Groupware

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What is groupware?

Wikipedia about groupware

"Collaborative software is software designed to help people involved in a common task achieve their goals."

MW about groupware

"Software that enables users to work collaboratively on projects or files via a network"
Grudin's eight challenges
Grudin's eight challenges

Essential problem with groupware:

“Because individuals interact with a groupware application, it has all the interface design challenges of single-user applications, supplemented by a host of new challenges arising from its direct involvement in group processes.” (Grudin)

Small task in groups of two/three

What successful groupware exists today? What has made it possible for success now, that did not exist ten years ago?
Grudin's eight challenges - 1

Disparity in work and benefit

“Groupware applications often require additional work from individuals who do not perceive a direct benefit from the use of the application.”

Costs and benefits depend on preferences, prior experience, roles, and assignments

Ideally, each individual benefits, but maybe not equally

E-mail, voice annotations & calendar examples - who does the work and who benefits?

Solution: Design processes for using the groupware that create benefits for all group members
Critical mass and Prisoner’s dilemma problems

“Groupware may not enlist the ‘critical mass’ of users required to be useful, or can fail because it is never to any one individual’s advantage to use it.”

Achieving a critical mass of users is essential for communication systems.

If everyone acts to further his or her personal best interest, the result is worse not only for the group but also for each individual.

E-mail example: one other user enough ...

Solution: Reduce the work required of all users, build in incetives for use, and suggest a process of use that provides or emphasizes individual and collective benefits.
Disruption of social processes

“Groupware can lead to activity that violates social taboos, threatens existing political structures, or otherwise demotivates users crucial to its success.”

In group work, our actions are unconsciously guided by social conventions and by our awareness of the personalities and the priorities of people around us, knowledge not available to the computer.

E-mail example: problems with flaming, junk mail, smileys ...

Solution: Understanding of users’ workplaces to avoid the common assumption of a “rational” work environment.
Exception handling

“Groupware may not accommodate the wide range of exception handling and improvisation that characterizes much group activity.”

There is a difference in the way things are supposed to work and the way they do work.

Human activity is characterized by error handling, exception handling, and improvisation.

E-mail example: flexible due to asynchronous and informal ...

Solution: Learn how work is actually done! Design tailorable and adaptable systems.
Unobtrusive accessibility

“Features that support group processes are used relatively infrequently, requiring unobtrusive accessibility and integration with more heavily used features.”

Groupware features work better if integrated with features that support individual activity

Infrequently used groupware features must be known and accessible to users - design to be unobtrusive yet accessible

E-mail example: basic use involve few features to learn and recall

Solution: If possible, add groupware features to an already successful application rather than create a new application
Difficulty of evaluation

“The almost insurmountable obstacles to meaningful, generalizable analysis and evaluation of groupware prevent us from learning from experience.”

- Groupware is affected by all group members, with shifting roles, preferences and backgrounds
- Difficult to capture complex and important social, motivational, economic, and political dynamics in, for example, lab tests
- Group interactions unfold over days/weeks - longer evaluations
- Field observations are complicated and time consuming
- E-mail example: Difficult to assess organisational costs & benefits
- Solution: enlist appropriate skills, provide resources, disseminate results
Grudin's eight challenges - 7

Failure of intuition

“Intuitions in product development environments are especially poor for multiuser applications, resulting in bad management decisions and an error-prone design process.”

- Experience often based on single-user applications
- Developers rely on feedback from few potential users
- E-mail example: Intuitions have improved over time (not all e-mail applications succeed)
- Solution: Involve users in the design process
Grudin’s eight challenges – 8

The adoption process

“Groupware requires more careful implementation (introduction) in the workplace than product developers have confronted.”

Understand the problem of the target group and match the solution to it, identify appropriate work processes, select appropriate pilot groups, allocated equipment properly, give the target group a clear understanding of the application, step-by-step training, management attituded ...

E-mail example: Use has spread from academic and public sources more than through product development and marketing processes

Solution: Add groupware features to existing applications or design to first meet the real needs of group members
Grudin’s eight challenges

Calls for

🌞 Better understanding of work environments and for corresponding adjustments by developers
🌞 Better knowledge of the intended users’ workplace (1. Disparity work & benefit, 2. Critical mass & prisoner’s dilemma, 3. Disruption of social processes, 4. Exception handling, 5. Unobtrusive accessibility)
🌞 Require changes in the development process (6. Evaluation, 7. Failure of intuition, 8. Adoption process)
🌞 Demands that product developers expand the conception of the development process and product to include concerns that have been outside their sphere of activity (8. Adoption process)
Task

Identify one other groupware than e-mail

Discuss Grudin’s eight challenges in relation to the selected groupware:

- Disparity work & benefit
- Critical mass & prisoner’s dilemma
- Disruption of social processes
- Exception handling
- Unobtrusive accessibility
- Evaluation
- Failure of intuition
- Adoption process
Groupware

What is groupware?
Models of groupware
Different types of groupware
What is groupware?

