

## CONSIDERATIONS REGARDING METHODS THAT ENSURE DATABASE INFORMATION MANAGEMENT AND SECURITY

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**Abstract:** *The growing complexity and diversity of the environment in which economic organizations are acting, continuously generates problems whose solution requires the adoption and implementation of scientifically grounded decisions. The best practices for database security are found to have a certain relativity of the updated cognoscibility within this field. Any user who designs an application in a database has assured by the database's managing system the possibility to monitor different events that occur. The frequently encountered events are changes regarding the data, but may also be submitting procedures or functions. The paper focuses on establishing the main methods for database information security as well as ensuring the substantiation of managerial decisions.*

**Keywords:** security, data, management

### 1. Introduction

The limited feature of material, financial, human resources implies responsibility and rationality in finding the best ways of allocating and using them to achieve the objectives in terms of high efficiency. For this purpose, the decision and the decision making system represent the management tools indispensable for the proper functioning of the company and for achieving the objectives set in its strategic plans.

Reducing the information - decision - action - results cycle depends largely on the degree of perfection of each of the subsystems of management involved in running it, namely the informational, organizational and decision making systems. The quality and effectiveness of decisions depend to a large extent on the

quality and quantity of the deciders' information, as well as on the quality and effectiveness of the decisions made and on the degree of substantiation depends the efficiency of the initial actions for their implementation.

It is known that database security is an issue particularly in the field of computer security, information security and risk management.

The best practices for database security are found to have a certain relativity of the updated cognoscibility within this field.

### 2. Database Management

Any effective information system provides users with true, accurate and real-time information. This information is entered into the database, taking the name

of files and will be organized to facilitate finding the information needed by users. Thus, data management represents an important component of the economic organizational information system due to the influence that it has on the speed of finding data and decision making, which many times can be vital to an economic entity. In all information systems data type resources have to be organized and structured in a logical manner allowing easy access, efficient processing, fast data access and effective management.

As a result of the investigations carried out, there have been outlined several requirements that decision must meet in order to effectively complete its multiple functions in a contemporary company. These requirements are:

- The decision must be scientifically proven. To achieve this major desideratum the managerial staff needs to possess both the needed decisional knowledge, methods, techniques and skills, as well as the understanding of market economy specific mechanism.

- The decision should be "empowered". This requirement must be understood in a double sense. Every decision should be adopted by the management body in whose service tasks is expressly stated.

- Every decision must be integrated, harmonized across the implemented or designed decisions taking into account the company's strategy and policies. The integration of decisions should be made both vertically and horizontally, ensuring the principle of unity of decision and action. Vertical integration refers to the correlation of the decisions made by each manager with the decisions taken at higher hierarchical levels. The horizontal integration refers to the interdependent correlation with the

decisions referring to the other involved activities.

- The decision must be within the optimum time of preparation and application. In order to achieve maximum economic effect, each decision must be designed and applied in a certain period of time. To ensure enrollment of decision design and implementation, particularly those of strategic and tactical decisions, during the optimum period a forecasting approach is required from the company's management.

- Correctly naming the decision is a prerequisite for effective implementation. The decision must be made clear, concise and to contain the objective and key operational parameters, meaning it must indicate the pursued objective, the expected course of action, the allocated resources, the decision-maker and the period or the deadline for implementation.

### **3. Considerations regarding methods to ensure database information security**

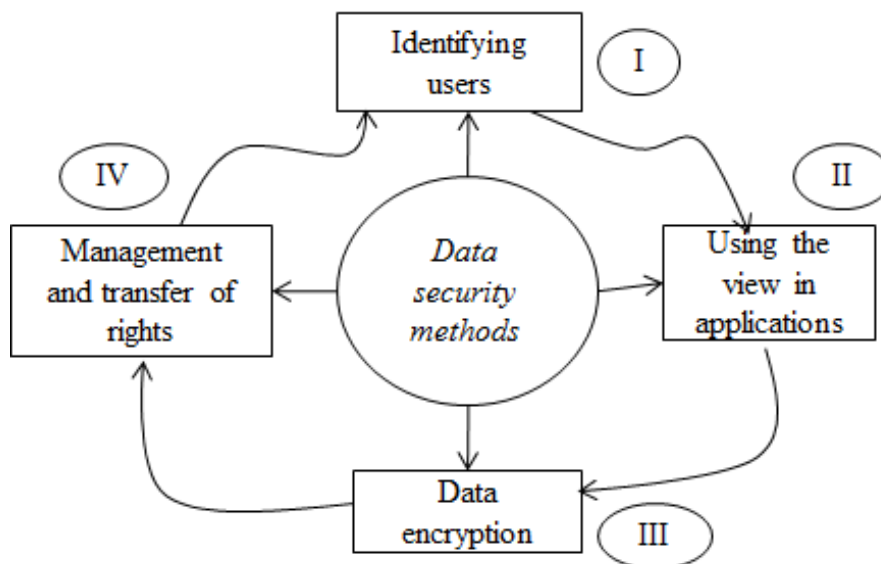
Any user who designs an application in a database has assured by the database's managing system the possibility to monitor different events that occur. The frequently encountered events are changes regarding the data, but may also be the submitting of procedures or functions.

