

# : *What are the components of a decision support system?*

by Dan Power

Editor, DSSResources.com

Traditionally, academics and practitioners have discussed building a decision support system (DSS) in terms of four major components: 1) the user interface, 2) the database, 3) the models and analytical tools, and 4) the DSS architecture and network (cf., Sprague and Carlson, 1982). A component is a distinguishable part of a larger entity. Component may be implemented with different technologies and each component has a different function or purpose unless redundancy exists in the system.

According to Sprague (1980), "Opening the large DSS box reveals a database, a model base, and a complex software system for linking the user to each of them (p. 14)." Sprague argued a decision support system "is comprised of three sets of capabilities: database management software (DBMS), model base management software (MBMS), and the software for managing the interface between the user and the system, which might be called the dialogue generation and management software (DGMS). These three major subsystems provide a convenient scheme for identifying the technical capability which a DSS must have (p. 14)."

Wikipedia uses the Sprague definition and also defines components of DSS in terms of:

Inputs: Factors, numbers, and characteristics to analyze;

User Knowledge and Expertise: Inputs requiring manual analysis by the user;

Outputs: Transformed data from which DSS 'decisions' are generated;

Decisions: Results generated by the DSS based on user criteria." This is a broad view of

components and it creates some confusion for software design. Inputs come from users. Outputs are intended for users and decision are made by users using a DSS. This is the blackbox view of components and we need a transparent box to build innovative DSS.

Focusing on technical components can assist in application design and can assist in implementing services to provide all or part of the functionality of a component. A component may be implemented as an independent software package or it may be implemented as a module in a DSS generator or development environment. Identifying needed software components for categories of DSS can enhance reusability and reduce the cost and complexity of building systems.

Overall, the traditional Sprague (1980) list of major technical components remains useful because it helps identify similarities and differences between categories or types of DSS. Also, understanding the technical system components can help managers and information systems analysts build innovative DSS. From a broad system perspective, the DSS user is the key component determining the effectiveness of the DSS. DSS designers need to recognize the important role of the targeted

## : What are the components of a decision support system?

user and involve them in customizing components for a specific DSS purpose.

### References

Decision support system, From Wikipedia, the free encyclopedia at URL [http://en.wikipedia.org/wiki/Decision\\_support\\_system](http://en.wikipedia.org/wiki/Decision_support_system).

Power, D. J. (2002). *Decision support systems: concepts and resources for managers*. Westport, Conn., Quorum Books.

Sprague, R. H., Jr., "A Framework for the Development of Decision Support Systems," *Management Information Systems Quarterly*, vol. 4, no. 4, Dec. 1980, pp. 1-26.

Sprague, R. H., Jr. and E. D. Carlson. *Building Effective Decision Support Systems*. Englewood Cliffs, N.J.: Prentice-Hall, Inc.: 1982.

Author: Daniel Power

Last update: 2005-08-26 20:14