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**UNIT: COMP 466 – MESSAGING SYSTEMS**

**TASK: ASSIGNMENT**

1. How do you think groupware is likely to affect our lives in the future? Justify your answer with examples

In the future, groupware is likely to transform how we communicate, how we work work together and how we collaborate. This is because over time remote and hybrid works are becoming more common, Therefore it’s foreseen that the only way to make the remote and hybrid works more effective is via groupware and this will improve team productivity , allowing real-time communication , document sharing and project tracking across different places.

**Example 1**

In the future, AI-driven groupware will enable smart task allocation, reducing the need for manual management.

**Example 2**

Healthcare professionals are likely to use advanced groupware to collaborate in real time on patient cases across different hospitals, improving diagnosis and treatment outcomes.

1. Low bandwidths and single media groupware systems reduce the transmission of back channels. How does this affect communication?

* **Misunderstanding**: Back channels such as facial expressions, tone of voice or body language are critical for understanding emotions, intentions, and nuances in conversations. Failure to have them as a result of low bandwidth and single media systems can lead to misunderstandings or incomplete communication.
* **Reduced Engagement**: Non-verbal signals lead to active participation and engagement in a conversation. Without them, communication may feel more impersonal, leading to disengagement.

**Example**

In a low-bandwidth Google Meet video call, a participant's frown or nod of head might not be transmitted, resulting in missed cues about agreement or disagreement.

1. How effective is the time/space matrix as a tool for classifying and analyzing groupware?

The **time/space matrix** categorizes interactions based on two measures: time (synchronous vs. asynchronous) and space (same location vs. different locations) helping designers and analysts understand how a group works together and the technology to use.

Such that:

**Synchronous (same time)/Same Place**: Face-to-face meetings with tools like whiteboards such as in-person brainstorming.

**Synchronous (same time) /Different Place**: Real-time video conferencing and chat such as Zoom, Teams.

**Asynchronous( Different time)/Same Place**: Tools like shared physical documents for example leaving comments on a shared whiteboard.

**Asynchronous (different time)/Different Place**: Email, document collaboration platforms such Google Docs

1. What is meant by the terms control and feedback and feedthrough in the classification by function framework?
2. **Control**: This is how actions are performed in any given groupware system, stating which functions users can execute.

**Example:** in shared document, creating , editing and saving the document includes control.

1. **Feedback**: This is the process of providing users with information about the outcomes of their actions.

**Example:** when a given user makes changes in a collaborative document, other users receive feedback such as through notifications.

1. **Feedthrough**: This is the indirect feedback about the actions of others while using the system making the user understand the state of the system and the contributions of others. **Example:** In collaborative software feedthrough may include visual indications of who is editing or commenting on a document in real-time.
2. Identify three types of shared application. What are the main issues that need to be addressed in the design of these applications?
3. **Shared Whiteboards**: Allow users to collaborate in real-time by drawing, writing, or brainstorming ideas.

**Main Issues to be addressed regarding shared whiteboards**

* Synchronization latency
* version control
* seamless integration across devices

1. **Shared Documents**: Tools like Google Docs, where multiple users can edit the same document.

**Main Issues to be addressed regarding shared documents**

* Conflict resolution when two users edit the same section
* Security
* access control.

1. **Video Conferencing with Shared Screens**: Allows participants to share their screens during a video call.

**Main Issues to be addressed in regards to video conferencing**

* Bandwidth constraints
* maintaining quality while ensuring low-latency communication
* security of shared content.

1. What are the two main architectures used for groupware systems? Identify the strengths and limitations of each and suggest how they can be resolved

**a. Client-Server Architecture**:

**Strengths**

1. Centralized control
2. easier to manage and update
3. better for security.

**Limitations**

1. Potential bottleneck if the server fails or is overloaded.
2. Scalability issue.

**Resolution**

Load balancing and distributed server architecture can curb these limitations by distributing data across multiple servers.

* + 1. **Peer-to-Peer (P2P) Architecture**:

**Strengths**

Decentralized, which can enhance scalability and reliability since no single point of failure exists.

**Limitations**

Can be more difficult to secure, manage, and synchronize changes across different peers.

**Resolution**: Hybrid architectures combining P2P and client-server elements can resolve security and synchronization challenges.

1. A company has offices in Nakuru and Mombasa. They are considering using some form of video to supplement their existing email, fax and telephone communications

**(a)** Discuss the options available and potential advantages and problems they may encounter.

**Options Available**

1. Video conferencing tools (e.g., Zoom, Microsoft Teams)
2. pre-recorded video messages
3. live streaming.

**Advantages**

1. Enhanced collaboration with visual cues
2. reduced need for travel
3. improved communication efficiency.

**Problems**

1. Bandwidth issues
2. video quality degradation
3. time zone differences.

**(b)**How would your advice be changed if the two offices were in Mombasa and Uganda ?

I would advice the company to consider the international bandwidth constraints and regulatory compliance for data privacy.

**(c)** Email and video are 'just' electronic substitutes for face-to-face conversation. What radically different forms of groupware might the company consider - justify your answer using examples and appropriate theoretical frameworks

* The company could consider VR/AR-based collaboration platforms. These would offer immersive environments where team members can interact in a virtual space, simulating face-to-face meetings.

**Example**

In VR groupware, employees could hold virtual meetings in a shared 3D office space, providing a richer, more engaging experience than video conferencing.

**Theoretical Framework**

The Activity Theory can be applied to justify how VR groupware improves collaboration by enabling more dynamic interactions in shared virtual spaces.