

## : *What type of DSS is it?*

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Managers and developers are recognizing that products and systems advertized as business intelligence, decision support systems or knowledge management systems are not solving the same problem. The question of "what type of DSS is a specific decision making relevant software product or system?" is common and recurring. The message is getting out that all DSS are not the same. DSS researchers have observed and recognized the differences for many years, but now managers, developers and vendors are realizing that differentiation or categorization of DSS is important and "real". Classification of objects, things, and artifacts is partly systematic analysis and partly the application of specific criteria from a rubric that is linked to a classification scheme. Many of us played the game 20 questions during our youth or as parents with our children. The game is fun, low cost and educational and it teaches classification skills. Often times the player begins with a question like "Is it a plant, animal or mineral?" The 20 questions elicit information about the object and help determine what it is. When classifying specific DSS or DSS generators this approach can be applied.

Let's use a revenue management application as an example. Some revenue management applications are model-driven DSS and some are decision automation systems and hence not DSS at all. One vendor is IDEaS (Integrated Decisions & Systems, Inc.). It is a privately held venture financed company (cf., <http://ideas.com>) founded in 1989 by Dr. Ravi Mehrotra and some colleagues. The company initially developed revenue optimization and yield management software for the Airline Industry and began marketing a solution for the hospitality industry in 1996.

What type of DSS software development package does the company market?

The company claims it markets "automated decision execution technology". This phrase indicate IDEaS may not be a DSS at all. Also, "IDeaS technology is fundamentally differentiated as a true 'decision' technology, combining analytics with scientific decision modeling." Analytics is often synonymous with model-driven decision support. If pricing is "automated" and the computer software makes the decision rather than a pricer or a manager, then the software is better classified as a decision automation system. DSS keep a human decision maker in the loop.

In 1999, Joan Marsan had a review of Revenue Management Systems in Hotels Magazine. Joan noted "In the earliest days of hotel revenue

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management systems (RMSs), forecasting and optimization focused on overall demand. If seasonal demand was predicted to be high, lower rate categories were closed. If demand forecasts were grim, lower rate categories opened. ... In the hotel market, advanced RMSs that handle multiple properties with many room options can determine the cross-price elasticity of demand when room options are opened and closed." Technology advances have enabled software companies to develop products to support and even make revenue management decisions. Joan notes "The greatest enabler of RMS advancements has been the improvement of interfaces between property management (PMS) and central reservation systems (CRS)." RMS decision support subsystems or automated decision systems can now use "live" data for forecasting and optimization calculations.

According to the [optims.com](http://optims.com) website "Based on real-time demand forecasting by market micro-segment and an optimization model, Yield Management (also known as 'Revenue Management' or 'Real-time pricing') is an economic technique to calculate the best pricing policy for optimizing profits generated by the sale of a product or service, based on real-time modeling and forecasting of demand behavior per market micro-segment." Revenue management systems are not always decision support systems.

How does one know what type of DSS is being used in a specific situation? Why is it important to be able to differentiate or discriminate among types of DSS? Differentiating the type of DSS IS IMPORTANT because it helps us communicate and understand! So what questions can differentiate types of DSS? After you have gathered as much information as possible on the vendor's product or the system that is being used in a company that someone calls a DSS, then you can ask the following questions.

1. Is the computerized system intended to support decision making? If **YES**, then possibly a BI, DSS or KMS.
2. Does the computerized system have multiple identifiable subsystems? If so, focus on only one subsystem at a time. Put a specific boundary around a possible decision support subsystem.
3. Is the focal system a Decision Support System, a decision automation

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system or used for a special decision support study? Check the 7 DSS evaluation criteria: Facilitation, Interaction, Ancillary, Repeated Use, Task-oriented, Identifiable, Decision Impact. For more information read Ask Dan! "What are the characteristics of a Decision Support System?", March 30, 2003.

4. Does electronic communication provide the dominant decision support functionality?

4.a. Does use of the DSS involve synchronous or asynchronous communication and collaboration?

4.b. Are tools provided to facilitate communications about a specific decision situation?

If all answers in Q4 group are **YES**, conclude --> Communications-driven DSS.

5. Does the DSS include a large, structured store (database) of historical data?

5.a. If so, can users query and interact with the data store?

5.b. Are real-time data updates an important component of the application?

5.c. Are predefined screens (reports) available to users?

5.d. Is data displayed on a map or geographic representation?

5.e. Does the dominant functionality of the DSS come from rapid access to and analysis of the data store?

If the answers to 5 and 5.e. are **YES**, and to some of 5.a. - 5.d., conclude --> Data-Driven DSS. The system may provide operational business intelligence, corporate performance management, or business activity monitoring.

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6. Does the DSS include a large database of unstructured documents?

6.a. If so, can users search, retrieve, summarize and sort documents for decision support?

6.b. Are documents used in a work flow or decision process to present information and record evaluations?

6.c. Do documents and document retrieval and analysis provide the dominant functionality for the DSS?

If all answers in Q6 group are **YES**, conclude --> Document-Driven DSS. Some may classify the system as a knowledge management system.

7. Does the DSS store and codify knowledge or expertise?

7.a. Is human expertise stored using AI technologies?

7.b. Does the DSS provide recommendations or advice?

7.c. Does the provision of expert support provide the dominant functionality for the DSS?

If all answers in Q7 group are **YES**, conclude --> Knowledge-Driven DSS. Some may classify the system as a knowledge management system.

8. Does the DSS include one or more quantitative models?

8.a. Can users manipulate the model and perform "What if?" and sensitivity analysis?

8.b. Does the interactive model analysis provide the dominant functionality for the DSS?

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If **YES**, conclude --> Model-Driven DSS.

When in doubt collect more information and ask more questions. An organization benefits when a shared vocabulary is used, especially for strategic issues like decision support.

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