Introduction of management information systems assignment

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Example of a Decision Support System for John Day Reservoir. A Decision Support System (DES) is a computer-based information system that supports business or organizational decision-making actively. Doss serve the management, operations, and planning levels of an organization (usually mid and higher management) and help to make decisions, which may be rapidly changing and not easily specified In advance (Unstructured and Semi-structured decision problems).

Decision support systems can be either fully computerized, human or a combination of both. While academics have perceived DES as a tool to support decision making process, DES users see DES as a tool to facilitate organizational processes. [l] Some authors have extended the definition of DES to include any system that might support decision aging. [2] Sprague (1980) defines DES by its characteristics: 1 . DES tends to be aimed at the less well structured, underspecified problem that upper level managers typically face; 2.

DES attempts to combine the use of models or analytic techniques with traditional data access and retrieval functions; 3. DES specifically focuses on features which make them easy to use by minicomputer people in an

interactive mode; and 4. DES emphasizes flexibility and adaptability to accommodate changes in the environment and the decision making approach of the user. Doss include knowledge-based systems.

A properly designed DES Is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, and personal knowledge, or business models to identify and solve problems and make decisions. Typical information that a decision support application might gather and present includes: inventories of information assets (including legacy and relational data sources, cubes, data warehouses, and data marts), comparative sales figures between one period and the next, projected revenue figures based on product sales assumptions.

Contents 1 History 2 Taxonomies 3 Components Development frameworks 5 Classification 6 Applications 7 Benefits 8 Features 9 See also 10 References 11 Further reading History[edit] The concept of decision support has evolved from two main areas of research: The theoretical studies of organizational decision making done at the Carnegie Institute of Technology during the late asses and early asses, and the technical work on Technology in the asses. [3] DES became an area of research of its own in the middle of the asses, before gaining in intensity during the asses.

In the middle and late asses, executive information systems (IIS), group decision support systems (EGGS), ND organizational decision support systems (ODDS) evolved from the single user and model-oriented DES. According to Sol the definition and scope of DES has been migrating over the years. In the asses DES was described as " a computer-based system to aid

decision making". In the late asses the DES movement started focusing on " interactive computer-based systems which help decision-makers utilize data bases and models to solve ill-structured problems".

In the asses DES should provide systems " using suitable and available technology to improve effectiveness of managerial and professional activities", and towards the end of asses DES faced a ewe challenge towards the design of intelligent workstations. [4] In 1987, Texas Instruments completed development of the Gate Assignment Display System (GADS) for United Airlines. This decision support system is credited with significantly reducing travel delays by aiding the management of ground operations at various airports, beginning with O'Hare International Airport in Chicago and Stapleton Airport in Demoralized. 5][6] Beginning in about 1990, data warehousing and on-line analytical processing (OLAP) began broadening the realm of DES. As the turn of the millennium approached, new Web-based analytical applications were introduced. The advent of better and better reporting technologies has seen DES start to emerge as a critical component of management design. Examples of this can be seen in the intense amount of discussion of DES in the education environment. DES also have a weak connection to the user interface paradigm of hypertext.

Both the University of Vermont PROMISE system (for medical decision making) and the Carnegie Mellon ZOO/SMS system (for military and business decision making) were decision support systems which also were major breakthroughs in user interface research. Furthermore, although hypertext researchers have generally been concerned with information overload, certain researchers, notably Douglas Manageable, have been focused on

Using the relationship with the user as the criterion, Heathenishly[7] differentiates passive, active, and cooperative DES.

A passive DES is a system that aids the process of decision making, but that cannot bring out explicit decision suggestions or solutions. An active DES can bring out such decision suggestions or solutions. A cooperative DES allows the decision maker (or its advisor) to modify, complete, or refine the decision suggestions provided by the system, before sending them back to the system for validation. The system again improves, completes, and refines the suggestions of the decision maker and sends them back to them for validation. The whole process then starts again, until a consolidated solution is generated.

Another taxonomy for DES has been created by Daniel Power. Using the mode of assistance as the criterion, Power differentiates communication-driven DES, data-driven DES, document-driven DES, knowledge-driven DES, and model-driven DES. [8] A communication-driven DES supports more than one person working on a shared task; examples include integrated tools like Google Docs r Groove[9] A data-driven DES or data-oriented DES emphasizes access to and manipulation of a time series of internal company data and, sometimes, external data.

