Chapter 7

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.

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

Table 1. Data management aspects and challenges

	Aspect	Challenge
Data continuity	Data availability	Is data available all the time?
	Data integrity	Is data integrity compromised?
	Data security	Is data secure enough?
Data improvement	Data overload	Can we cope with all that data?
	Data integration	How to integrate data? Could the data integrate the business? Do we know organization's data? Do we know how to use organization's data?
	Data quality	Do we know what quality data is? Are we aware that the quality of data is degradable?
	Data ownership/stewardship	Who is the owner/steward of the data?
	Data privacy	Is data privacy a concern?
	Data visualization	Could we amplify cognition of data?
Data management	Data management	Do we need data governance?

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