Software supporting group work, focusing on the requirements of co-operation

It is not only a communication tool

Divide groupware based on when and where members of the group are working
Time-Space matrix (JG)

When: same/different time, synchronous/asynchronous

Where: same/different space, co-located/remote
<table>
<thead>
<tr>
<th>Place</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>Same</td>
<td>face-to-face meetings, meeting support tools</td>
</tr>
<tr>
<td>Different</td>
<td>Tele-conferencing, Video-conferencing, Collaborative editors, Instant messaging</td>
</tr>
</tbody>
</table>
Classification through function (Dix)

Co-operation involves participants who perform the work and the artefacts they are working with.
Mediated communication - direct communication between the participants.
Meeting rooms and decision support systems
- common understanding

Mediated communication
- direct communication between the participants

Participants

Understanding

Direct communication

Artefacts of work

Control and feedback
Meeting rooms and decision support systems
- common understanding

Mediated communication
- direct communication between the participants

Participants

Understanding

Direct communication

Control and feedback

Artefacts of work

Shared applications and artifacts
Different types of groupware

Classified by the functions which they primarily support

- Computer-mediated communication: supporting the direct communication between participants
- Meetings and decision support systems: capturing common understanding
- Shared applications and artefacts: supporting the participants’ interaction with shared work objects - the artefacts of work
Different types of groupware

Classified by the functions which they primarily support

- Computer-mediated communication
- Meetings and decision support systems
- Shared applications and artefacts
Mediated communication

E-mail and bulletin boards

- Asynchronous and from different places
- Well known and successful groupware
- E-mail recipients categories, to, cc and bcc, where the social purpose differs
- Communication through e-mail: one-to-one or one-to-many
- Communication through bulletin boards: one-to-many
Mediated communication

Structured messaging systems

- Asynchronous from different places
- A mix between e-mail and database
- Predefined fields for the sender, filtered by the receiver
- More work the one who sends, benefit for the receiver
Mediated communication

Text messages
- Asynchronous/Synchronous and different places
- SMS & IM
Mediated communication

Video conferences and communication

- Synchronous and different places
- Technically mature today, but what does it lack?
- Cheaper than face-to-face meetings if long distances to travel
- Not replacing but complementing face-to-face meetings
Mediated communication

Virtual environments

- Synchronous/Asynchronous and different/same places
- Communication through text or voice
- Representing people through embodiments - avatars
- Different views of the world: from behind, through the eyes ...
Different types of groupware

Classified by the functions which they primarily support

- Computer-mediated communication
- Meetings and decision support systems
- Shared applications and artefacts
Meeting- and decision support systems

Argumentation applications

- Store arguments as a support for making decisions
- Asynchronous and from different places
- Support the generation, development and storing of ideas
- Provide information about why certain decisions have been made
- Share problems between projects
- Often a hypertext-like structure
- Concurrency control needed, but only if people happen to work on the same node
Meeting- and decision support systems

Meeting rooms
- Synchronous and from same place
- Electronic support for meeting face-to-face
- Individual terminals showing the same thing
- Shared screens and whiteboards storing what is written (e.g., Smart Board)
Meeting- and decision support systems

Shared work surfaces

- Synchronous and from different places
- Write or draw on the same electronic surface
- Communication through voice or text
Different types of groupware

Classified by the functions which they primarily support

- Computer-mediated communication
- Meetings and decision support systems
- Shared applications and artefacts
Shared applications and artefacts

Shared computers and windows

- Synchronous and different or same place
- Individual applications that do not need to be aware of cooperation
Shared applications and artefacts

Shared editors

- Synchronous and different or same place
- The application needs to be aware of the cooperative activities
- One document, several users
- Text and/or graphics
- Multiple views - how do we handle that? Same or different? One or several cursors? If several views, who scrolls?
Shared applications and artefacts

Tools for co-authoring

Mostly asynchronous but parts of it synchronous, the place is not of interest

Long-term writing on documents, not editing

May include roles such as author, commenter, reader ... but who decides about the roles and how flexible are they?
Shared applications and artefacts

Shared calendars

- Mostly asynchronous and the place is not of interest
- Idea: make the calendars easier to share and allow automatic meeting scheduling
- Privacy issues: Who can see my calendar?
- Control issues: Who can write in my calendar?
Shared applications and artefacts

Communication through the artefact

- If you make a change in a shared application you need feedback to see the effect and feedthrough for others to see the effect.
- Feedthrough mediate communication through the artefact.
- Indirect communication through the artefact is important.
Awareness

- Who is there?
- What has happened and why?
- How did it happen?
GroupLab
DiamondTouch™ Toolkit