When such an event occurs it triggers an evaluation process of a condition induced by constraint [7].

If the condition is satisfied then it is performed as such.

Correcting the failure to follow restrictions is ensured by the active rules.

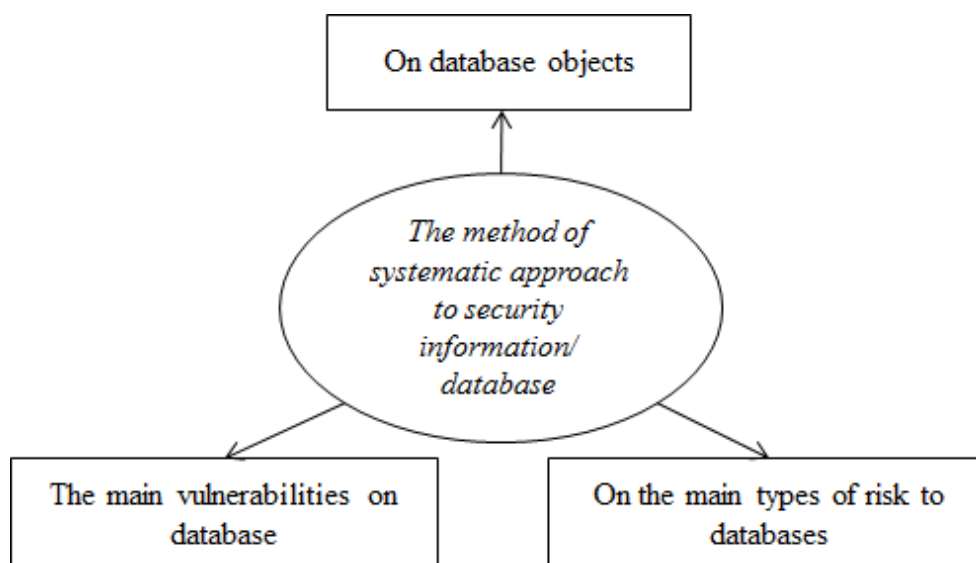
The database administrator is directly responsible with solving the problems related to the protection and security of the database.



*Figure 1 The main methods for data security*

The best practices for database security are found to have a certain relativity of the updated cognoscibility within this field.

In the first sense, finding the method of systemic approach to database security leads to the relational systematization approach in this field.



*Figure 2 Indications of the techniques belonging to the method of systematic approach to database security*

Simultaneously, through conceptual articulation, we find that there are also

indications of structural approach for ensuring database security.

