

Chapter 2.17

Challenges of Data Management in Always-On Enterprise Information Systems

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ABSTRACT

Data management in always-on enterprise information systems is an important function that must be governed, that is, planned, supervised, and controlled. According to Data Management Association, data management is the development, execution, and supervision of plans, policies, programs, and practices that control, protect, deliver, and enhance the value of data and information assets. The challenges of successful data management are numerous and vary from technological to conceptual and managerial. The purpose of this chapter is to consider some of the most challenging aspects of data management, whether they are classified as data continuity aspects (e.g., data availability, data protection, data integrity, data security), data improvement aspects (e.g., coping with data overload and data degradation, data integration, data quality, data ownership/stewardship, data privacy, data visualization) or data management aspect (e.g., data governance), and to consider the means of taking care of them.

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INTRODUCTION

In everyday business we may notice two important data characteristics:

- **Every business is an information business:** All business processes and important events are registered by data and, eventually, stored in an enterprise information system's data base. In other words: if it is not registered by data, it has not happened.
- **Data is registered in digital form:** The majority of important business data is registered in digital form, e.g. the sales data collected at point of sale, the transaction data at automated teller machine, etc. They are all memorized in digital form in various data bases.

The underlying task of an enterprise information system (EIS) is to link processes on the operational, management and decision-making level so as to improve performance efficiency, support good quality management and increase decision-making reliability (Brumec, 1997). The EIS's database,

specifically its organization and functionality, play a critical role for the functional use of data and information assets in an organization.

Data management involves activities linked with the handling of all organization's data as information resource. The Data Management Association (DAMA) Data Management Body of Knowledge (DAMA, 2008) defines data management as "the development, execution and supervision of plans, policies, programs and practices that control, protect, deliver and enhance the value of data and information assets."

Always-on EIS supports business agility which is the ability to make quick decisions and take actions. "Agility is the ability of an organization to sense environmental change and respond efficiently and effectively to that change" (Gartner, 2006, p. 2). The measurable features that enable a business system to increase the agility of its performance can be defined as follows:

- **Awareness is knowing what is going on:** Awareness level can be determined by answering these questions: Do end users see the right information at the right time? Is the information easily accessible to the right people?
- **Flexibility is the ability to respond appropriately to expected changes in business conditions.**
- **Adaptability is the ability to respond appropriately to unexpected change:** Does the structure of business data promote or prevent flexibility and adaptability is the key question regarding adaptability and flexibility.
- **Productivity is the ability to operate effectively and efficiently:** It is important to establish whether or not business data increase the efficiency and effectiveness of business operations and decisions.

Effective data management in an EIS is essential to fulfil these tasks. This chapter considers

various aspects, possibly not all, of data management that seem to be important for running an EIS. Table 1 shows the considered aspects and challenges classified as data continuity aspects, data improvement aspects, and data management aspects.

The challenges of successful data management vary from technological to conceptual. Technological aspects of data management help business continuity by making EIS data available, complete, consistent, correct and secure. The aspects addressing the problem of EIS data continuity are described in the section on data continuity.

Once the technological aspects are solved, business may run smoothly. Nevertheless, the business may run even better if it is innovated constantly and persistently. Conceptual aspects deal with important data management issues that can improve business data: coping with data overload, solving data integration problems, improving data quality, assigning data ownership/stewardship, maintaining data privacy, and improving insight into data. In fact, these aspects address the issue of EIS data improvement and are dealt with in the section on data improvement.

DATA CONTINUITY

Data Availability

Challenge: Is Data Available All the Time?

Enterprises use their EIS based on information technology (IT) infrastructure to increase process productivity, empower users to make faster and more informed decisions, and consequently provide a competitive advantage. As a result, the users are highly dependent on EIS. If a critical EIS application and its data become unavailable, the entire business can be threatened by loss of customers and revenue. Building of EIS that ensures

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