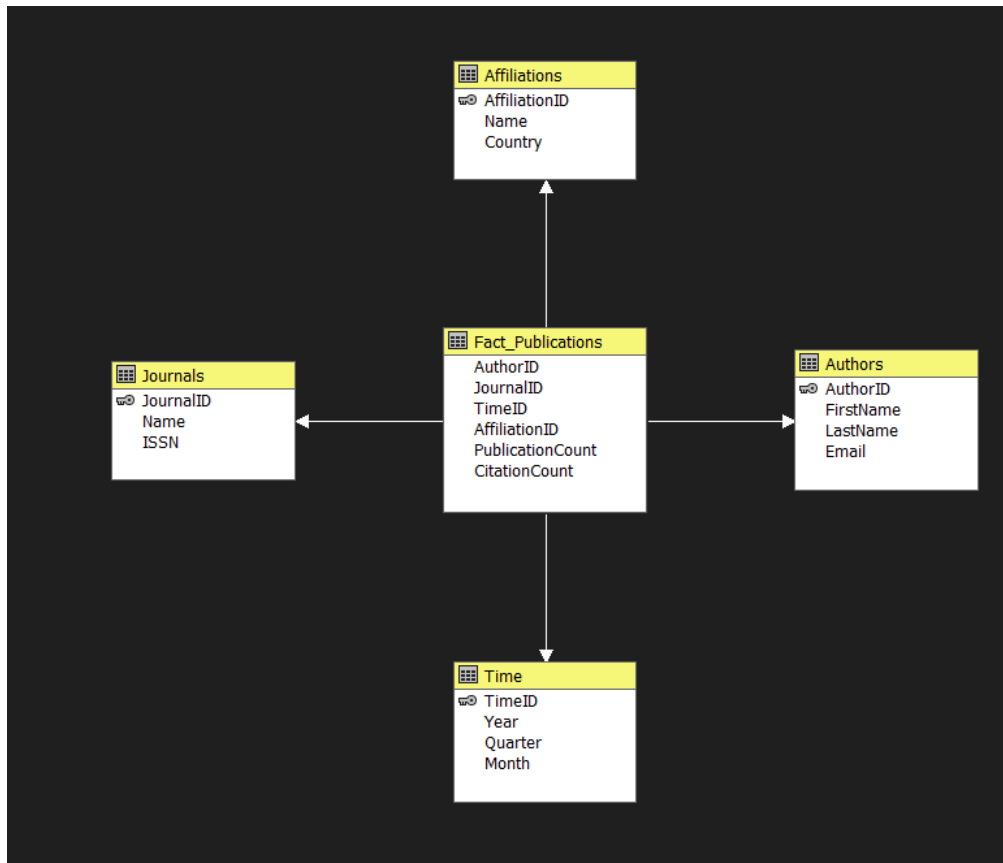
To achieve these goals, a multi-level system architecture was developed (see Fig. 1), which includes a client device, an application server, a database server, and external data sources. The key element of the system is a relational database designed for efficient storage and retrieval of information about scientific publications, authors, and keywords. To enable multidimensional data analysis, OLAP technologies [1] are used in the system.



(Fig. 1 System Topology)

The software development was carried out using the following tools and technologies:

- MS SQL Management Studio: for database management and administration.
- SSAS (SQL Server Analysis Services) [2]: for creating OLAP cubes (an example of a cube in Fig. 2) that allow aggregating and analyzing data across different dimensions.
- SSRS (SQL Server Reporting Services) [3]: for developing interactive reports that visualize analysis results.
- Data Flow: for creating data flows that automate the processes of extraction, transformation, and loading of data (ETL).



(Fig. 2 Created OLAP Cube)

The results of the development include:

- A mechanism for extracting, processing, and transmitting data, including OLAP cubes and automated data flows.
- A reporting system that provides visualization of analysis results.
- A set of key performance indicators that allow evaluating the productivity of authors, the citation rate of articles, and the dynamics of research areas.

The developed system is an effective tool for analyzing scientific articles. It provides the ability to identify key trends in scientific research, evaluate the productivity of authors, and analyze the popularity of various scientific areas. Further directions for the development of the system may include expanding the functionality for automatic classification of articles using machine learning methods, as well as integration with other scientometric databases.

REFERENCES

1. Barsagyan A. A., Kupriyanov M. S., Stepanenko V. V., Kholod I. I. Methods and models of data analysis: OLAP and Data Mining. - St. Petersburg: BHV-Petersburg, 2004. - 336 p.
2. Overview of Service Manager OLAP cubes for advanced analytics. URL: <https://learn.microsoft.com/uk-ua/system-center/scsm/olap-cubes-overview?view=sc-sm-2019>
3. What is SQL Server Reporting Services (SSRS)? URL: <https://learn.microsoft.com/uk-ua/sql/reporting-services/create-deploy-and-manage-mobile-and-paginated-reports?view=sql-server-ver15>

**НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ БІОРЕСУРСІВ І
ПРИРОДОКОРИСТУВАННЯ УКРАЇНИ
ФАКУЛЬТЕТ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ**



**ТЕОРЕТИЧНІ ТА ПРИКЛАДНІ
АСПЕКТИ РОЗРОБКИ
КОМП'ЮТЕРНИХ СИСТЕМ**

**ЗБІРНИК НАУКОВИХ ПРАЦЬ ЗА МАТЕРІАЛАМИ
VII ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ
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