Microsoft Teams

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Phase 1

Abstract

Microsoft Teams, part of the Microsoft 365 suite, is a comprehensive collaboration platform that enhances communication and teamwork. This study highlights its features, such as integrated chat, video conferencing, and file sharing, which facilitate seamless interactions among users. We focus on its effectiveness in educational settings, particularly during remote learning. Comparing Teams with other applications like Webex, Zoom, and Google Meet reveals its unique advantages, including deep integration with Microsoft Office and robust security. The study also outlines functional and non-functional requirements, user interface designs, and the technologies that support Teams. Our findings demonstrate that Microsoft Teams significantly boosts productivity and collaboration, making it an essential tool in both academic and professional environments.

Introduction

Before the emergence of modern software, communication among individuals in work and study settings was fraught with challenges, leading to difficulties in coordination and information sharing. However, with the advent of platforms like Microsoft Teams, communication has become more accessible and efficient, providing integrated solutions that enable instant interaction and effective collaboration.

Microsoft Teams is a comprehensive collaboration platform designed to facilitate communication and teamwork within organizations. Launched as part of the Microsoft 365 suite, Teams integrates chat, video conferencing, file sharing, and application integration into a single user-friendly interface. This platform enables teams to collaborate seamlessly, regardless of their geographical locations, promoting productivity and efficiency in both remote and in-office settings. With features such as real-time collaboration on documents, customizable channels for different projects, and robust security measures, Microsoft Teams has become an essential tool for businesses seeking to enhance their collaborative efforts and streamline workflows. A survey conducted among several students revealed positive results regarding their experiences with the platform.

This transformation in communication has significantly impacted how teams operate, allowing them to work remotely more effectively, which in turn has increased productivity and facilitated the exchange of ideas. Thanks

to these tools, it is now possible to organize meetings, share files, and communicate in real time, contributing to the achievement of goals more swiftly and efficiently.
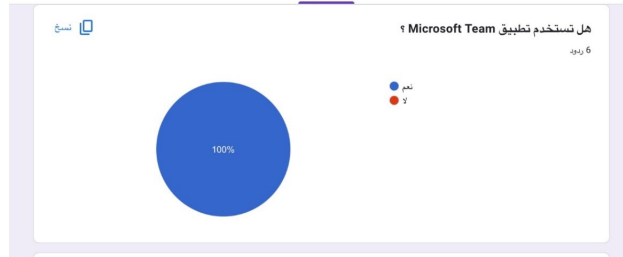

Figure 1: Microsoft Teams Usage Survey Results

The survey presents the use of Microsoft Teams, and the results show that all participants (6 people) answered YES indicating their complete reliance on the application with 100 percent Usage

Figure 2: Microsoft Teams Ease of Use Survey Results

The survey presents results on the ease of use of Microsoft Teams based on the opinions of 6 participants, with the pie chart showing that 100 percent of them selected the "Easy" option, while none of the other options were chosen.

Figure 3: Microsoft Teams Service Satisfaction Survey Results

The image presents a survey assessing participants' satisfaction with the services of Microsoft Teams, showing that 83.3Percent of participants were satisfied, while 16.7Percent were neutral, with no participants expressing dissatisfaction or annoyance. Based on these results, it can be said that the majority of participants are satisfied with the application's services.

Figure 4: Feedback on Problems Faced While Using Microsoft Teams

The survey aims to gather users' opinions on any issues they may have encountered while using Microsoft Teams. Based on the responses, it appears that most participants did not face any significant issues, as the majority of answers were along the lines of "none."

Figure 5: Feedback on Feature Suggestions for Microsoft Teams

The survey aims to gather users' opinions on the features they would like to add to the Microsoft Teams application. The responses showed a division among participants; some expressed no desire for any additions, while others suggested overall improvements to the application. One participant proposed adding a section for recording virtual classes, reflecting their interest in enhancing the educational user experience

Purpose

Microsoft Teams for Students provides students and teachers with the opportunity to meet and collaborate, create content, and exchange information. It also allows for organizing virtual meetings, whether audio or video. The application is used when classes are shifted to remote learning due to adverse weather conditions.

Existing programs

There are many applications similar to Microsoft Teams, such as Webex and Zoom.

