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Issues in Groupware Design

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CSCW Basics

- Intro to Group Work
- **Intro to Groupware**
- **Design of Groupware** ←
- Evaluation of Groupware

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Learning outcomes

- After attending this lecture and reading the additional literature you should be able to:
 - Explain the impact that groupware could have on individuals
 - Discuss how people, teams, organisations and technology determine the success of groupware design
 - Introduce the concept of awareness in a variety of forms
 - Recognise the characteristics of groupware technology that may enable team members to coordinate their activities

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The impact on groupware

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How tasks are done

- Task taxonomy
 - *Generating Tasks*: coming up with alternative solutions to a problem (as in brainstorming) or alternative options for action
 - *Intellective Tasks*: solving problems with correct answers
 - *Judgement Tasks*: deciding issues where there are no right answers
 - *Negotiation Tasks*: resolving conflicts of interests or viewpoints
- The different types of task require different amounts of information, not just about the nominal content of the task, but also about peoples' feelings and attitudes.

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Communication richness


- Face-to-face
- Video
- Audio
- Text based
- However,
 - Touch?
 - Smell?

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The Problem of Critical Mass

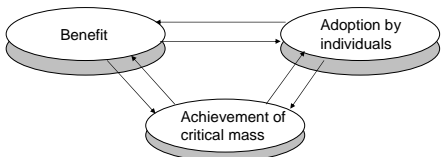
- No groupware technology will work unless a high percentage of team members use it
 - Access to technology?
 - Availability of technology?
 - Ability to use groupware technology?
- As a central coordination tool, ALL team members must be able to satisfy these conditions



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The 'Vicious circle'



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    graph TD
      Benefit((Benefit)) --> Adoption((Adoption by individuals))
      Adoption --> Benefit
      Adoption --> CriticalMass((Achievement of critical mass))
      CriticalMass --> Adoption
      CriticalMass --> Benefit
      Benefit --> CriticalMass
  
```

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Personal Motivation

- Individual effort versus team benefit
 - There is always an individual cost to using groupware technology
 - Effort to use and effort to maintain
 - Automatic meeting scheduler
 - Benefit lag
 - Nobody expends effort needlessly
 - Prisoner's dilemma problem
 - Nobody wants to be the first, but somebody has to pioneer the use of the technology
- Design for the individual



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Prisoner's dilemma

- Choice between collaborating and not collaborating
- Benefit of enough people collaborating (critical mass) = B
- Cost of collaborating = C
- Cost/benefit of collaborating (benefit – cost)
 - I. If enough people collaborate = B – C
 - II. If not enough people collaborate = 0 – C
- Cost/benefit of not collaborating
 - III. If enough people collaborate = B
 - IV. If not enough people collaborate = 0
- The bottom line = { III > I } AND { IV > II }

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Payoff

Critical mass

Proportion of people collaborating



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Social and Political Issues

- Disruption of the social dynamics of groups
 - Violating social taboos
 - Ignorance of tacitly understood knowledge
 - Too rigid communication patterns ()
 - Challenging organisational politics
 - Decisions are not always rational
- Recognise the problem and avoid making assumptions
 - Investigate work place practices
 - User-participation in design



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Organisational Issues

- Lack of support for exception handling and improvisation
 - There is a difference between the way things are supposed to work and how they actually work
 - Standard procedures may not be productive
 - Passive strike by 'working to rule'
- Recognise that a lot of problem solving is *ad hoc*
 - People don't like the rigidity of long term planning



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Why do you think Email is such a successful tool?

- Think about the things that have determined the adoption of email
- What are the criteria that suggest that email is indeed a success?
 - Think about it for a few minutes
 - Then discuss these questions in small groups

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Maximise Personal Acceptance

- Add appealing features, but watch out that 'bells and whistles' do not take over
 - Increasing instant user-appeal
- Adopt "The Reflexive Perspective" of the person as a group
 - Different places of work
 - Different roles
- Recruit "Champions" and "Evangelists"
 - Promote the use of the system



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Minimise Requirements

- Avoid dependence on user actions
 - Do not rely on users providing structured information
 - Use information that is available for free
 - Use header information in email to build an address book
 - Automation by introducing intelligent user agents
- Enable shifts of costs and benefits
 - The person getting the benefit will have to burden the cost
 - If the benefit shifts, the cost should also shift
 - May not be compatible with a hierarchical organisation structure



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Minimise Constraints

- Be aware of the two level perspective of technology
 - What is possible?
 - How will it be used?
- Beware of rigid models and theories
 - Workflow tailoring
- Use open and unconstrained systems

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Increase external integration

- Reduce transitions
 - Seamless transition between
 - Individual and group work
 - Phases of the group process
 - Work mode
 - Time
 - Video fusion (e.g., ClearBoard)
- Minimise dependence on structure and format
 - Use standardised formats
- Avoid dependence on implementation platform
 - Web-based tools and services

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Common understanding

- What's going on?
 - Activity/Workspace awareness
 - Synchronous
 - Asynchronous
 - Informal awareness
 - Who is around and what are they doing?
 - Group-structural awareness
 - Organisation/ Workflow etc.
 - Social awareness
 - giving group members information helpful for making sense of others' actions, such as background on team members' beliefs and knowledge'

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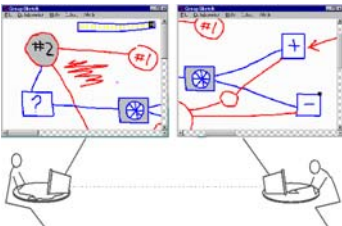
Synchronous Activities:

- What You See Is What I See: WYSIWIS
 - Consistent presentation of shared information
 - Strict form
 - Scroll wars
 - Window wars
 - Relaxed forms (WYSIWITYS)
 - Separation of workspaces
 - Personalised layouts and views
 - Time divergence

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Relaxed WYSIWIS



In relaxed-WYSIWIS systems like this one, the awareness problem is particularly severe. Any information about where the other person is working or what they are doing can only be gathered through laborious verbal communication.

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Further Reading

- Jonathan Grudin – Eight Challenges for Developers
- Andy Cockburn and Steve Jones – Four Principles of Groupware Design
- Borghoff & Schlichter pp.127-141