

: What is the difference between a DSS and a DSS generator?

This Ask Dan! expands upon the question "What is a DSS?" from September 12, 2004. John Wen had asked on the Free DSS Forum at DSSResources.COM about the difference between a DSS and a DSS generator and that interchange of ideas lead to this summary response.

Let me quote and paraphrase from John's September 2, 2004 posts: "Dr. Power, What is the difference between DSS and a Decision support software/generator (e.g. Excel, Expert Choice, MicroStrategy, etc)? For example with Excel, you just make use of some of the functionalities in Excel to solve problems which helps or assists in decision making. Then you call this a DSS. But in fact you only use the functionalities of Excel. Why don't you directly call Excel a Decision Support System? After I pondered over the differences, I still don't know the difference between a DSS and Excel or Expert Choice. When you use functionalities of Excel or Expert Choice you are using that software. But the book just claims that you are 'building' a DSS instead of using a DSS. I still think Excel or Expert Choice itself is a DSS because you are using functionalities of Excel or Expert Choice to help make a decision. This problem has puzzled me for a long time, I hope you can understand and solve my problem. Thank you!"

The term "decision support systems" is used to refer to a class of information systems and decision support system refers to a specific example of such a system. The acronym DSS refers to both the singular and plural terms. Some authors have tried adding a lower case "s" and then using the acronym DSSs for the plural concept, but it never seemed to gain widespread acceptance. When we build a DSS (singular), we are referring to a specific decision support system. To add some other subtle distinctions, DSS refers to multiple decision support systems in an organization; DSS refers to a field of research; and DSS refers to a concept that can be defined in terms of specific characteristics and attributes.

For more than 20 years, the academic literature has drawn a distinction between a specific DSS and a DSS generator (cf., Sprague and Carlson, 1982). I think the distinction remains useful, but it is not universally recognized. Some vendors DO call application development software (DSS generator software) a decision support system. Also, as I mentioned in a short article titled "What is a DSS?" in 1997,

"Keep in mind as you read articles in the DSS literature that if a computerized system is NOT an on-line transaction processing system (OLTP), someone will be tempted to call it a DSS." Distinctions "get lost" in casual conversation and vendor marketing materials. No one can really "buy" an off-the-shelf specific DSS.

My DSS book (2002) defines a DSS generator as a "computer software package that provides tools and capabilities that help a developer build a specific DSS (cf., Sprague and Carlson, 1982, p. 11). Microsoft Excel is an example of a DSS generator for creating small-scale data and model-driven DSS. See development environment (p. 226)."

A specific DSS is a software/hardware system for use in a specific situation as part of a decision process. Sprague and Carlson argue "systems that actually accomplish the work might be called Specific DSS. These involve an information systems 'application,' but with characteristics that are significantly different from those of a typical data processing application. Specific DSS are the hardware/software that allow a specific decision maker or group of them to deal with specific sets of related problems (p. 10)."

: What is the difference between a DSS and a DSS generator?

A DSS generator is a software package for developing the user interface and in some cases a model, rules or a database schema for a DSS. A DSS generator is used to create a specific DSS. Sprague and Carlson (1982) discuss DSS generators in detail (pp. 69-72; pp. 306-314). They identify "two basic objectives of the DSS Generator: 1. To permit quick and easy development of a wide variety of specific DSS; and 2. The Generator must be flexible and adaptive enough to facilitate the iterative design process by which Specific DSS can respond quickly to changes". A DSS generator is a software "package" that provides a set of capabilities to build specific DSS quickly and easily. A DSS generator for developing a specific data-driven DSS is very different than one for building a model-driven DSS.

Perhaps we would be better served by using phrases like "application development environment", "fourth generation language", "template", "toolkit", or "shell", rather than DSS generator. Is the term DSS generator still useful? In my opinion YES, but it is important to define it and use it consistently. It is important to think about and draw distinctions like the one John Wen is struggling with.

What about Excel and Expert Choice? Microsoft Excel is a general purpose, application development environment and an end-user productivity tool. The addition of Visual Basic for Applications (VBA) expanded Excel into a much more sophisticated DSS development environment. Excel can be used to "generate" a specific DSS and it can be used to conduct personal, one-time analyses and studies. Excel is definitely not a DSS, but it may be much more than a DSS generator. So while many people use only a small fraction of Excel's capabilities, Excel is a sophisticated DSS application development environment and hence it can be called a DSS generator. A software package like Expert Choice can be used for a one-time decision analysis or it can be used to help structure a recurring decision situation and the Analytical Hierarchy specified in the Expert Choice environment then becomes the core of a specific, model-driven DSS that is used repeatedly in the situation.

Sprague and Carlson identified Interactive Financial Planning System (IFPS), EXPRESS from TYMSHARE, Executive Information System (EIS) marketed by Boeing Computer Services and Geodata Analysis and Display System (GADS) from IBM Research Lab in San Jose as examples of DSS generators. But in 2004, as was true in 1982, there are no "full service" DSS generators. DSS are customized information system applications. Building a DSS remains a challenging task and it remains important to create DSS development environments, a.k.a. DSS generators, to help and facilitate development of a specific DSS.

The above response is from Power, D., What is the difference between a DSS and a DSS generator? DSS News, Vol. 5, No. 20, September 26, 2004.

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