

DECISION SUPPORT SYSTEMS

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According to Moore's Law volume of the information is doubling every two years, so we have problems with processing and analyzing of data, but quality management requires a well-formalized and organized data, and we can not cope with such huge volume manually. Technology, which helps us with this task has been developed recently, but develops rapidly and reaches a higher level nowadays.

Decision support systems constitute a class of computer-based information systems including knowledge-based systems that support decision-making activities.

A Decision Support System (DSS) is a class of information systems that support 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 a combination of raw data, documents, personal knowledge, or business models to identify and solve problems and make decisions.

According to Keen (1978), the concept of decision support has been evolving since early 1960s.

As with the definition, there is no universally-accepted taxonomy of DSS either. Using the relationship with the user as the criterion, Haettenschwiler differentiates passive, active, and cooperative DSS. The system again improves, completes, and refines the suggestions of the decision maker and sends them back to her for validation. The whole process then starts again, until a consolidated solution is generated.

Another taxonomy for DSS has been created by Daniel Power. Using the mode of assistance as the criterion, Power differentiates communication-driven DSS, data-driven DSS, document-driven DSS, knowledge-driven DSS, and model-driven DSS.

Using scope as the criterion, Power differentiates enterprise-wide DSS and desktop DSS.

Three fundamental components of a DSS architecture are:

the database (or knowledge base),

the model (i.e., the decision context and user criteria), and

the user interface.

The users themselves are also important components of the architecture.

DSS technology levels (of hardware and software) may include: the actual application that will be used by the user, generator contains

Hardware/software environment that allows people to easily develop specific DSS applications; tools include lower level hardware/software.

An iterative developmental approach allows for the DSS to be changed and redesigned at various intervals. Once the system is designed, it will need to be tested and revised for the desired outcome.

There are several ways to classify DSS applications. Not every DSS fits neatly into one category, but a mix of two or more architecture in one. Holsapple and Whinston classify DSS into the following six frameworks: Text-oriented DSS, Database-oriented DSS, Spreadsheet-oriented DSS, Solver-oriented DSS, Rule-oriented DSS, and Compound DSS.

DSS components may be classified as: inputs, User Knowledge and Expertise, Outputs, Decisions

DSSs which perform selected cognitive decision-making functions and are based on artificial intelligence or intelligent agents technologies are called Intelligent Decision Support Systems (IDSS).

The nascent field of Decision engineering treats the decision itself as an engineered object, and applies engineering principles such as Design and Quality assurance to an explicit representation of the elements that make up a decision.

DSS has many applications. However, it can be used in any field where organization is necessary. So DSS is beneficial because it

- Improves personal efficiency.

- Expedites problem solving (speed up the progress of problems solving in an organization).

- Facilitates interpersonal communication.

 - Promotes learning or training.

 - Increases organizational control.

 - Generates new evidence in support of a decision.

 - Creates competitive advantage over competition.

- Encourages exploration and discovery on the part of the decision maker.

 - Reveals new approaches to thinking about the problem space.

 - Helps automate the managerial processes.

So, DSS have many benefits, which are needed in modern world to do our work and products of our work better, more economical and safe for environment.

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