Web-based Decision Support Systems

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The World-Wide Web is where the action is in developing enterprise-wide decision support systems. When vendors propose a Web-based DSS they are refering to a computerized system that delivers decision support information or decision support tools to a manager or business analyst using a "thin-client" Web browser like Netscape Navigator or Internet Explorer. The computer server that is hosting the DSS application is linked to the user's computer by a network with the TCP/IP protocol. In many companies, a Web-based DSS is synonymous with an enterprise-wide DSS that is supporting large groups of managers in a networked client-server environment with a specialized data warehouse as part of the DSS architecture.

This technology is developing rapidly so we all need to monitor and explore the possibilities of Web-based DSS. This brief overview focuses on advantages and disadvantages of Web-based DSS; examples of Web-based DSS software; examples of Web-based DSS implementations; and conclusions about Web-based DSS.

Web-based DSS have reduced technological barriers and made it easier and less costly to make decision-relevant information available to managers and staff users in geographically distributed locations. Because of the World-Wide Web infrastructure, enterprise-wide DSS can now be implemented in geographically dispersed companies and to geographically dispersed stakeholders including suppliers and customers at a relatively low cost. Using Web-based DSS, organizations can provide DSS capability to managers over an intranet, to customers and suppliers over an extranet or to any stakeholder over the global Internet. The Web has increased access to DSS and it should increase the use of a well-designed DSS in a company. Using a Web infrastructure for building DSS improves the rapid dissemination of "best practices" analysis and decision making frameworks and it should promote more consistent decision making on repetitive decision tasks across a geographically distributed organization. The Web also provides a way to manage a company's knowledge repository and to bring knowledge resources into the decision making process. One can hope that Web-based delivery of DSS capabilities will promote and encourage ongoing improvements in decision making processes.

Also, the Web can reduce some of the problems associated with the competing "thick client" enterprise-wide DSS design where special software needs to be installed on a manager's computer. Web-based DSS should reduce IT management and support costs and end user training costs.

With many Web-DSS and OLAP products, managers with a browser and access to a Web-based DSS have the same type of ad-hoc reporting and interactive data analysis capability

as that provided by "thick client" on-line analytical processing (OLAP) tools. Web technology is and will continue to change the way organizations deliver all types of documents and data.

What are the potential problems with Web-based DSS? User expectations may be unrealistic, especially in terms of how much information they want to be able to access. There will be technical implementation problems especially in terms of peak demand/load problems; training decision support content providers and providing them with tools and technical assistance may be costly; the continuing "browser wars" between Microsoft and Netscape are also a potential problem; and using the Web may result in accumulation of obsolete materials.

EXAMPLES OF WEB-BASED DSS SOFTWARE

The DSS Companies page at URL http://dssresources.com/vendorlist/index.html lists more than 50 companies that market DSS products. Many of these vendors have Web-based DSS products. The following are a few vendors that have on-line examples or demonstrations. Arborsoft's (http://webgate.arborsoft.com) Essbase and the Essbase Web Gateway allow developers to deliver On-Line Analytical Processing (OLAP) applications directly from operational systems, or within an overall data warehousing architecture on the Web.

On the Web, you can run a live demonstration of Booz-Allen's Purchasing Analysis Tool called SS/DSS. It includes structured and flexible tools that allow analysis of historic purchasing data; predefined graphs and reports for performing analysis within and across business units; and a flexible Java-based OLAP tool for drill-down, pivot, filter, and selection on a purchasing database.

Comshare's DecisionWeb uses Java applets. You can see a sample screen at http://www.comshare.com/. Web-OLAP is a product from Information Advantage (http://www.infoadvan.com). Information Advantage has been a leader in developing Web DSS/OLAP applications. The company has had demonstration software at its Web site, but the address has apparently changed. You'll need to contact the company for a demonstration.

InterNetivity, Inc. has an updated product called dbProbe 2.0. Written in Java, dbProbe is a cross-platform, corporate-wide tool for sales analysis, statistical analysis, financial analysis, inventory analysis or any data warehouse application that needs multidimensional data analysis. You can visit the dbProbe Solutions Gallery at http://www.internetivity.com/site/products.html. This product is an excellent example of what is possible with Java applets.

Microstrategy has a slide show on DSS Web 5.0 (visit URL http://www.strategy.com/Products/Web/slideshow.asp?Slide=Webcasting). DSS Web 5.0 provides a World Wide Web interface to the product called DSS Server which runs a Relational OLAP (ROLAP) engine.

