

## CHAPTER 16

### Organizational Computing for Decision Support

1. Offer an organizational perspective that identifies and relates multiple kinds of decision support systems found in an organization.

- 4 class of ODSS in a 3 Dimensional Framework (see Figure 16-1)

Classes - corporate planning systems

- functional decision support systems
- executive decision support systems
- local decision support systems
- corporate decision support systems

Framework - Formality

- User
- Scope

Why do organizations exist?

- Participants collectively can accomplish more that they could individually
- Knowledge resources are distributed, yielding a range and complexity of organization knowledge beyond any single participant.
- Must be properly processed to accomplish organization's work
  - depends on organization infrastructure (OI)
  - supporting technological infrastructure (TI)

-OI and TI

OI refers to

- roles
- relationships among them
- regulations governing use of roles and relationships

-For example, OI for groups differ from OI for teams

-TI refers to computer-based means for designing, enabling, monitoring, evaluating, enforcing, and modifying OI.

-For example, TI may allow

- roles that are otherwise not practical for a single participant due to cognitive limitations
  - relationships that are otherwise impractical due to time/space differences
  - regulations that permit simultaneous message passing, anonymous communication, market-oriented decision making.
- Good fit of TI with OI is important for an organization's performance
- seek TI to fit existing OI
  - redefine OI to fit advances in TI (business process reengineering)

2. Outline the organizational computing field and discuss its relevance to the decision support system. (see figure 16-2)

-Organizational Computing (OC)

-concerned with

-creating new kinds of TI

-studying fits between TI and OI

-Portion of OC field of interest here involves DSSs for supporting multiple persons involved in making a decision (in contrast to DSSs for individuals making decisions)

-multiparticipant DSSs are subject to all generic DSS features identified earlier

-have added features making them suitable for supporting decision making of multiple participants

-organized according to some structure of interrelation

-operating according to some set of regulation

-these features come from research in such OC areas as

-groupware technology

-computer-supported cooperative work technology

-computer-mediated communication technology

-coordination technology

-still evolving

3. Identify the categories of multiparticipant decision support systems.

1. Corporate Planning Systems (CPS)

-hold/derive knowledge relevant to overall planning decisions of organization's top managers

-decisions that cut across departments and divisions

-decisions that affect all of an organization's functions

-KS includes extensive data about the organization's functions and its environment

-DSS includes solvers that mathematically model the organization's processes

-designed to respond to what-if questions of corporate planner to show corporate-wide implications of scenarios posed by planner

-actually predate the DSS term

-widespread in large organizations

-built and maintained by professional developers

2. Functional Decision Support Systems (FDSS)

-hold/derive knowledge relevant for decisions about some function an organization performs

-deploying cash on hand

-budgeting an advertising campaign

-scheduling production of backordered products

-relative to CPS, FDSS support systems

-within a function

-with shorter time horizon

- of lower level managers
- requires less effort than CPS to create/maintain

### 3. Executive Information Systems (EIS)

- holds knowledge relevant to wide-ranging decisions made by a high level executive
- not restricted to planning or any particular function
- supports diverse mix of immediate, short-term decisions executives make
- satisfies ad hoc information needs about current performance and anticipated activities
- may have relatively simple modeling capabilities
- built and maintained by professional developers

### 4. Local Decision Support Systems (LDSS)

- tends to be localized within some function (more specialized than FDSS)
- usually built and maintained by the end user

### -Organization-wide framework for DSSs

- All four DSS types can exist in a single organization
- How should they be managed, coordinated, evaluated?
- Basis for studying these issues is a framework that relates the four DSS types on three dimensions

- organizational level/scope
  - operational/narrow: FDSS, LDSS
  - strategic/wide: CPS, EIS
- formality of design and documentation
  - formal due to support of recurring decisions: CPS, FDSS
  - less formal for unanticipated, one-shot decisions: LDSS, EIS
- User Class
  - support for individual decision maker
  - support for multiparticipant decision maker

### -DSS planning should

- assign responsibility for development, maintenance, control, and evaluation of each DSS type
- specify whether they are to be developed in parallel or some sequence
- indicate how they are to be linked (if at all)
- clarify relationships that developers and users of each type can have with other computer-related elements of organization
  - establish oversight authority and regulations to ensure consistency across DSSs' KSs

### 4. Describe the nature of groupware, computer-mediated communication, computer supported cooperative work, and coordinated technology.

