Decision Support
In the Twenty-First Century

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Where We Are and Where We Have Been

DSSs have been successfully applied to a wide variety of problems. Some of these areas (with an application in each area) are:

- Environmental decision making – water resource management
- Agriculture – irrigation control
- Forestry – reforestation planning
- Manufacturing – materials requirement planning
- Medicine – patient load and service forecasting
- Organizational support – investment risk assessment

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The Future of Decision Support Systems

- The problem of information overload is a reality considering the amount of data collected is doubling every year.
- A typical knowledge worker can effectively analyze 5% of those data, so there is a crucial need for decision support.
- A number of challenges (DSS integration and connectivity, document processing, and virtual reality) face the DSS designers and users of tomorrow.

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Virtual Reality in a DSS Environment

- This multisensory technology can vastly improve the way DSS users process and respond to data.
- Potential applications are everywhere. For example, an engineer can see his design from both inside and outside. Elementary school students can live history rather than read about it.

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Virtual Reality in a DSS Environment (cont.)

- There are some concerns about VR. It could cause some users to be incapable of distinguishing between virtual reality and "actual" reality. Likewise, VR could be used to manipulate users.
- Nonetheless, the potential of VR is such that it has been called the "manifest destiny for computers."

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The Future of Expert and AI Systems

- AI requirements for intelligent database systems: intelligent software agents, attached to expert systems, will require new ways to distribute and share data. Modeling, controlling, and managing large amounts of data of different types will demand innovations such as the emerging high performance storage system.

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The Future of Expert and AI Systems (cont.)

- Knowledge management: current research is focusing on new ways to extend and capture knowledge. Some of these efforts tackle the problems of working with ever-expanding databases. Others address issues of how to represent (code) new types of knowledge.

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The Future of Executive Information Systems

- The advancement of EISs has paralleled the decrease in dependence on mainframe systems.
- Given the rate at which personal computers increase in performance, future EISs may well cover entire organizations.
- Many EIS vendors are already incorporating features that allow users to "snap together" different products to form these organizational information systems.

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The Future of Intelligent Software Agents

- As ISAs come of age, you can expect highly personalized content to appear on web sites.
- Commercial ISAs continue to appear. These can work with your personal shopping list and even automatically charge your credit card.
- The next generation of agents will be able to mimic human thought by working with a database of user preferences.

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Challenges Yet to be Addressed

To realize all the promise of ISAs, society will have to grapple with several issues:

- Privacy
- Responsibility
- Legal issues
- Ethical issues
- Safety
- Vigilance

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Some Final Thoughts on the Future of DSS Technologies

- Who will lead us? In 1996 an industry group thought Microsoft would be the leader in 2000. The result would probably be the same today. The same group thought it would be "somebody new" in 2005.
- The silicon revolution – the raw power of silicon technology has been doubling every 18 months. The estimate is processors operating at 1000 gigahertz in 2007.

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More Thoughts on the Future

- Bandwidth is almost free – wireless systems will free us from our need to compute from a fixed base.
- Network power grows, too – the Internet is a network of networks, and its size appears to be doubling every year.
- Dreams are becoming realities – the world chess champion is now a computer. By 2005, two people anywhere on the globe can talk with translating telephones. Education will be revolutionized.

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