

**Chapter I**

Information Systems Development and the Need for Computer Aided Method Engineering

The business issues of today are global in nature, for instance, organizational objectives may be as varied as increasing profits, obtaining faster product life cycles, or increasing the competition at a global level. To get more value out of a business, people tend to re-engineer the business process. Development of information systems today is mostly the process of bringing improvements to the existing system, as part of a large business change initiative, and systems development efforts that do not address these problems tend to be incomplete or inefficient.

As a result, the introduction of various applications and architectures is becoming increasingly common. New and different technologies such as telecommunication, artificial intelligence, image processing, multimedia, object orientation, as well as various applications such as batch or on-line transaction processing, process control, decision support, and work flow support are increasingly being introduced to improve the performance of business processes. Information systems development is changing, and the types of systems being built are much more varied and complex.

The development of information systems is a complex and ill-structured activity. The ill-structuredness results from conflicting systems goals defined by the business process and a large number of, sometimes possibly even never-ending, alternative actions and solutions. The complexity is due to the large number of systems components and the enormous number of relationships between these components. The scope and complexity of many systems often require that a range of techniques

and methods must be applied. In this book the classical notation of 'methodology' is used to indicate the study of methods. Business processes need to be re-designed and re-structured to implement strategic choices successfully.

Integration of business needs with information systems development initiatives is required to control the complexity of the project as well as the management of the project (Appelgate et al., 1999a; Applegate, et al., 1999b; Hidding, 1994). The evolving needs of business environments require the increasing adaptation of information system development processes to such needs (Kumar et al., 1992; Dahanayake, 1997; Rossi, 1998; Tolvanen, 1998). Information systems development processes must be adaptable to the evolution of a business system's goals and objectives. Dealing with the future needs of organizations and their business systems demands that information systems development strategies are revised, and this means that the information systems development process must incorporate many different information systems design techniques and development methods.

To look at the information systems development from the point of view of changing development strategies, this chapter is organized as follows: first, information systems development methods are discussed from a traditional standpoint and the degree of misfit with today's objectives are discussed. Then follows the focus to method designing approaches and continues on information modeling from the problem-solving perspective and from an intelligent way of support perspective. The discussion follows on summing up the deficiencies of CASE tools and automated support so far provided within information systems development. An overview of CASE environments and further reasons for limiting this book to the analysis and design stage of information systems development are given and discussed at the end.

METHODS AND TECHNIQUES: A HISTORICAL BREAKDOWN

The various information systems development methods that are presently available (2000) consist of a number of techniques packed together, to provide a set of guidelines for managing and executing information systems development projects (Marshall, 1999). Information systems development methods can be considered as an attempt to provide Road Maps for carrying out the development process and for delivering

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