# : What is a modern decision support system?

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"Modern" refers to recent times and recent innovations. Modern decision support is evolving rapidly in step with computing hardware and software progress. A modern decision support system is "current", "up-to-date" and relatively "new". The current era in decision support systems (DSS) development started in many ways in 1995 with the specification of HTML 2.0 and the introduction of handheld computing and cell phones. For the past 10 years, Web 2.0 technologies, mobile integrated devices and improved software development tools have revolutionized decision support user interfaces, while the decision support data store back-end has gotten extremely powerful supporting large, real-time and complex data sets.

Overall, post-2007 DSS are more complex, use bigger data sets, and are more diverse than those built prior to that time. Decision support builders need to stay current as decision support evolves and keep focused on what to expect in enhanced decision support. Using technology is not "evil" rather the problem is how it is used and sometimes abused. Technology, especially automated technology systems, got a bad reputation many years ago in Charlie Chaplin's movie "Modern Times" (1936). Decision automation is increasing and there is more knowledge-driven decision support, but modern DSS are not dehumanizing the job of managers or employees. Managers are **not** in a struggle for dominance in a battle of man vs. machine, rather modern decision support provides one of the "keys" to helping us live successfully on this planet and in our congested cities.

Computerized decision support has been in use for at least 50 years and some researchers trace such systems to 1951 and the Lyons Tea Shops business use of the LEO I (Lyons Electronic Office I) digital computer. LEO handled the company's accounts and logistics. Decision support software also factored in the weather forecast to help determine the goods carried by "fresh produce" delivery vans. One of LEO I's early tasks was the capture of daily orders which were phoned in every afternoon by the tea shops and used to calculate the overnight production requirements, assembly instructions, delivery schedules, invoices, costings and management reports (cf., Wikipedia). Frank Land, London School of Economics, considers Lyons the first company to use decision support applications.  The SAGE system built for the U.S. military in the late 1950s was another first generation decision support application.  The system built by Michael Scott-Morton in 1966 started efforts to build decision support applications

with
second generation computing technology (cf., Power, 2002; Power, 2006; Scott Morton, 1971). We are at
least 3 computing technology generations beyond 1966.

By the mid-1980s, all of the current types of DSS were implemented in some form, but those initial systems
were primitive compared to modern DSS.  Just as the video games of the 1980s like Donkey Kong and
PacMan can still be played, some early DSS remain usable.  But modern DSS are light years ahead in graphics, speed and functionality like modern video games on X-Box One and Nintendo. So early DSS like the first Atari games still have some interest, however the capabilities of modern DSS are much advanced and improved.

The features of the specific categories of DSS have been reviewed. Check the discussions on communications-driven DSS (Power, 2007a), data-driven DSS (Power, 2007b), document-driven DSS (Power, 2007c),
knowledge-driven DSS (Power, 2007d), and model-driven DSS (Power, 2007e). The defining characteristics of
DSS have not changed. DSS remain characterized by facilitation, interaction, ancillary, repeated use, task
oriented, identifiable and decision impact (cf., Power, 2003).

The following is a list of attributes that are becoming increasingly common in new and updated decision
support systems. Not all modern DSS have these attributes, but some do! Some attributes are more closely associated
with one category of DSS than another, but complex DSS often have multiple subsystems that fit in different
categories.  So for example, a complex, modern DSS may have a well-defined data-driven subsystem and a model-driven
decision support subsystem. Major attributes of modern DSS include:

1) Broad domain of applications with diverse functionality -- who uses a DSS and for what purpose has expanded.
We are identifying many use cases for DSS and we are beginning to capture each specific use in use case models.

2) Faster access to data stored in very large data sets -- data access refers to software and

activities
related to retrieving or acting upon data in a database or other repository. Data-driven DSS can have almost
unlimited historical data stores.

3) Faster deployment -- software deployment is all of the activities that make a new DSS available for use. Faster deployment is partly due to the use of Web technologies, but better prototyping, templates, and vertical market
applications also speed deployment of DSS.

4) Faster response -- how quickly an interactive system responds to user input has improved significantly.  In
a distributed computing environment, the lagg with video, voice, data retrieval or transmitting model results is now negligible.

5) Integrated DSS with TPS, multiple decision support subsystems -- enterprise-wide decision support applications are increasingly common. A standardized
interface and single sign-on security helps create an integrated and unified decision support/transaction
processing environment.  The days of standalone DSS are numbered and few.

6) Lower cost per user -- total annual cost for licensing DSS development software on a per user basis is
declining.  This trend will continue given the increased open source decision support applications for BI and CRM.

7) Multi-user and collaborative interaction -- DSS are increasingly collaborative and shared decision making environments.

8) Real-time data, DSS use and system response-- the classical conception is an immediate real-time system that is
used while action is occurring.  That vision is increasingly possible and sometimes very useful. See the Ask Dan!
columns on real-time DSS (cf., Power, 2002a, 2002b).

9) Ubiqitous -- DSS are available and seem to be usable everywhere. DSS for a particular function can go with the
targeted user.

10) User friendly and a better user experience -- Usability denotes the ease of using a particular tool.  All DSS
are much easier to use, but we can do more to improve usability and reduce information load.

11) Visualization, graphics intensive, visual applications -- visualization involves creating images, diagrams, or
animations to communicate a message. Modern DSS increasingly include capabilities to see and manipulate
visualizations.

This list of attributes of a modern DSS is likely incomplete.  A modern DSS is usually ahead of the current practices, but may represent "best practices". Those of us interested in modern computerized decision support are promoting new ideas and approaches, and encouraging progress in supporting decision making. Building better decision support provides one of the "keys" to competing in a global business environment.

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