Application	Disadvantages	Advantages
Webex	1- Some Webex users experience performance issues during meetings, especially when sharing screens and files. 2- Frequent updates in the Webex application can be annoying for some users.	1- Webex provides high-quality video and audio calls, making remote meetings smoother and more effective. 2- Webex provides high-level protection through data and call encryption, ensuring the security of meetings and the protection of information.
Zoom	1- Sometimes, the Zoom application may be affected by the quality of the internet connection, resulting in video or audio interruptions or delays in communication. 2- The application faces restrictions or bans in certain countries due to local policies or security concerns.	1- It allows users to share their screens with others, making it ideal for meetings and presentations. 2- A large number of users can join meetings simultaneously, making it perfect for large meetings or webinars.

Application	Disadvantages	Advantages
Google Meet	1- It requires a good connection to ensure successful calls. 2- The absence of certain interactive tools, such as polls or breakout rooms.	1- It can accommodate a large number of participants in meetings. 2- It offers good data encryption and protects meetings with passwords.

Our Program

Microsoft Teams is distinguished by its seamless integration with Microsoft 365, allowing users to collaborate effortlessly on applications such as Word, Excel, and OneNote. This integration facilitates smooth teamwork without the need to switch between platforms and enhances collaboration beyond mere meetings. The platform combines chat, video conferencing, file sharing, and task management into a cohesive experience, providing a unified communication solution. Furthermore, Teams prioritizes enterprise-level security. Additionally, Microsoft Teams can utilize assignment features and display virtual classrooms, enabling the division of students into smaller breakout rooms for purposes such as introductions, test preparation, discussions, or group work. It also features an intuitive design and a streamlined interface, making navigation and interaction user-friendly.

Phase 2

Functional Requirements

- **Log in:** The user shall be able to log in.

- **Log out:** The user shall be able to log out easily and log in again without the need to create a new account.

- **Homepage:** The user shall be able to view a homepage containing the latest alerts.

- **Language:** The user shall be able to change the language.

- **Create meeting:** The user shall be able to create a meeting and specify the desired participants.

- **Groups:** The user shall be able to create groups and add members.

- **Recording:** The user shall be able to record meetings and save conversations.

- **Messages:** The user shall be able to exchange messages and text conversations.

- **Notifications:** The system shall provide notifications to users when they receive new messages or meeting invitations.

- **Teams:** The system shall provide users with the ability to create and manage teams, including adding or removing members

- **Search:** the system shall allow the user to search for the members he wants to add to the group by email or name

- **Calendar:** The system shall be capable of presenting the calendar to the user

- **Updates:** The system shall make the user able to update and modify data at any time

- **Manage:** The system shall allow users to manage their profile and modify personal information.

Non-Functional Requirements

- **Ease:** The system shall be easy to use and understandable for users regardless of their technological experience.

- **Protection:** The system shall protect the user's data and personal information.

- **Response:** The system shall provide quick responses.

- **Availability:** The system shall be available 24 hours.

- **Compatibility with Operating Systems:** The system shall be compatible with various operating systems.

- **User Customization features:** The system shall allow user customization options such as language and others.

- **Scalability for High User Volume:** The system shall be able to handle large numbers of users without suspension or errors.

- **Legal Compliance Assurance:** The system shall comply with all applicable laws.

- **Continuous Update Functionality:** The application should allow updates to happen continuously without slowing down performance or causing any issues while it is being used.
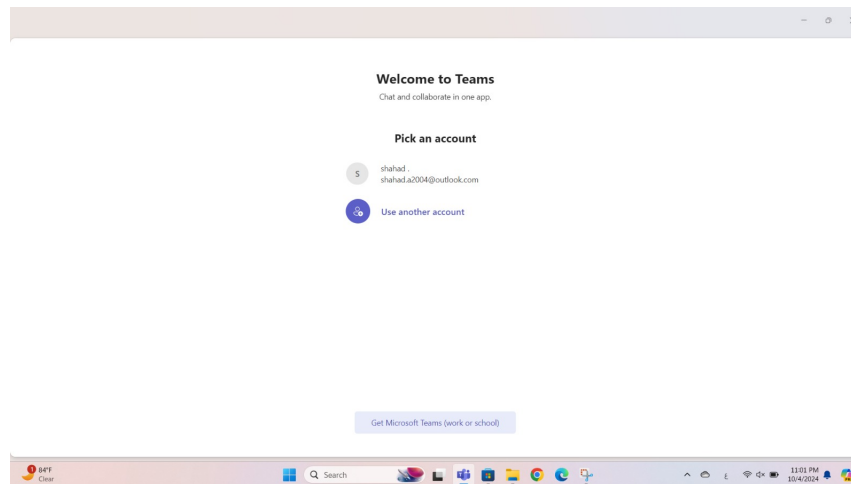
Phase 3