Pilot Software (http://www.pilotsw.com/) includes Internet capabilities within the Pilot Decision Support Suite. At the Web site you can see a screen shot of Pilot Internet Publisher (PIP) Version 6.0. PIP delivers decision support solutions on the World-Wide Web to users at company and remote locations through Web browser interfaces.

EXAMPLES OF WEB-BASED DSS IMPLEMENTATIONS

A number of DSS software companies provide case studies of successful DSS implementations at their Web sites. All of the Vendors are reporting favorable results from Web-based DSS.

Arborsoft reports (see http://www.arborsoft.com/essbase/custmrspot1.html) Bell Canada is implementing a Web-based DSS. According to a Bell Canada spokesperson "... the cost of deploying traditional client/server OLAP software makes it prohibitively expensive to enable the entire enterprise for OLAP ... The Web dramatically alters the cost dynamics of delivering applications to users." He notes "All users need are a Web browser and a laptop computer. There's almost no training required, very low client costs and zero infrastructure costs. The intranet acts as a free wide area network."

Bell Canada installed the Essbase Web Gateway. Arborsoft says "hundreds of business, operation and sales managers will be able to compose their own interactive queries right from their Web browser rather than accessing static data reports prepared by financial analysts. They can navigate, analyze and even update their sales forecasts without the need for proprietary client software."

On January 23, 1998, Information Advantage announced that EDS had chosen DecisionSuite and WebOLAP(tm) to support implementation of the EDS knowledge management strategy. "EDS is rolling out DecisionSuite to several hundred users performing on-line analyses on a 50 GB database. 1998 deployment could scale up to 9000 knowledge worker desktops." Larry Ford, president and CEO of Information Advantage said in the press release, "The Web enables multinational organizations, like EDS, to provide applications that deliver content to the end-user without the traditional, costly barriers of installation, training and maintenance."

According to a MicroStrategy case study, Societe Generale USA chose a multi-tier architecture that enabled the support of both client server and web computing. MicroStrategy software enabled Societe Generale USA to provide support for executive and power users, running on either PCs or UNIX workstations and provided a web browser interface.

CONCLUSIONS ABOUT WEB-BASED DSS

The World-Wide Web has created a major opportunity to deliver more quantitative and qualitative information to decision-makers. Client-server architecture and networks permit Information Systems professionals to centralize and control information and yet easily distribute it in a timely manner to managers who need it. Also, intranets or company internets are providing many opportunities for securely delivering information from data warehouses and external databases to a manager's desktop in a format that permits and encourages frequent use and follow-on analysis.

The Web has not resolved all problems associated with building, developing and delivering enterprise-wide DSS and many questions about Web-based DSS remain controversial. The following questions are still being debated, but I'll share my opinions. Can a Web-based DSS provide a company with a competitive advantage? SOMETIMES, especially in knowledge

oriented businesses. Does a Web-based DSS have significant cost advantages compared to other competing DSS technologies? USUALLY, especially in large-scale implementations where companies have multiple sites. Will a Web-based DSS speed application deployment and increase access to both structured and unstructured data? YES, in most situations.

Will a Web-based DSS improve decision making? Perhaps, I'm an optimist. Will Web-based DSS provide a broader knowledge base for decision making? YES, in most cases once the "knowledge" is on-line. Does Web access increase the value of a data warehouse? YES, if the data is meaningfully displayed and drill-down is available to decision makers.

Does a Web-based DSS provide timely, user-friendly and secure distribution of business information? YES, if a good product is selected and if the implementation is successful. Can a Web-based DSS be managed? YES, the tools for managing the Web server and web content are maturing. Will information on the Company Web expand in an uncontrolled manner? NO, not if a person manages the knowledge base. Will managers be able to locate what they need when they need it? PROBABLY, staff need to organize information in meaningful ways and search engines need to be available for unexpected information queries.

Does Web-enabled DSS/OLAP help mobile managers, sales staff, customer support staff? YES, information access and analysis is much easier and more widely available. Are Web agents and alerts useful and practical? YES, if you understand what they are and how to use them.

The Web makes it possible to deploy a global enterprise-wide DSS. Will Web-based DSS facilitate corporate growth? Improve productivity? and Improve profitability? YES.

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