The overlap of OC and decision support

- Understanding types of DSSs available for improving organizational productivity
- Organization-wide planning for their development and coordination
- Evaluation of their collective impacts on the organization
- Multiparticipant decision support systems (MDSSs)
  - two main categories studied by researchers
    - group decision support systems (GDSSs)
    - organizational decision support systems (ODSSs)
    - team decision support systems (TDSSs) have yet to be researched
  - cutting across these are negotiation support systems (NSSs)
  - related to other major OC subjects
    - **groupware**
    - **computer-mediated communication**
    - **computer supported cooperative work**
    - **coordination technology**

## 1. Groupware

- Computer-based systems that
  - provide an interface to an environment shared by a group of persons
  - support the group in carrying out a common task or meeting a common goal

Classes of Groupware

### 1a. message systems

- use message management
- allows persons to pass messages among themselves
- examples: e-mail, bulletin boards
- permit asynchronous communication
- decision support in sense of knowledge acquisition

### 1b. Conference systems

- instead of a face-to-face conference, participants interact via their computers to have a conference
- three approaches
  1. real-time computer conferencing
    - interact at same time
    - can be supplemented with audio/linkage (conference call)
    - lack of video capability
  2. Computer teleconferencing
    - video conferencing
    - specially equipped rooms plus linkages to other sites
    - lack ability to share text and graphics images
  3. Desktop conferencing
    - interact via desktop computers
    - each screen partitioned into windows
    - some for text/graphical interaction
    - others for video images of participants
    - computers also equipped for audio interaction

-decision support to the extent that conference objective is to inform or make a decision

1c. Collaborative authoring

- allows groups to collaborate on creation/revision of a document
- document composed of sections
- anyone can view and comment on any section at any time
- only one participant can modify a section at a time
- decision support to the extent that the document describes a collective decision

1d. Group decision support systems

- other kinds of groupware not devised solely for decision support
- GDSS assistance includes
  - removal of communication barriers
  - facilities for structuring flow of deliberations
- GDSS can help participants generate ideas, organize comments on relevant topics, analyze issues, rank alternatives, etc.
- typical setup
  - participants meet in room equipped with local area network (LAN) of computers and a large public display screen: “electronic meeting room”
  - each computer screen has a private space (for preparing contributions) and public space (for viewing collective results)
  - some GDSSs allow participants to be in different places

1e. Coordination systems

- Aim to help in integration and harmonizing of participant activities
- show each participant status of own actions and what others have done
- issues alerts and reminders (i.e. system keeps track of who has filled out what form)
- for example, system that circulates electronic forms

1f. intelligent agent systems

- software (autonomous entity) that employs some AI mechanism to carry out certain set of tasks
- for example, those that behave like personal assistants
  - concealing task complexity
  - doing tasks for user
  - monitoring events
  - notifying user about situations
- Intelligent agents can
  - function as participants in groupwork
  - help participants collaborate
  - help participants use other groupware

**2. Computer-Mediated Communications**

- systems that use computers to create, store, deliver, process communications
- CMC system usually has all or some of the following traits:
  - text management facility to create/modify messages

- notebook for each participant to keep notes, drafts, personal documents
- messages, each sent to one or more participants and held at receiving computer until processed
- journals which are shared spaces for posting and viewing messages
- conferences, each of which is a storage space common to a set of participants determined by an organizer, for which each participant can add or view comments

-CMC impacts on group decision makers

- CMC groups less likely to
  - reach total consensus
  - have a dominant participant

-CMC groups more likely to:

- have requests for sharing of opinions
- use fewer works in producing decisions
- have higher quality decisions
- reach decisions farther away from individual preferences

### 3. Computer supported cooperative work

-Varying views on what it is

- Just another term for groupware
  - but not all cooperative work is done by groups
  - and not all group work is cooperative

-More comprehensive than groupware

-Attempts to understand nature of cooperative work as a basis for designing supportive computer-based systems

- aim to reduce overhead coordination costs of cooperative work
- aim to improve outcome of cooperative work
  - not defined by a set of technologies

-Support provided by CSCW systems distinguished in 3 ways

1. system likely to be distributed across multiple computers in a way that allows them to function together to support cooperative work
2. system will establish, maintain, process representations of