A document-driven DES manages, retrieves, and manipulates unstructured information in a variety of electronic formats. A knowledge-driven DES provides specialized problem-solving expertise stored as facts, rules, procedures, or in similar structures. [8] A model-driven DES emphasizes access to and manipulation of a statistical, financial, optimization, or

simulation model. Model-driven DES use data and parameters provided by users to assist decision makers in analyzing a situation; hey are not necessarily data-intensive. Idiocies is an example of an open source model-driven DES generator. 10] Using scope as the criterion, Power[11] differentiates enterprise-wide DES and desktop DES. An enterprise-wide DES is linked to large data warehouses and serves many managers in the company. A desktop, single-user DES is a small system that runs on an individual manager's PC. Components[edit] Design of a drought mitigation decision support system Three fundamental components of a DES architecture 1 . The database (or knowledge base), 2. The model (I. E. , the decision context and user criteria), and 3. He user interface.

The users themselves are also important components of the Development frameworks[edit] DES systems are not entirely different from other systems and require a structured approach. Such a framework includes people, technology, and the development approach. [12] The Early Framework of Decision Support System consists of four phases: Intelligence Searching for conditions that call for decision. Design Inventing, developing and analyzing possible alternative actions of solution. Choice Selecting a course of action among those. Implementation Adopting the selected course of action in decision situation.

DES genealogy levels (of hardware and software) may include: 1 . The actual application decision maker to make decisions in a particular problem area. The user can act upon that particular problem. 2. Generator contains Hardware/software environment that allows people to easily develop specific DES applications. This level makes use of case tools or systems such as

Crystal, Analytical and think. 3. Tools include lower level hardware/software. DES generators including special languages, function libraries and linking modules An iterative developmental approach allows for the DES to be changed and redesigned at various intervals.

Once the system is designed, it will need to be tested and revised where necessary for the desired outcome. Classification[edit] There are several ways to classify DES applications. Not every DES fits neatly into one of the categories, but may be a mix of two or more architectures. Wholesale and Winston[1 5] classify DES into the following six frameworks: text-oriented DES, database-oriented DES, spreadsheet-oriented DES, solver-oriented DES, rule-oriented DES, and compound DES. A compound DES is the most popular classification for a DES.

It is a hybrid system that includes two or more of the five basic structures ascribed by Wholesale and Winston. [1 5] The support given by DES can be separated into three distinct, interrelated categories:[16] Personal Support, Group Support, and Organizational Support. DES components may be classified as: 1 . Inputs: Factors, numbers, and characteristics to analyze 2. User Knowledge and Expertise: Inputs requiring manual analysis by the user 3. Outputs: Transformed data from which DES " decisions" are generated 4.

Decisions: Results generated by the DES based on user criteria Doss which perform selected cognitive decision- making functions and are based on artificial intelligence or intelligent gents technologies are called Intelligent Decision Support Systems 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. Applications[edit] As mentioned above, there are theoretical possibilities of building such systems in any knowledge domain.

One is the clinical decision support system for medical diagnosis. There are four stages in the evolution of clinical decision support system (CADS). The primitive version is standalone which does not support integration. The second generation of CADS supports integration with other medical systems. The third generation is standard-based while the fourth is service model-based. [18] Other examples include a bank loan officer verifying the credit of a loan applicant or an engineering firm that has bids on several projects and wants to know if they can be competitive with their costs.

DES is extensively used in business and management. Executive dashboard and other business performance software allow faster decision making, identification of negative trends, and better allocation of equines resources. Due to DES all the information from any organization is represented in the form of charts, graphs I. E. In a summarized way, which helps the management to take strategic decision. A growing area of DES application, concepts, principles, and techniques is in agricultural production, marketing for sustainable development.

For example, the Disaggregate,[19][20] developed through financial support of SAID during the ass and ass, has allowed rapid assessment of several farm and policy levels. There are, however, many constraints to the successful adoption on DES in agriculture. [21] DES are also prevalent in forest

management where the long planning time frame demands specific requirements. All aspects of Forest management, from log transportation, harvest scheduling to sustainability and ecosystem protection have been addressed by modern Doss.

A specific example concerns the Canadian National Railway system, which tests its equipment on a regular basis using a decision support system. A problem faced by any railroads worn-out or defective rails, which can result in hundreds of derailments per year. Under a DES, CNN managed to decrease the incidence of derailments at the same time other companies were experiencing an increase. Benefits[edit] . Improves personal efficiency 2. Speed up the process of decision making 3. Increases organizational control 4.

Encourages exploration and discovery on the part of the decision maker 5. Speeds up problem solving in an organization 6. Facilitates interpersonal communication 7. Promotes learning or training 8. Generates new evidence in support of a decision 9. Creates a competitive advantage over competition 10. Reveals new approaches to thinking about the problem space 1 1 . Helps automate managerial processes 12. Create Innovative ideas to speed up the performance Features[edit] 1 . Solve semi-structured and unstructured problems . Support managers at all levels.