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Decision Support
Systems

Decision support in the future tense

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This special issue is composed of a set of articles whose earlier version appeared in the 1995 Proceedings of the Third International Conference on Decision Support Systems, Hong Kong. The selected articles share a common thread. They discuss concepts and issues related to the development and deployment of decision support technology in the context of heterogeneous, network-wide distributed environments.

At the risk of dating ourselves, we name the theme of this issue: "Decision Support in the Future Tense". Indeed, the overwhelming success of the Internet has recently opened uncharted opportunities for organizations, large and small, to use that technology as a means to explore the new frontiers of electronic commerce. And more recently, while the Internet is still grabbing most of the headlines in information technology, another revolution has taken place inside corporations. Intranets – private and internal Internets shielded from the external world by "firewalls" – have quickly become a means for companies to streamline their internal communications and enhance their productivity.

The explosive growth of the Inter-/Intranets and the World Wide Web (WWW) has, however, been primarily focused on information exchange among different organizational units using data exchange protocols and workgroup technology. Organizations

have yet to explore the possibility of using the telecommunication systems and client-server computing as a strategy to enhance (distributed) decision making and to better capitalize on their investment in decision support technology. Despite the fact that decision support systems have come of age, their deployment remains limited, or at least not as widespread as office automation tools. From the DSS user's perspective, there are a number of reasons for the restricted diffusion of DSS, to include: unawareness of the existence of relevant decision support technologies; difficulty in accessing these technologies due to portability limitations; obstacles in matching and adapting existing technologies to specific problem situations; and, last but not least, the high costs of data integration required by interactive decision models.

The advent of new programming language environments (e.g., Sun's Java or script languages based on URL conventions), combined with the introduction of client-server architecture in organizational computing platforms, has opened new opportunities for DSS researchers and builders to develop distributed, network-based DSS in environments ranging from the desktop to the networked-embedded devices and the WWW.

Paramount among the challenges of future DSS is the development and delivery of decision support technologies that are architecture neutral, portable, dynamically adaptable to ever changing decision situations, and efficient in consuming system resources.

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To cope with these challenges, a new approach to deploying DSS is in order. The purpose of this issue is to shed light on some new directions for DSS research toward this formidable task.

This special issue starts with a discussion on the future requirements of DSS to operate in an open environment. Goul et al. propose a set of requirements/specifications for application-specific DSSs that are to be deployed and shared within and across organizations. Of particular importance, they emphasize improved discovery, model integration, accountability, and security. The authors further suggest the use of an automated intelligent WWW-DSS search agent to ensure effective delivery of DSS components.

Starting from the observation that business is primarily supported by structured documents, Ba, Kalakota and Whinston offer a client–broker–architecture to provide decision makers with Intranet-based accurate, comprehensive, and consistent information. Assuming the use of the World Wide Web as the vehicle of the corporate information infrastructure, they advocate the creation of “inter-mediation” agents to perform brokerage service among information workers, using structured documents. Their approach seeks to provide an information architecture that (1) allows users to access large amounts of data and documents in their corporate web servers; (2) facilitates inter-application data exchange; and (3) provides a stable knowledge repository.

Bhargava, Krishnan and Müller discuss the concept of DSS-on-demand in the context of emerging electronic markets. Discussing the expectations of both the providers and consumers of DSS, they identify some distinct market dimensions for DSS delivery: market objectives (information, access, execution), market infrastructure (search and retrieval technologies and billing mechanism), and the technological formats of DSS objects or “goods”. Based on this framework, they present some on-going initiatives of electronic markets for “decision objects”. A common feature of these attempts is that the market functions via a central repository that serves as a clearinghouse for matching the supply and demand of DSS components.

Acknowledging the difficulties of setting up and operating a central repository for DSS objects, Jeusfeld and Bui advocate a federated system of DSS deployment whose market structure is germane to the perfect competition model in economics. As an economic agent, each DSS provider/consumer would use his/her/its repositories to offer/demand DSS “goods”. Uniform data representation and uniform naming are proposed as mechanisms to instantiate exchange of DSS components across the Internet.

Together, the papers in this issue demonstrate the potential power of the new information infrastructure to promote the use of decision support technologies. More important, we hope that they serve as a source of inspiration for further research.