Interfaces

Figure 6: Registeration Interface

The registration interface in the Microsoft Teams application allows new users to easily create an account. The interface includes entering an email address and password, to the terms and conditions, and then clicking on "Sign Up." After that, the application verifies the data's validity, and the user may be required to confirm their email address through a verification message to ensure security
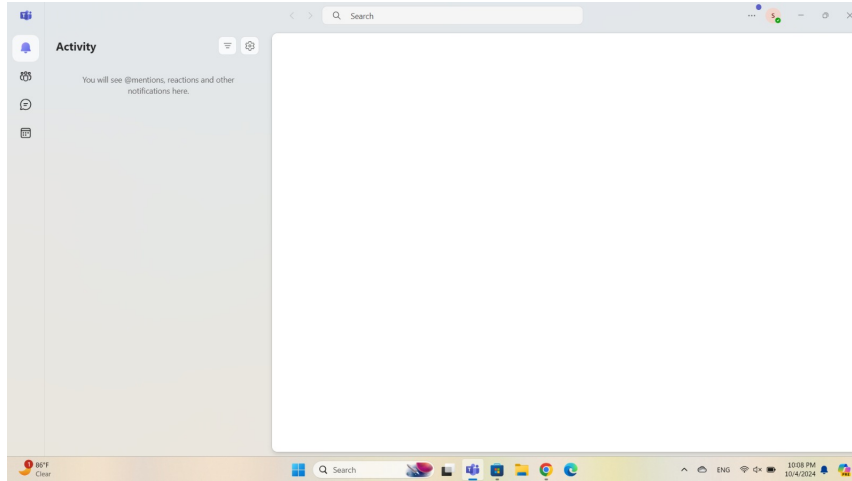
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Figure 7: Activity Interface

The Activity interface displays all recent activities and notifications received by the user, including new messages, posts, comments, and mentions in conversations. This interface helps save time by gathering all activities in one place, reducing the need to navigate between different screens. The user can click on any notification to view the content directly, allowing for quick access to details.interface also enables organizing activities by type, such as displaying only messages or tasks, which helps prioritize important items.
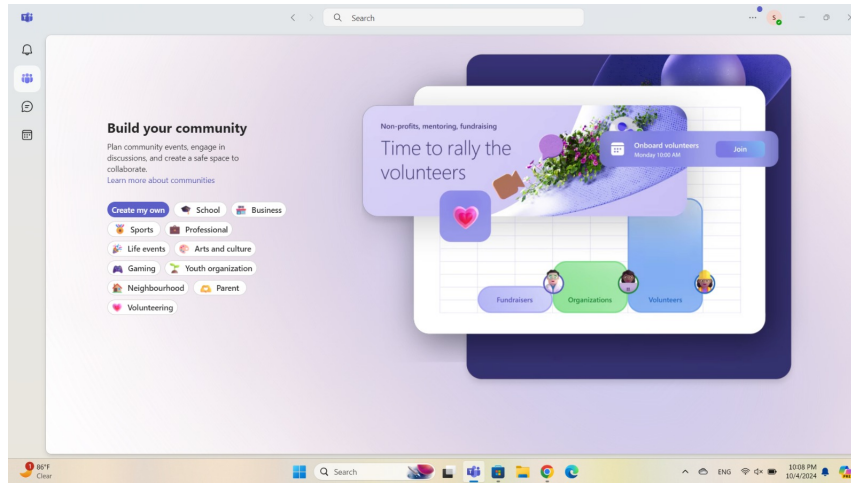
Figure 8: Teams Interface

