Group Decision Support
and Groupware Technologies

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Group Decision Making

- MDM – Holsapple suggests we use the term *multiparticipant decision maker*
- A group is the MDM structure where multiple decision makers completely interact
- A team is the MDM structure where members advise one decision maker but do not interact
- A committee is the MDM structure with a single decision maker and member interaction

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Communication Networks

- *The wheel network:* each participant can communicate with the decision maker in the center but not with other participants. This structure is generally unsatisfying to all participants except the decision maker
- *The chain network:* participants relay information only to those immediately adjacent in the chain. The end members are not well satisfied.

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Communication Networks (cont.)

- *The circle network:* similar to the chain, but the ends are connected
- *The completely connected network:* no restriction on communication and interaction among members. Generally, the most satisfying type of network to the participants, but conveying information takes longer and there is more chance for error.

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Group Behaviors and Norms

- MDMs establish norms that guide the decision-making process
- A norm specifies what group members are expected to do under given circumstances
- Norm "sending" can be through examples, peer review or sanctioning

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Deciding How to Decide

- The choice of which MDM structure to use must be based on several factors associated with the decision context.
- For example, an individual structure would work where the decision is highly structured and information is directly available.
- A committee structure would be the choice when the decision maker cannot make the decision alone.

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The Problem With Groups

- *Size:* in general, member satisfaction and cohesiveness decreases with group size. In large groups, subgroups or internal coalitions tend to form.
- *Groupthink:* in large groups, people tend to think in ways that achieve unanimity instead of creativity.

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Other Sociological Issues

- *Conflict:* the desire to be seen as a good team member can lead to conflict avoidance.
- *Anonymity:* one method used to control sources of conflict is to allow members to participate anonymously.
- *Gender Issues:* males and females tend to place different values on different skills, but this may be a strength in an MDM setting.

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Negotiating and Deciding

- The decision may involve multiple viewpoints, thus creating the need for negotiation.
- The design of the support mechanism for the MDM must accommodate the activities of negotiation.
- These activities include equitable access to information and support for a wide variety of communication structures.

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MDM Support Technologies

- *Organizational DSS* – a system that provides decision support across the organization
- *Group Support System* – technology used to aid multiple participant efforts
- *Group DSS* – a system designed especially for support of an MDM
- *DSS* – a system under the control of a decision maker that provides a set of tools to help structure the decision-making situation and to improve effectiveness of the decision outcome.

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A Bit of History

- The existence of support mechanisms for MDM activities predates the technology (Churchill's cabinet war room and its wall of maps).
- The 1960s and 70s saw the addition of slide projectors and overheads.
- The computer was the next logical step in the 1970s and 80s.
- Today there are entire facilities devoted to MDM activities

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Objectives of MDM Support Technologies

- Process support mechanisms focus on facilitating interaction
- Process structure mechanisms govern the communication activities
- Task support mechanisms can select, organize or derive information
- Task structure mechanisms provide access to techniques that filter, combine and analyze knowledge relevant to the task

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Classes/Types of MDM Support Technology

Classification by feature – DeSanctis and Gallupe proposed a three-level scheme based on the features offered:

- *Level 1 System:* primarily intended to facilitate communication among members
- *Level 2 System:* designed to reduce uncertainty
- *Level 3 System:* help regulate the decision process

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Classes/Types of MDM Support Technology (cont.)

Classification by technology – Kraemer and King focused on the technology applied:

- Electronic Boardroom
- Teleconference Room
- Group Network
- Information Center
- Collaboration Lab
- Decision Room

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Groupware

- Software designed to support collaboration, including capturing and storing the information exchanged
- Current market leaders are Lotus Notes and Domino, Microsoft Exchange, Novell GroupWise and Oracle Office
- Individual tools inside the software suite include a meeting manager (Lotus Sametime) and message exchange (Lotus Notes Mail)

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A Lotus Sametime Meeting Center Screen

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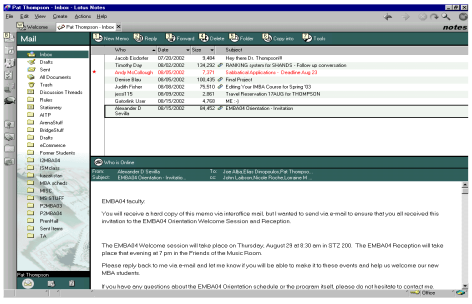
A Typical Lotus Notes Messaging Screen Layout



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Groupware Classification

Ellis, *et al* proposed a classification system based on type of support it provides:

1. Messaging systems
2. Conferencing systems
3. Collaborative authoring systems
4. Group DSS
5. Coordination systems
6. Intelligent agent systems

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Forces Driving Groupware Development

Some of the major factors include:

- Increased productivity
- Reduced number of meetings
- Increased automation of routine workflow
- Need for better global coordination
- Availability of widespread networks

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Managing MDM Activities

Some of the more common MDM coordination methods are:

1. Nominal group technique
2. Delphi technique
3. Arbitration
4. Issue-based information system
5. Nemawashi

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Nominal Group Technique

1. Each participant writes down ideas about what the decision should be.
2. In turn, each participant presents his or her ideas, which are recorded on a whiteboard. No discussion occurs here.
3. After all ideas are presented, participants may question others.
4. Each participant votes on each idea.

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Delphi Technique

- Essentially the same as nominal group technique except the participants never meet.
- A survey instrument is used to collect initial input from members.
- A second survey is sent with a summary of the collective results.
- These steps repeat until either a consensus or majority view is reached.

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Arbitration

- Most appropriate when the members of the MDM represent opposing factors.
- Participants agree that if mutually agreeable alternatives are not found, an outside arbitrator will get involved.
- The arbitrator then selects the alternative he or she deems most appropriate.

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Issue-Based Information System (IBIS)

- A structured argumentation method.
- An IBIS is represented as a graph with nodes and links.
- The IBIS begins with selection of a root issue node, then the various position nodes are linked to the root.
- These position nodes are then evaluated based on the arguments attached to them.

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Nemawashi (widely used in Japan)

1. One or more members of the MDM are designated as coordinators. The coordinators then select remaining participants.
2. Coordinators construct a choice set and then experts rate the choices.
3. Coordinator selects a choice based on results in 2.

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Nemawashi (cont.)

4. The alternative is circulated; the coordinator seeks consensus through persuasion and negotiation.
5. If consensus is reached, coordinators circulate a document that each MDM member signs off on.

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The Virtual Workplace

- Many worldwide organizations are trading real estate for collaborative technology.
- Work is becoming a thing you do rather than a place you go.
- The biggest changes brought about by the virtual workplace may be cultural or sociological rather than technological.

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