

(1) Answer all parts

- (a) Explain what is meant by “The Prisoner’s Dilemma” in the use of groupware and give a concrete example of how this may apply. (5 marks)
- (b) The attainment of a critical mass of groupware users depends both on the adoption by individuals and the benefit derived from its use. Discuss how these two factors together with the absence of critical mass can form a vicious circle that may prevent the groupware from being successfully used in a group, and discuss what the groupware designer can do to break this vicious circle. (7 marks)
- (c) A groupware designer is developing an online calendar tool for a distributed project team located in several continents. Explain how its successful adoption by the team members can be stimulated by taking a “person as a group” approach to the design of this tool. Specify and discuss what the result of this approach would be in the design of such a calendar tool. (8 marks)

(20 marks in total)

(2) Answer all parts

- (a) Explain what is meant by “the space-time taxonomy” of groupware and how this taxonomy should be extended to include mobile groupware. (5 marks)
- (b) The increased connectivity of mobile devices such as mobile phones and personal digital assistants, allow them to be used increasingly in collaborative activities. Discuss how mobile devices could potentially increase the scope for collaborative working. (7 marks)
- (c) Compare and contrast the implications for groupware design of including mobile workers in a team compared to a team without mobile workers. Give examples of each of the differences. (8 marks)

(20 marks in total)

(3) Answer all parts

(a) Teams that are geographically distributed may have to overcome a number of problems, such as 'dispersion', that could impact negatively on the performance of the team. Name these problems and explain briefly how each of these can affect a team's performance.

(4 marks)

(b) Explain how choosing which communication tool to use in a particular situation depends on the type of task being undertaken.

(6 marks)

(c) Discuss and evaluate the trade-off between structure and flexibility that one encounters when designing a CSCW system to support remote collaboration.

(10 marks)

(20 marks in total)

(4) Answer all parts

(a) Name each of the four types of awareness that members of a distributed team need to possess in order to successfully work together and give examples of how each type can be supported in a CSCW system.

(6 marks)

(b) Explain how WYSIWIS is an essential feature in coordinating the activities of distributed team members when working with in a shared workspace, and evaluate the importance of implementing WYSIWIS in a way that allows each team member to separately view and manipulate the workspace.

(6 marks)

(c) Sketch the layout of the main screen areas of a groupware tool that allows 2 or more remote members to view, discuss, and edit the data flow diagram of a large software program. Explain what the design choices are that need to be made.

(8 marks)

(20 marks in total)

(5) Answer all parts

(a) What are social information systems, and how do they differ from traditional CSCW systems?

(4 marks)

(b) What are the main obstacles in the successful adoption of social information systems, and what can the system's designer do to avoid these problems?

(6 marks)

(c) Discuss the main services offered by social information systems (such as Blacksburg Electronic Village) and give examples of how you would implement each of these services and why.

(10 marks)

(20 marks in total)

1.

- a) The prisoner's dilemma relates to a problem faced by people when deciding whether to invest in the use of a groupware application or to wait until other people have invested enough so that less investment is subsequently required. If this decision is made on the basis of maximising the individual gain, then the latter is the preferred option. However, if everyone chooses that option, no one will benefit from the use of the groupware.

For example, when deciding whether or not to buy a multimedia mobile phone (which is more expensive than a phone without multimedia capabilities), one can wait until many of your friends have such a phone before buying one yourself and get the full benefit from it, but if everyone thinks that way, then no one will experience the potential benefits that such a device may offer.

(5 marks)

- b) Critical mass can be reached only if individuals decide to adopt the technology, but they will only do so when they can see the benefit of doing so, and the benefit of groupware is in turn dependent on reaching critical mass.

In order to break this vicious circle, the designer has to "design for the individual". That means that certain features may be included that provide immediate benefit to the individual before critical mass is reached. People may decide to use the groupware application on the basis of these individual features first without worrying about critical mass, and in such a way critical mass may be more easily reached.

(7 marks)

- c) A calendar tool is equivalent to a central coordination tool, which means that it can only be adopted for use by the team if all the members of the team have access to it. However, individual team members may not be working just in a single location (office, home) or may be travelling. They would still want to access their calendar tool in each of these situations. So if the designer designs the tool with this in mind, then each team members may want to adopt the tool for their own individual needs and soon they will be able to use the tool to coordinate the team work.

(8 marks)

(20 marks in total)

2.

- a) The space-time taxonomy of groupware uses the two dimensions of time and location of use in order to classify groupware. Along the time dimension, groupware can be classified as supporting either 'synchronous collaboration' if the people who are collaborating use the tool at the same time or 'asynchronous collaboration' if these people use the tool at different times. Along the space dimension groupware can be classified as supporting either 'co-located collaboration' if the people who are collaborating are in the same place or 'distributed collaboration' if these people are in different places. By combining these two dimensions one creates four categories of groupware: synchronous co-located, synchronous distributed, asynchronous co-located and asynchronous distributed.

