Chapter 17
Multiparticipant Decision Support Systems

1. Distinguish between GDSSs and ODSSs. (traits, definitions)

- ODSS-Involves computer-based technology and may contain communication technologies.
- accommodates users who perform different organizational functions and who occupy different positions in the organizational hierarchy.

GDSS
- little differentiation in Roles
- little differentiation in Relationships
- simple regulations

ODSS
- high diffenentiation in Roles
- high differentiation in Relationships
- complex regulations

2. Describe a generic architecture for multiparticipant DSSs.
(see remainder of notes and text for answer)

3. Discuss what has been discovered about the benefits and limitations of group decision support systems. (process gains and losses)
(see remainder of notes and text for answer)

4. Identify important issues in the design and usage of organizational decision support systems.
(see remainder of notes and text for answer)

5. Explain various ways in which negotiation support systems can help in the resolution of conflicts among a decision maker's participants. (know components and benefits. NSS play a role in negotiation as participant or intervener or they can support a participant or intervener)
(see remainder of notes and text for answer)

-MDSS study lies at the intersection of OC and DSS
-The multiparticipant decision maker may be working on:
    -single decisions
    -collection of minor decisions leading to a major decision
    -multiple concurrent decisions
        -interdependent
        -in totality, affect an organization's performance

-MDSS fits with OI
    -MDSSs are a kind of TI that exists to improve
        -performance participants can achieve
        -through a particular OI
    -There can be good or poor fits of TI with OI as measured by: (see figre 17.1)
        -efficiency

-quality
-satisfaction
-motivation
-innovation

-Fits with roles
-degree of functional differentiation
-degree of authority differentiation
-degree of conflict
-GDSS fits well where there is little differentiation
-ODSS fits well where there is high differentiation
-NSS fits well where there is high differentiation

-Fits with relationships
-degree of restriction in communication channels
-GDSS fits well where there is little restriction
-ODSS fits well where there is need to accommodate greater restrictions
-NSSs can be applicable across the spectrum

-Fits with regulations
-degree of regulation complexity
-GDSS fits in cases of simple regulations
-ODSSs are able to handle greater complexity of regulation
-NSSs can range from simple to complex

-Participant arrangements

-Four time/place categories

1-Same time/same place MDSS
-involves a high tech decision room
-MDSS and/or facilitator coordinates participant activities
-GDSS has been studied mainly in this category, although applicable to others

2-Different times/same place MDSS
-can also function in a decision room
-shift work
-better quality, less efficient than GDSS use in same time/same place

3-Same time/different places MDSS
-does not depend on a single decision room
-tends to increase distance between individuals' original positions and their group decision
-less efficient, similar quality relative to GDSS use in same time/same place

4-Different times/different places MDSS
-does not depend on decision room or simultaneous work
-not widely studied

5-Anytime/Anyplace MDSS

-Common architecture for MDSSs

-same as generic DSS architecture, but with some special LS, PS, PPS, and KS traits

-Four kinds of users interact with MDSS
-participants in decision maker
-facilitator who helps participants
-external knowledge sources

- -system developer/administrator

- -PPS and/or KS are distributed

- -LS messages
  - -private (only one user can submit it to MDSS)
  - -semi-private (can be submitted by multiple, but not all, users)
  - -public (all users can issue these messages)
- -kinds of requests
  - -to recall from KS
  - -acquisition of new knowledge
  - -derivation of knowledge
  - -clarification of response
  - -to accept some new knowledge into KS
  - -to route a message
  - -to provide help about using the system

-PS messages
- -private (goes to single, specific user)
- -semi-private (goes to a subset of users)
- -public (can serve as responses to all users)
- -kinds of responses
  - -provide knowledge (selected/derived from KS, routed, PPS clarification, or help)
  - -seek knowledge (to be stored in KS, routed, or used by PPS)
- -could be triggered by requests or events

- -KS contents
  - -any of the 6 types of knowledge
  - -alternative classification
    - -system knowledge
      - -about the OI
      - -about the TI
    - -domain knowledge
      - -public
      - -private
    - -relational knowledge
      - -characterizes users (not the roles they fill)
      - -public
      - -private

- -PPS abilities
  - -knowledge acquisition
  - -knowledge selection/derivation
  - -knowledge presentation
  - -participant coordination
    - -embodies technological support for OI regulations
    - -can draw on KS or coordination mechanisms can be embedded in PPS
    - -examples of coordination abilities:

-communication of channel control
-decision process guidance
-information distribution
-communication synchronizing
-role assignment
-incentive management
-learning (for improved coordination)

-Group decision support systems (GDSS)

History -EMISARI (1971)

-designed to support decision making of 100-200 persons during national emergencies
-helped participants monitor, organize, interpret information relevant to group decision making in volatile situations

Planning Laboratory (late 1970s)

-decision room with terminals, public display, software
-Mindsight software supported idea generation by participants
-both psychological and technical aspects of GDSS are challenging
-inspiration for much of today's same time/same place GDSSs

-Definitions and objectives

-Set of software, hardware, language components, and procedures that support a group of people engaged in a decision-related meeting [Huber 1984]
-Interactive, computer-based system that facilitates solution of unstructured problems by a set of decision makers working together as a group [DeSanctis & Gallupe 1985]
-Aim is to reduce time/effort required of participants in meetings (which take time away from other matters)
-Seek to reduce group process losses while keeping)or enhancing) group process gains

