: What is a DSS?

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"What is a DSS?" is a fundamental question that many have addressed over the years. It seems appropriate to clarify the term decision support system and the associated acronym DSS before drawing any further distinctions.

In a "long ago" DSS forum posting of Friday, January 16, 1998, I raised the following issues: “What are the pluses and minuses of using the term decision support systems or DSS as an all inclusive term for more specialized systems like enterprise-wide DSS, data warehouses, OLAP, desktop data bases with query tools, spreadsheet financial models, visual simulation models, optimization models built using a management science package, knowledge management tools for indexing and searching text data bases, web information systems that support management decision-making, management expert systems and groupware?” My 1997 practitioner paper titled “What is a DSS?” had basically concluded DSS should be used as an all-inclusive term for these more specialized systems.

At that time, I noted in the forum “My approach is to define DSS as a meta-category. DSS is a category like fruit is for apples and oranges. It is my perception that DSS is a general term that will be more understandable to non-IS staff in an organization. We have many 'buzz' words that we can use with technical people that are related to the broad, general category – Decision Support Systems (DSS). DSS can be categorized in many ways. Data-driven DSS emphasize a data warehouse and OLAP tools and model-driven DSS emphasize simulation, operations research, and spreadsheet financial models.”

Renae Houck replied January 21, 1998 “I believe (and I assume most IS professionals would agree) that the term 'decision support systems' is too broad of a phrase to define what most systems are trying to accomplish. Using more specific terms such as OLAP and data warehouses are needed so we can understand each other. However we must always remember that when speaking to end-users we need to simplify complex jargon. Most of the people in this class do not really know what a “visual simulation model” or a “knowledge management tool” is so we should not expect people who do not have a lot of technical skills to be able to understand these terms either.” Kandy Jones followed up on January 26, 1998 “It is my understanding that Data Warehouses are used to store and manage data. Some of the other applications mentioned collect the data that is stored by the warehouses. Other applications use the data to assist managers in making informed decisions about the business. These are all very different functions that are related. Using DSS as a term that describes all of them would not be correct unless it was accepted as a category, such as fruit is for apples and oranges.”

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Consultant Larry Greenfield noted some time ago in a short paper at his Website, Data Warehousing Information Center (dwinfocenter.org), “Business intelligence seems to have become the vendors' preferred synonym for decision support. My guess is because decision support has an academic connotation and, as just mentioned, decision support systems do not necessarily support decisions. On the other hand, business intelligence systems do not necessarily make a business more intelligent.” By the way Greenfield focuses only on data-driven DSS. According to his definition, "A decision support system or tool is one specifically designed to allow business end users to perform computer generated analyses of data on their own."

Some vendors like Information Builders do use a broad definition of DSS like the one advocated by Ralph Sprague and Eric Carlson more than 20 years ago and similar to the definition used at DSSResources.COM. Sprague and Carlson (1982) stated, “DSS comprise a class of information system that draws on transaction processing systems and interacts with the other parts of the overall information system to support the decision-making activities of managers and other knowledge workers in organizations (p. 9).” In general, Decision Support Systems (DSS) are a specific class of computerized information system that supports business and organizational decision-making activities. A DSS is an interactive software-based system or subsystem intended to help decision makers compile, analyze and manipulate information from raw data, documents, knowledge frameworks, and/or business models to identify and solve problems and make decisions. A DSS is a specific software/hardware system for use in a specific situation as part of a decision process.

Techtarget.COM defines a decision support system as “a computer program application that analyzes business data and presents it so that users can make business decisions more easily. It is an 'informational application' (in distinction to an 'operational application' that collects the data in the course of normal business operation). A decision support system may present information graphically and may include an expert system or artificial intelligence (AI). It may be aimed at business executives or some other group of knowledge workers.”

In the late 1990s, Techweb defined a Decision Support System (DSS) as “an information and planning system that provides the ability to interrogate computers on an ad hoc basis, analyze information and predict the impact of decisions before they are made. DBMSs let you select data and derive information for reporting and analysis. Spreadsheets and modeling programs provide both analysis and “what if?” planning. However, any single application that supports decision-making is not a DSS. A DSS is a cohesive and integrated set of programs that share data and information. A DSS might also retrieve industry data from external sources that can be compared and used for historical and statistical purposes. An integrated DSS directly impacts management's decision-making process and can be a very cost-beneficial computer application.”