The Teams interface in Microsoft Teams is a central hub for collaboration among members. It includes a list of teams that the user belongs to, allowing for easy navigation between them. The interface also provides options to view conversations and activities within channels, making it easier to follow discussions. Members can start new conversations and reply to existing ones, as well as upload files and documents directly within the chats.Additionally, it features a notification system that helps members stay updated on important messages and updates, enhancing immediate interaction.
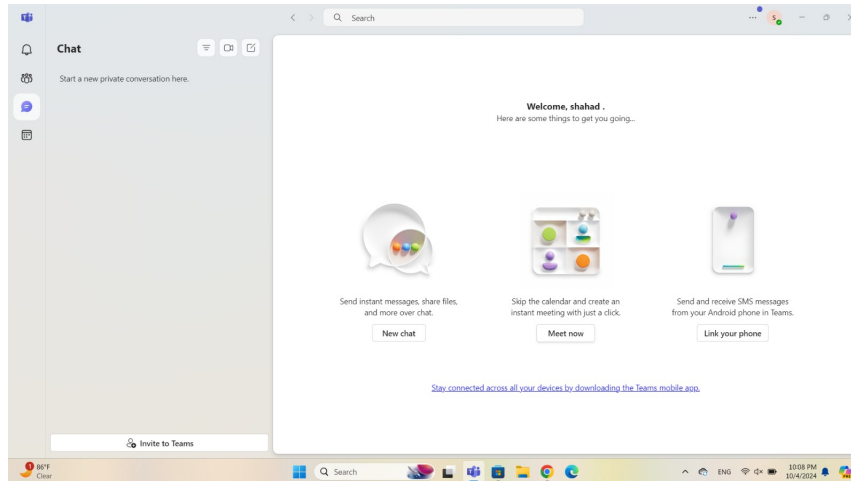
Figure 9: Chat Interface

The chat interface displays a list of all current conversations, whether individual or group chats, and shows the latest messages for each conversation, making it easy for users to follow updates. The interface supports various types of messages, such as text and voice messages, and also allows for easy file sharing. Users can start a new conversation with specific individuals or create a group chat.Text messages can be sent immediately or scheduled for later.Files can be easily attached and shared directly with participants in the conversation.
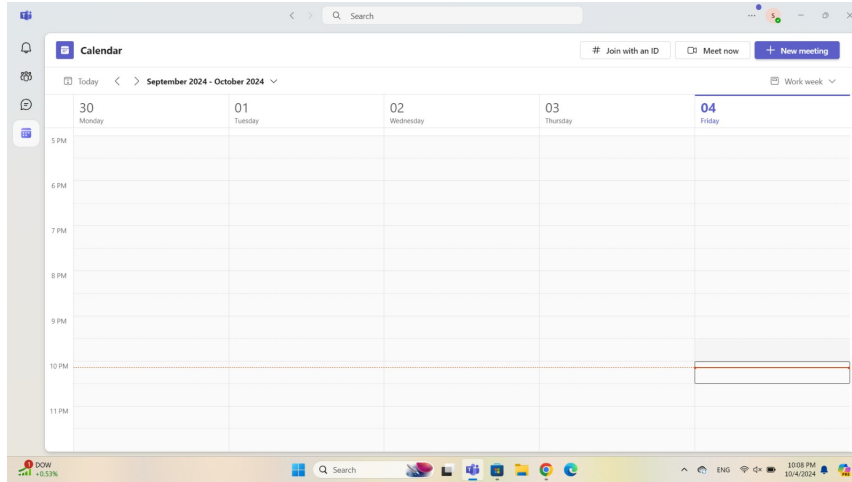
Figure 10: Meating Interface

The Meetings interface in Microsoft Teams displays all scheduled meetings and the user's daily calendar, making it easy to organize time effectively. It offers options to start a new meeting or join an ongoing one, as well as share screens. Users can select their preferred devices, such as cameras and microphones, to ensure good audio and video quality. Additionally, inviting participants is straightforward by entering their email addresses. Users can also share slides and other materials, ensuring effective interaction among all participants. Overall, the Meetings interface enhances the communication and collaboration experience.

Data Models

- **User Model:** The user model represents all data related to users in the system and how they interact with various components. This model is used to store and manage individual information for each user at the system level. This model includes several key elements, which are: UserID, UserName, Email, PhoneNumber, Roles.

- **Message Model:** The message model represents all data related to conversations and messages exchanged between users, whether within a team or in private chats. This model helps manage, track, and document messages. It includes several key elements, which are: MessageID, SenderID, Content, Timestamp, Reactions.