-**Sources of Gain**

-a group has greater knowledge than any individual participant
-participants' differing knowledge and processing skills allow results that could not be achieved individually
-as part of a group, a participant can be stimulated to acquire or derive knowledge that would otherwise be unavailable
-participants can improve their own performance by learning from the behaviors of others in the groups
-a group is better than an individual participant at detecting flaws in proposed ideas

-**Sources of loss**

-available speaking time must be allocated among participants
-because only one person can express ideas at a time, fewer ideas are produced and expressed
-information is presented faster than it can be absorbed
-participants can fail to remember contributions of others.
-out of fear of politeness, participants can be hesitant about disagreeing with the positions or ideas of others
-participants can be reluctant to share their ideas for fear of getting a negative evaluation of their contribution

-some participants can rely on the others to accomplish the group work due to a disinterest in competing for air time, a perception that their inputs would not be useful, or laziness

-group work proceeds in a narrowly focused direction because participants are reluctant to offer comments that do not seem to be directly related to the focus

-the group loses focus and accomplishes less due to excessive socializing about matters unrelated to the group

-dominating personalities or positions of some participants give them greater influence or allow them to unproductively monopolize group time

-without appropriate coordination to integrate participants' contribution, discussion cycling, incomplete discussion, and premature decisions can result

-incomplete access to knowledge can hamper successful completion of the group work

-incomplete appreciation of the group work to be done can result in superficial or irrelevant discussions

-GDSS approaches to influencing group work (Table 17.3)

-process support as a CMC system for allowing the group's process of participant interaction to occur

-anonymity *

-group memory *

-parallel communications *

-electronic media effects

-process structure (basically concerned with the communications that are happening) to regulate pattern, timing, content of communications

-task support by selecting/deriving knowledge relevant to group's decision tasks

-Task structure to help group better appreciate task knowledge (e.g. controlling the timing of its generation)

-GDSS types (categories) [table 17-4]

-Facilitator-aided versus no facilitator

-Public interface versus both public and private interfaces

-Private KSs allowed versus public KS only

-Infrastructure knowledge allowed versus embedded in PPS

-Time/Place categories

-Three GDSS levels

Level 1: reduce communication barriers to stimulate or hasten exchange of messages (message oriented)

Level 2: reduce uncertainty/noise in group's decision process (i.e., systems that have built-in solvers)

Level 3: drive/regulate the group's decision process

-6 GDSS technologies [table 17-5]

1-Electronic boardroom (level 2)

-conference room; computer-controlled audiovisual projections on a screen

-for storage and retrieval of previously prepared presentations

-same time/same place; audiovisual technician present

2-Teleconference rooms (level 1)

-conference rooms; computer controlled audiovisual transmissions between rooms

-for handling digital transmission of audio, video and data
-same time/different places; teleconference facilitator present

3-Group network (emphasis on level one)
-separate offices; computer network
-for real time or asynchronous desktop conferencing; for real time meeting scheduling
-same(or different)time/different places; one participant serves as conference chair

4-Information Center (level 2)
-conference room; video projector for large screen; computer(s) with display terminals
-for database management, statistical analysis, graphics, and text processing
-same time/same place; modeling and software specialists present

5-Collaboration laboratory
-conference room; electronic chalkboard computer work stations

-software for collaborative writing/outlining and perhaps structured argumentation
-same (or different)time/same place

6-Decision room
-conference room, video projector for large screen
-for brainstorming, topic commenting, voting, modeling, decision analysis
-same (or different) time/same place: group process facilitator present

GDSS development and usage

1. Identify a group that is a candidate for decision support
(look for frustration due to group process loss)

2. Determine the type of GDSS needed (e.g., level 1,2. or 3)

3. Development tools:
-Usually ready-made PPS, LS, PS
-KS contents furnished by developer/administrator and users: "group memory"
-gives participants a common perspective of objectives and regulations
-provides uniform, consistent knowledge
-brings new participants up to speed via browsing through records of prior sessions
-basis for coordinating participant activities
-basis for learning about group effectiveness

-PPS may be a collection of distinct processors sharing the same KS
-support electronic brainstorming (generates ideas, rapidly circulates them, participant comments, stimulate more ideas, critiques) [free for all]
-topic commenting (topics/subtopics stored, commented on, available for viewing) [more structured]

-issues analysis (organizes and prioritizes results of idea generation)
-voting and others

4.GDSS success factors

-Organizational commitment
-Executive support
-Operating sponsor
-Dedicated facilities
-Site visits - take participants to where others are using a GDSS
-Liaisons - Developer, Builder, Facilitator, Group Participants
-Responsiveness- of the builder of the PPS to the needs of the group
-Training
-Cost/benefit analysis
-Software flexibility
-Managing expectations

5. Group facilitation

-Can strongly influence group performance
-effects related to task domain
-relational effects
-One or more of 4 main functions
-helps participants in technical aspects of using a GDSS
-helps in planning agendas for sessions
-guides a session (to be sure agenda is followed)
-provides continuity across GDSS sessions

-Three types of facilitators
-internal (often ineffective)
-external (trained)
-technical, process
-automated (level 3 GDSS)