In an online glossary at IBM Developerworks decision support system (DSS) is defined as “one of a

number of older synonyms for applications and data used to support decision-making and business management processes, now broadly called business intelligence systems. Check URL http://www-106.ibm.com/developerworks.

The same glossary states “Business Intelligence (BI) is the gathering, management and analysis of vast amounts of data in order to gain insights to drive strategic business decisions, and to support operational processes with new functions. BI is about the development of information that is conclusive, fact based, and actionable. It includes technology practices like data warehouses, data marts, data mining, text mining, and on-line analytical processing (OLAP). The objective of a BI solution is to transform data into useful information, such as customer profiles, buying habits, product profitability and competitive analysis. It may involve analyzing volumes of data for unsuspected, but valuable, associations and insight. It includes streamlining data into useful reports and sharing that information with people inside and outside the organization who need that information.” The IBM definition builds on its data-driven approach to DSS first advocated in the 1980s with the introduction of DB2.

Why is it important to differentiate different types of decision support systems? The more that DSS impact us, the more important it is to draw distinctions. Distinctions among DSS can help target the right decision support capability to a specific need. Drawing meaningful distinctions can assist in understanding what specific type of DSS works and when. Clarifying our terms can also improve Information Systems teaching and research. We need to periodically revisit fundamental terms to help us grapple with the growing complexity of computerized systems and to help explain what is possible and what is desirable. Why shouldn't we adopt a new term like business intelligence and abandon the term decision support system? Is DSS an archaic synonym? Providing intelligence information to managers about the status, operations and environment of a business is a worthwhile goal and a purpose for a specific DSS. My preference for naming DSS with such a purpose is to call them data-driven DSS. It is easy to fall to the temptation of changing the labels on our computerized information systems to stay current with vendor nomenclature. We must resist that temptation. Maintaining an historical continuity in our nomenclature and terminology helps make sense of what we observe.

So what are we trying to do by expanding and more explicitly defining concepts related to computerized decision support? The computing technologies that are used to build DSS are evolving and becoming more powerful and more sophisticated. Hence new systems are being developed that better meet long standing needs and that meet new needs derived from a more complex organizational environment. For those of us who build and try to understand computerized decision support our vocabulary needs to become more sophisticated and we need to differentiate types of DSS in more elaborate and more meaningful ways. Our DSS language is evolving and becoming more differentiated. Like the Eskimos who developed many words in their language to describe the different types of snow, we need to develop word phrases to describe the many types of DSS. The phrase “decision support system” like the word “snow” remains useful, but it is not adequate to capture the evolving reality of DSS. The Eskimos speak of “anniu” meaning “falling snow” and “api” meaning “ground snow” and “salumaroaq” meaning “smooth snowy surface of fine

particles". We need to add adjectives to enhance the descriptions of our systems.

In general, we who are interested in DSS should become more precise and more specific when we discuss a specific DSS. Are we discussing, investigating or building a data-driven, web-based DSS for providing business intelligence, or a web-based, document-driven DSS to assist in managing operational risk, or a spreadsheet-based, model-driven DSS for cost estimation. It is no longer adequate to speak in broad generalities about decision support systems or business intelligence.

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For more information about Eskimos and snow terms check http://www.units.muohio.edu/dragonfly/snow/snow.HTML or check Woodbury at http://www.princeton.edu/~browning/snow.html.

The above response is modified from Power, D., What is a DSS? DSS News, Vol. 5, No. 1, September 12, 2004.

From http://www.informationbuilders.com/decision-support-systems-dss.html

"Decision Support Systems (DSS) are a specific class of computerized information system that supports business and organizational decision-making activities. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

Typical information that a decision support application might gather and present would be:

* Accessing all of your current information assets, including legacy and relational data sources, cubes, data warehouses, and data marts

* Comparative sales figures between one week and the next

* Projected revenue figures based on new product sales assumptions

* The consequences of different decision alternatives, given past experience in a context that is described "

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Last update: 2009-03-20 09:00