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- **Team Model:** The Team Model in Microsoft Teams is a structure that represents a group of people working together toward common goals. It helps improve collaboration and communication among team members, making information and resources easily accessible. The key elements include: TeamID, TeamName, TeamOwner, Members, TeamSettings

- **activity model :** The activity model is used to track and document all activities performed by users within the Microsoft Teams application. This model helps provide information on how users interact with the platform. It includes several key elements, which are: ActivityID, UserID, Action, Timestamp

- **Meeting Model :** The Meeting Model in Microsoft Teams represents information related to scheduled meetings. This model helps manage and organize meetings effectively, enhancing communication among participants. The key elements include: MeetingID, Title, OrganizerID, Participants, StartTime EndTime, MeetingLink.
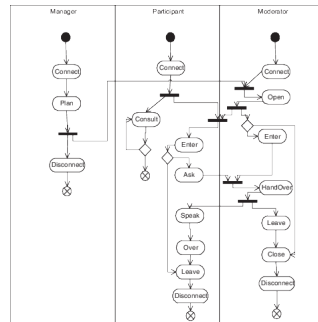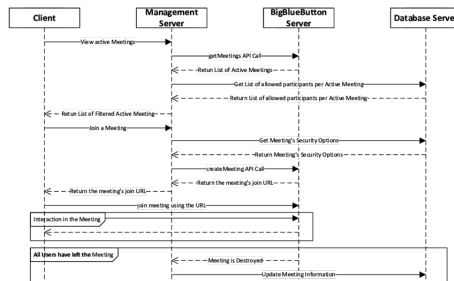

Figure 11: Activity Diagram

Figure 12: Sequence Diagram

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Date Bases

The database in Microsoft Teams is a vital component for organizing and managing information. It features a structure based on various data models, including users, messages, teams, channels, and files, organized into tables. It stores diverse types of data, such as user information (ID, name, email) and message details (content, timestamp), as well as activity data. Relationships between tables are used to link data, such as connecting the users table to the messages table. The database provides different permission levels for access control and employs backup strategies to ensure data recovery. Techniques like indexing are used to enhance performance, along with security measures such as data encryption. Practically, the database supports user management, message storage, activity tracking, and team/channel management.
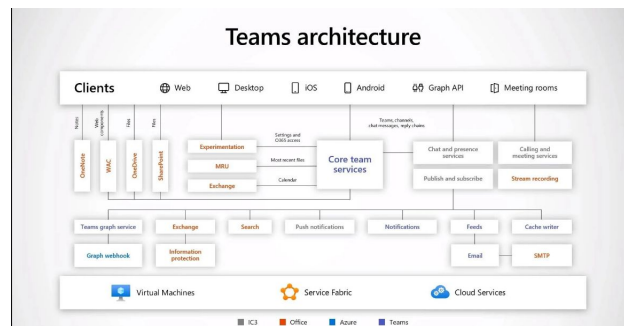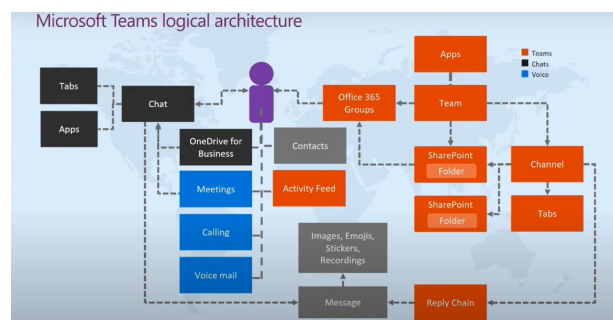

Figure 13: Architecture Interface

Figure 14: Logical Architecture Interface

Programming languages

The Microsoft Teams application relies on a variety of programming languages and technologies suited for different tasks: JavaScript: Used for building interactions and user interface features. React: A library for building interactive user interfaces. C: Used for developing services and supporting servers in the .NET environment. Python: Utilized for data analysis and tasks related to artificial intelligence.

Conclusion

In conclusion, Microsoft Teams is considered one of the most prominent modern digital collaboration tools, offering a comprehensive platform that combines instant messaging, virtual meetings, and file management. With its seamless integration with Microsoft365 applications, it enhances the efficiency of teamwork. Teams also stands out for its flexibility, making it suitable for various educational and professional environments,making it an ideal tool for communication and collaboration, whether remotely or in the workplace. Its diverse features and high security levels reinforce its role as a key tool in boosting productivity and facilitating joint work

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