Handling Textual Information in a GDSS Database: Experience with the Arizona Analyst Information System


* School of Business Administration, Georgetown University
** Department of MIS, University of Arizona

Abstract

Research on group decision support systems (GDSS) has mainly been focused on means to make decision meetings more productive, but decision making is a continuous process with interactions inside and outside of the meeting room. A GDSS database must address general considerations of how information is stored and retrieved in decision environments. Much of this information is likely to be in the form of text, some of which is so "messy" that representing it in other forms is not worthwhile or is counterproductive. The Arizona Analyst Information System (AAIS) is a hypertext tool for entry, retrieval and analysis of textual information in a multi-user, multi-task, collaborative environment. This research examines the experience of using the AAIS for the cooperative creation, use, and maintenance of a large textual database. The main questions considered are the performance of users as direct participants in the database building process, and the way in which the AAIS design facilitates joint use of information.

Introduction

Research on group decision support systems has mainly been focused on means to make decision meetings more productive [e.g. 5]. Electronic versions of the nominal group technique, electronic brainstorming, and other methodologies include input phases, during which decision-makers enter their opinions and ideas, and resolution phases, during which the entered data are manipulated in order to enhance the decision making process. Meeting rooms are equipped with personal computers and local area networks; technologies range from computer-assisted audio-visual displays to full collaboration tools including data and model bases and electronic chalkboards to facilitate group discussion and thinking [7, 16].

Because of this emphasis on the decision meeting itself, the literature has given little attention to the question of how a database for a GDSS should be organized. A decision meeting is just one form of collaborative work. As more and more information is stored, accessed, manipulated, and presented using the computer, the GDSS database must do more than store text fragments during the course of a meeting. It must have a general ability to handle text which permits incremental decision-making by various groupings of people. In this paper, the Arizona Analyst Information System (AAIS) is introduced. The AAIS is an interactive tool for entry, retrieval, analysis and long-term maintenance of textual information in a multi-user, collaborative environment. Experience of using the AAIS raises many questions about the design of a GDSS database.

Messy Data and the GDSS Database

The AAIS, which is described in greater detail in the next section, was originally designed to handle information storage and retrieval in "messy" data environments. Messy data is likely to arrive in incomplete and inconveniently bundled fragments, to come from multiple, potentially contradictory sources of varying trustworthiness, and to be difficult to capture through formal, traditional channels. Data fragments may be relevant to more than one task area or user. Their full relevance may only be known when other fragments can be linked together with them in a manner which is difficult to predict. Although it is impossible to draw the line precisely, a messy data environment may be defined as one in which the cost of the information lost by representing data in rigid formats is greater than the benefits from the easy retrieval and processing which these formats allow. The following composite excerpt, which might be used by a marketing department to determine a competitor's product line strategy, is typically messy:

The G/16 programmable economic (commercial) terminal (Courier 5101) differs from the G/14 in the following aspects: it is constructed as a work place with chair, up to four floppy disks may be connected (up to two in the same device or four in a separate box), the G/17-4 (Courier 1152) is used with it as a typewriter, the OS (operating system) uses the SIOs interface. It is intended for use as office computer for factoring, bookkeeping and financial accounting.

What fields would be needed in a traditional relational database to store this information? Candidates would include TERMINAL NAME, TERMINAL CLASS, EXTERNAL STORAGE, PRINTING DEVICE, OPERATING SYSTEM, and TERMINAL USES. Since there could conceivably