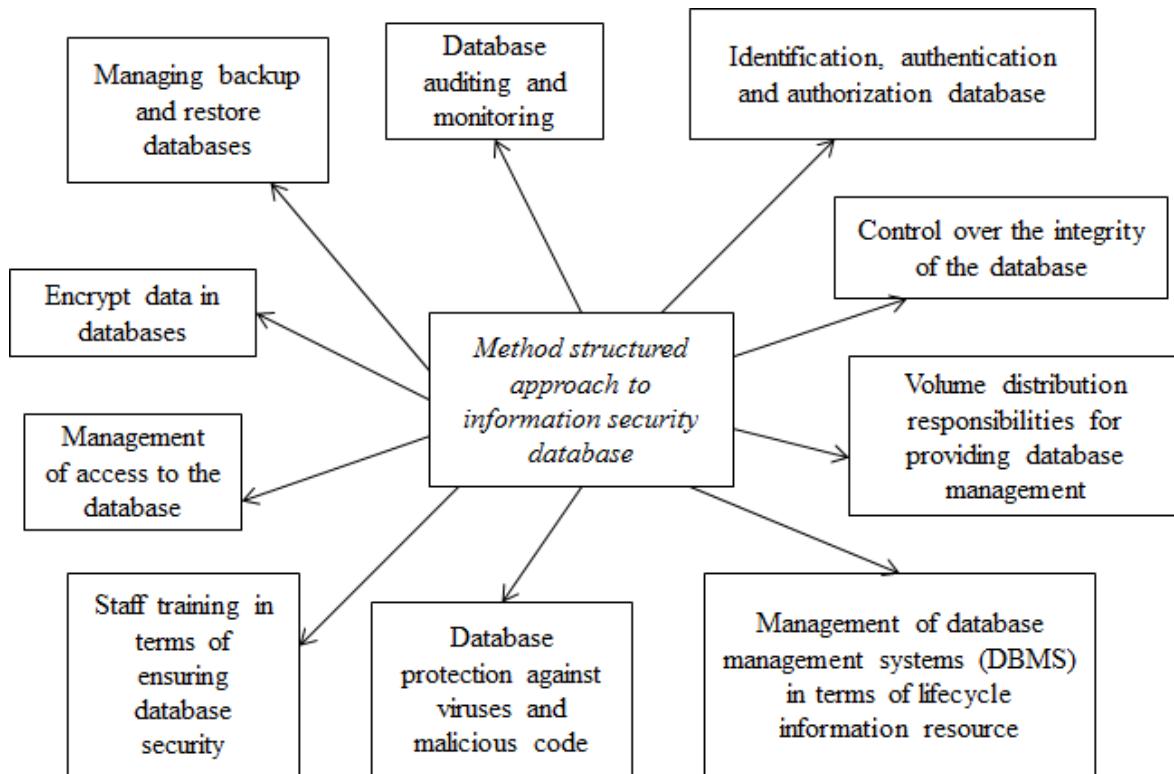


Figure 3 Indications of the structural approach method for ensuring database security

It is noted that the identification, authentication and authorization of access to databases requires, in time, monitoring and audits.

The control over the database integrity is associated with the distribution of the volume of management responsibilities. As such, the software of the database management system should be implemented in terms of the information resource lifecycle. The competitive advantage of a database security level is superior to the competitive advantage in the field.

Among the best practices for database security, found in security techniques, the ones listed below can be found.

- *Keeping the database server separated from the web server*

When installing the web software, the created database is just for the entity. This database is built on the same web server which generates easy access to data for an attacker.

As such, from a secured perspective, a database must be located on a separate serve, protected by a firewall.

- *Encrypting stored files.* In practice, it is estimated that 80% of websites are vulnerable to at least one form of attack.

- *Encrypting backup files.* Not all data thefts occur as a result of an external attack.

- *The use of firewall for web.* Protecting the web server is not strictly linked to the database. To protect a site against vulnerabilities such as web vandalism, a firewall application can be used.

- *Updates.* Web sites that have third-party applications can often be the target of attacks.

- *Maintaining third-party applications to a minimum.* If third-party applications are not absolutely necessary these should not be installed.

- *Avoiding the use of a protected web server if the database contains sensitive information.*

- *Enabling security controls within the database.*

The exemplificative alignments of techniques and best practices for database security have a conceptual and operational significance in the process of ensuring information / data security.

Contextually, the actions described above contribute to the effort of ensuring sustainable database security.

#### **4. Principles and practices recommended to ensure database integrity and security**

Database security describes using the multitude of security controls to protect databases.

Protection includes data, database applications or the stored functions, database systems and servers as well as the corresponding network links.

In fact, the protection is against compromising confidentiality, integrity and the availability of data/the database.

This involves different types of categories of controls, such as technical, procedural/administrative and physical.

Database security, as such, aims to protect against misuse and unauthorized modification or destruction.

*Database protection* should be ensured on several levels:

1) On the physical level (the room where the computers are installed must be protected from unauthorized users);

2) On a human level (the access authorizations are granted and a clear record of them is kept);

3) On an operating system level (any problem at this level must be resolved by applying security measures);

4) On a database management system level, when there are established the facilities for data protection.

#### **5. Conclusions**

The main methods for data security are closely related to the fundamentals of establishing the best practices for database security. Finding the systemic approach method for ensuring database security leads to relational systematization in this field.

Data management involves an important component of the economic organizational information system due to the influence that it has on quickly finding data and decision making, which many times can be vital to an economic entity.

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