In order to incorporate mobile groupware, the taxonomy can be extended by distinguishing between predictable distributed and unpredictable distributed, because the location of the mobile worker has become unpredictable.

(5 marks)

- b) Mobile wireless technology allows mobile workers to become full and effective members of collaborative work groups. Before the availability of this technology, mobile workers were isolated while they were 'in the field'. Only when they touched base was it possible for them to collaborate with other members of the team. This situation put a considerable restriction on the potential participation of mobile workers in collaborative work, while at the same time imposing restrictions on the other non-mobile members of the team. For example, a work schedule could not be changed once the mobile worker had left the base. In some situations these restriction were unacceptable, and in these the use of mobile communication technology was first introduced. In particular, emergency services and the police were early adopters of mobile technology. However, with the availability of cheap mobile communication devices that can handle even multimedia information the initial gap (key word) between mobile workers and central workers can be significantly reduced. In addition, mobile collaboration will be possible even in small companies to increase their flexibility and to make it less inconvenient to visit customers and suppliers, for example.

(7 marks)

- c) The main differences between these types of CSCW systems revolves around coping with the unpredictability of the situation of the mobile worker. The system and its users need to maintain awareness of the presence (what kind of device are they using), context (what kind of environment are they in) and location (are they in a location were this makes sense)

To solve the latter problem, a CSCW system may want to use GPS information.

(8 marks)

(20 marks in total)

3.

a) The four problems are:

1. Dispersion – “out of sight, out of mind”; it is easy to forget about the needs of remote team members if you are not being confronted by their presence (keeping a low profile).
2. Loss of communication richness – can lead to misunderstandings, which take longer to repair, and lack of trust.
3. Coordination breakdown – more effort is required in the coordination of the team. More protocols and rules, which may hinder flexible working.
4. Lack of teamness – Less willingness to cooperate due to lack of trust, and ‘them versus us’ mentality.

(4 marks)

b) Four kinds of task: Generative, Intellective, Judgement, Negotiation with different requirements for communication richness. Four different communication media with different levels of richness: Face-to-face, Video, Audio, Text.

(6 marks)

c) More structure implies more restricted work practices. The danger is that the wrong communication structure is implemented that forces people to break social taboos. You also risk a lack of initiative and creativity, and people having to spend too much time adhering to the protocols without allowing shortcuts. The benefit is that it provides good coordination, the work process is well documented, all the work is traceable etc.

(10 marks)

(20 marks in total)

4.

a) These four types of awareness are:

1. Social awareness – information about the roles of other team members, a contact structure, what every team member is expected to do.
2. Task awareness – How is the task structured, implying workflow tools and task allocation tools, calendar and diary tools
3. Concept – what is everyone talking about, what are the topics and subjects, do I know enough about these. Did I understand that correctly?
4. Workspace – event notification, shared views etc.

(6 marks)

- b) WYSIWIS provides workspace awareness. It is important to allow each participant to have their own view in order to avoid 'scroll wars' and 'window wars' and any other problems related to 'concurrency'.

(6 marks)

- c) Screen areas:

- a. Team members with an indication of who is available, their location, local time, etc
- b. Main view of the workspace
- c. Compressed view of the workspace with indicators showing what each of the team members is looking at
- d. Multiple pointers
- e. A chat area, or video fused video camera view of the participants
- f. Other features that make sense

(8 marks)

(20 marks in total)

5.

- a) Social Information Systems are not work oriented and usually aimed at communities of people rather than at work groups. They provide information spaces and the tools needed to create and access the information. There is usually no central control, and instead there may be a system of social control that relies on voting. Information is relatively unstructured and can include any topic. The boundaries of who should have access are not always clear, or there can be levels of access.

(4 marks)

- b) There can be no top-down enforcement of use of the system. The only reason people will use it is if they think the benefits outweigh the costs. Few people would want to invest effort up front, which may mean that the system has to be seeded to entice people to use it. It can be tied in with public services such as those offered by local councils and local clubs and societies.

There are many stakeholders and roles to play, and many people may have more than one role. It is important that information is traceable to both individuals and roles. Information access must also be structured to take different roles and individuals into account.

Because the system is potentially for all the people, the hardware requirements have to be taken into consideration. The range of different hardware in the community could be diverse, so a Web-based system would be best. Access for people without the proper hardware could be provided at dedicated locations such as libraries, town halls etc.

and any other valid considerations

(6 marks)

- c) These services have been implemented in BEV.
- a. Improved Communication – email services
 - b. Presence - Web hosting
 - c. Structure – Who-is-who, Directories
 - d. Notification – Calendars and News
 - e. Access – High bandwidth Internet access, Local multimedia service access points

(10 marks)

(20 marks in total)