

## Chapter 4.2

# EIS Systems and Quality Management

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### ABSTRACT

This chapter discusses the support of quality management by Enterprise Information Systems. After a brief introduction in ISO9001, one of the principle and widest-spread quality management frameworks, this chapter discusses the design and implementation of a typical QMS and in particular of key performance indicators, indicating the present state of performance in the organization. While analyzing design and implementation issues, requirements on the supporting EIS system will be derived. Finally, the chapter presents an outlook onto future developments, trends and research. This chapter reveals that key performance indicators can be well integrated in EIS systems, using either relational or object-oriented storage technology.

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### INTRODUCTION

#### Quality Management Systems

Over the last decades, enterprises and other organizations from large to small have come to implement quality management systems (QMS). Large Scale Enterprises (LSE's) and Small and Medium Enterprises (SME's) alike, decided to apply QMS to get grip on the product and business process quality level customers nowadays expect. Many SME's initially did so "because customers ask for it". While customer satisfaction is a pivotal factor indeed, learning to master and apply quality principles correctly also assists in increased employee involvement and productivity, preventing defects from occurring, reducing costs and production times. The key to achieving this is a timely and correct alignment of

the delivered quality in business processes at all levels in the organization, board to shop floor. The information needed to know and control quality performance goes hand in hand with other daily operational information within the organization and consequently, quality information will typically be residing in emerging Enterprise Information Systems (EIS). This is why in this chapter we will discuss quality management within the context of EIS systems, seen from the angle of SME's. A QMS is not the same as an information system; an information system (e.g., an EIS system) supports the implementation of a QMS.

## ISO 9001

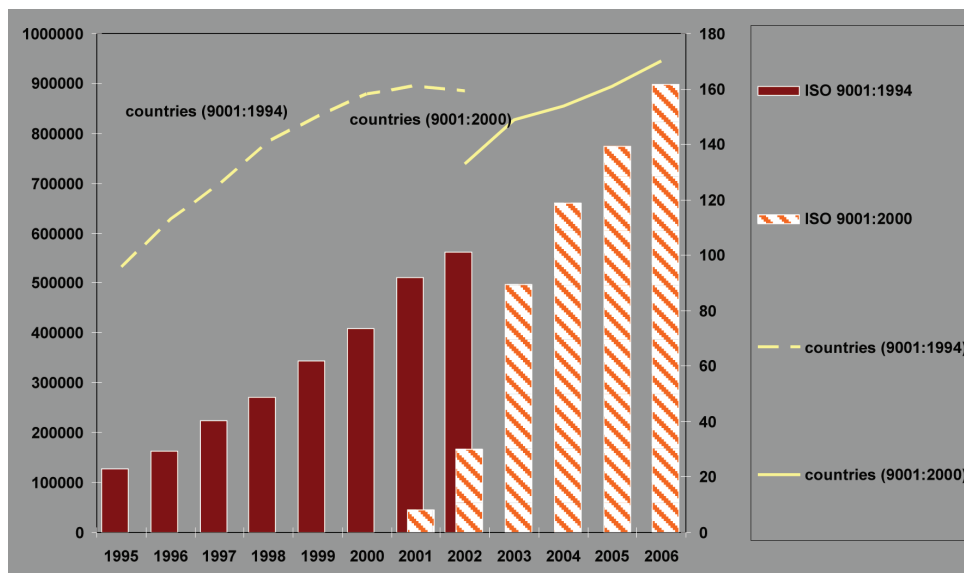
One of the principle and widest-spread standards to design and implement a QMS is ISO 9001, belonging to the ISO 9000-family of standards. The most recent version of this standard is ISO 9001:2008. Figure 1 based on the 2006 ISO annual survey figures (ISO, 2006) shows the world wide adoption of the standard.

ISO 9001 does not prescribe any quality management system in particular but frames the process of designing, implementing and operating one, defining guiding principles, requirements and key elements it ought to contain for proper functioning: the *what to*, not the *how to*. Organizations can tailor and scale a QMS framework to their own needs and chose the implementation they see fit, as long as the standardized good quality management practices remain honored. The detailed design and operating of a QMS is critical to its success, however, and ultimately critical to the success of the organization as a whole.

## Research Questions and Approach

Designing a fit-for-purpose QMS requires thorough understanding of business strategy and business processes and the readiness to align the QMS with the business processes, vice versa. Generally, alignment and fine tuning is something for the long haul, and of continuous concern. Niven, in (Niven, 2005) estimates that at present at most 10% of

*Figure 1. Global uptake of ISO 9001:1994 (solid bars) and 9001:2000 (hatched bars) up to 2006; China is now the country with the largest number of ISO 9001-based QMS (approx. 200000), comparable to Europe as a whole. Source: (ISO, 2006).*



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