

# SSE3: Advanced Software Technologies for Knowledge Management

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## Lecture 5: Topics

- Sociology / psychology perspective
  - Concepts that seem to be basic to CSCW
  - Group exercise
- Awareness
- Common information spaces

## CSCW: cases and concepts

- Cases (CSCW applications)
  - 1. Generation CSCW systems
  - Discussion of failures and successes
- Concepts
  - Account for this experience
  - Influence future CSCW design
  - Preliminary CSCW agenda for research, design, and implementation of 2. Generation CSCW systems

## Cases

- GROVE (Group Authoring System)
- Calendar Management
- The CO-ORDINATOR (Email application)
- Work team support (The Florence Project)
- Group decision support system (Wage Bargainer)
- Computer supported spontaneous interaction (CRUISER)
- Arizona groups decision support system (GDSS)

## Concepts

- Articulation work
- Situated action
- Mutual influence
- Shared information space
- Shared material
- Double level language
- Equality

## Group exercise

- Explain in your own words (few sentences) what each concept means
- Make a diagram that shows the relation between the concepts
- Make some slides for presentation
  - Make diagram on board

# Concepts

- Articulation work
  - Representation of information (e.g., a decision) only makes sense if you know the background (history) for its origin
    - {conflict, discussion, compromise, ...}\*

# Concepts

- Situated action
  - Understanding the relationship between plan, action, and context

# Concepts

- Mutual influence
  - Understanding the social contexts' influence on actions, plans, and representations

# Concepts

- Shared information space
  - The context in which articulation work, situated action, and mutual influence fit together
  - The shared information space must include the subjectivities of the participants

# Concepts

- Shared material
  - Exists in a shared information space
  - Situated action, mutual influence, and articulation work all need to be grounded in shared material – otherwise there is no overlap between actions

# Concepts

- Double level language
  - Formal and cultural levels of conversation
  - The two levels are brought together in a shared information space

## Concepts

- Equality
  - There must be a balance between the benefits and the amount of work done by different actors

## Taking CSCW seriously

- CSCW should be conceived of as *an endeavor to understand the nature and requirements of cooperative work with the objective of designing computer-based technologies for cooperative work arrangements*
- The approach of CSCW: Computer Support
- The scope of CSCW: Cooperative Work

## Articulation work

- The conception of cooperative work can be subsumed under the notion of supporting the articulation of distributed activities
- The concept of a cooperative work arrangement plays a central role in articulation work

## Articulation work

- A cooperative work arrangement may simply *augment* the mechanical and information processing capacities of human individuals and thus enable the cooperating ensemble to accomplish a task that would have been infeasible for the workers individually.
- A cooperative work arrangement may *combine the specialized activities* of multiple workers devoted to the operation of different specialized tools, techniques, or routines.
- A cooperative work arrangement may facilitate the application of multiple problem solving *strategies and heuristics* to a given problem and may thus serve the function of balancing the individual biases.
- A cooperative work arrangement may facilitate the application of multiple *perspectives and conceptions* on a given problem so as to match the multifarious nature of the work environment.



## Supporting articulation work

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- Supporting the management of workflows
- Supporting the management of a common information space
- How does this match with the concepts presented by Robinson?

## CSCW perspectives

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- Engineering perspective
  - (Groupware)
- Can we bridge the gap?
- Sociology / psychology perspective
  - (CSCW)

## Previous paper (Bannon and Schmidt)

- Core CSCW issues
  - Supporting articulation work
  - Sharing an information space
  - Designing socio-technical systems
    - Understanding the relationship between design of systems and workflows of an organizations
    - New systems may often consciously or unconsciously change the workflow of an organization
    - Adapting the technology to the organization and vice versa

## AwareMedia

- Coordinating work at hospitals is particular challenging
- Much effort is put into the mutual awareness of workers on the flow of work
- AwareMedia
  - Shared interactive display
  - Social, temporal, and spatial awareness
  - Shared messaging system

# Awareness

- Field studies of surgical departments
- Public and shared social awareness
  - We all know what we are all doing
- Temporal awareness
  - Helping users to be aware of past, present, and future activities
  - Temporal coordination
    - Alignment of own actions to a log of past activities, to current activities, and to the anticipated future flow of work

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# Awareness

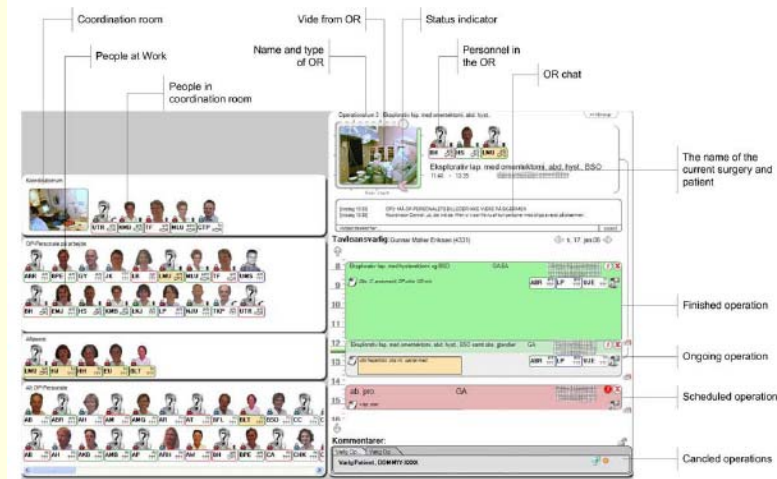
- Spatial awareness
  - Helping users to understand and be aware of activities taking place in specific rooms
    - Social awareness – tied to persons
    - Temporal awareness – tied to people
- Communication
  - Supporting written and spoken communication
  - Asynchronous (leaving messages) and synchronous (talking on the phone)

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# AwareMedia



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Figure 2: AwareMedia showing video connection between the different operating rooms, status information for an operation, and the operation schedule.

# AwareMedia

## Large displays



Figure 3: The deployment of AwareMedia on two 42" touch screens in the coordination room.



Figure 4: The deployment of AwareMedia on a 20" touch screen in an operating room (to the left in the picture).

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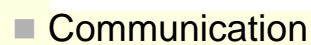
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- Spatial

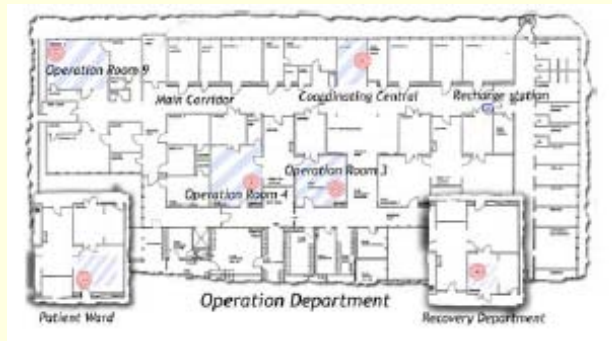


- Temporal



# AwareMedia

## ■ Deployment



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## AwareMedia conclusions

- AwareMedia runs continuously at a operating ward and is deployed in ten different settings, including three operating rooms.
- After three months of deployment, the system handles all operations in the three ORs and the clinicians have abandoned using the old paper-based operations schedules.
- There is substantial evidence that the system helps clinicians to coordinate their work in new ways by providing a shared awareness. This helps them time interruptions appropriately, eases simple message communication, and helps locate people within the ward.
- The facts that AwareMedia shows the same contextual information in many redundant ways and that it is a stable, persistent, and predictive display for easy visual reference, was also reported as a major benefit of the system.

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# Questions

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- The three papers (9 + 10 + 12)