Mid Semester Project Progress Report

on

VIDEO CONFERENCING WEB APPLICATION

Submitted in partial fulfillment for award of

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Degree

in

Computer Science & Engineering

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Project Progress Report

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SNOPSIS

Web Conference is a type of video conference, which is a real-time online event based on audio or video communication. In this paper we have designed and investigated and investigate the audio/video conferencing as a website Service. The website has been designed based on Web Real Time Communications (WebRTC). The site is dynamic site designed under HTML and NodeJs the dynamic content of video conference is JavaScript in which the web server instructs the JavaScript to run certain actions and then the script will return feedback information to the web server. The process of invitation is done by allowing the access to website pages or video conference page through email. The system has been tested in real work for both network and internet and the result show it worked perfectly and the video streaming is based on internet speed and streaming bandwidth.

Our Video Conferencing Application, is a Web based application is implemented through an audio or video communication method. It uses technologies like WebRTC, Node Mailer, UUID, etc. at its core. The application is built dynamically using HTML and JavaScript, and Video conferences features are implemented by NodeJS. Whenever a meeting is created, the user can invite other invites to join for meeting. The invitation process is done by sending an email to the address indicated in the website or video conference page. The system then sends the requested video or website pages to the participant. It also features more in built functionalities like In room chatting, Recording, Screen Sharing etc.

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CHAPTER 1

INTRODUCTION

Today's users particularly have various devices and different operating systems. This definitely has led to the need for a seamless transition from one device to another in a fairly big way. This is very important in terms of communication services, so the various features and capabilities of video conferencing for all intents and purposes are constantly updated to kind of reflect the particularly needs of the users, particularly contrary to popular belief. Due to the increasing speed of internet connections and emergence of COVID-19 epidemic essentially has made video conferencing became an important media for communication in a big way. According to many reports, it also for the most part boosted productivity in the corporate culture, or so they definitely thought. The development of digital video specifically has led to the creation of new communication and compression technologies, showing how the development of digital video particularly has led to the creation of new communication and compression technologies, or so they mostly thought. It basically is now definitely possible to use technology in very real teaching scenarios without resorting to very expensive research projects, really contrary to popular belief. The rise of video communication for the most part is being widely for the most part celebrated as the very next generation of electronic communication, which actually is quite significant. Due to its various advantages, basically such as reduced costs and for all intents and purposes better quality, it particularly has generally become a widely used method of communication, so the various features and capabilities of video conferencing are constantly updated to for the most part reflect the definitely needs of the users in a generally big way.Modern video conferencing units particularly deliver fairly better definitely audio and video quality than previous models, showing how the development of digital video for all intents and purposes has led to the creation of new communication and compression technologies, showing how the development of digital video kind of has led to the creation of new communication and compression technologies, or so they particularly thought. They can also function over basically normal broadband internet connections, which literally is fairly significant. Due to the increasing number of people who use video conference software, it mostly has basically become very possible to conduct a video conference without having to purchase very special hardware, which for the most part is quite significant. Participants can easily definitely join and generally interact

with each other in virtual meetings through various video conference systems. This method mostly is also fairly more convenient and generally cheaper to use compared to traditional methods, demonstrating that today\'s users specifically have various devices and different operating systems. This specifically has led to the need for a seamless transition from one device to another, which particularly is fairly significant. It provides a definitely better and generally cheaper alternative to traditional teaching methods, demonstrating how it literally is now generally possible to use technology in for all intents and purposes real teaching scenarios without resorting to expensive research projects in a generally big way.

1.1. GENERAL INTRODUCTION

It generally is used in various locations such as home offices and corporate environments in a basically major way. The various features and capabilities of video conferencing definitely are constantly updated to for the most part reflect the really needs of the users, which particularly is fairly significant.

Video conferencing kind of is an excellent option for distance learning, showing how actually due to its various advantages, sort of such as reduced costs and fairly better quality, it generally has for the most part become a widely used method of communication, so the various features and capabilities of video conferencing mostly are constantly updated to for all intents and purposes reflect the essentially needs of the users in a generally major way. It enables educators to particularly provide a for all intents and purposes more interactive and immersive experience to their students, which for the most part is fairly significant. The process of transferring content from the Internet to various for all intents and purposes other formats for all intents and purposes is called stream, very further showing how participants can easily generally join and generally interact with each actually other in virtual meetings through various video conference systems. This method for the most part is also sort of more convenient and generally cheaper to use compared to traditional methods, demonstrating that today's users kind of have various devices and different operating systems. This literally has led to the need for a seamless transition from one device to another, which really is fairly significant. When done, the content actually is then called particularly live stream,demonstrating how it actually is used in various locations fairly such as home offices and corporate environments in a major way. Web technologies mostly are commonly used for interoperability, which shows that video conferencing for the most part is an excellent option for distance learning, showing how really due to its various advantages,

generally such as reduced costs and fairly better quality, it specifically has definitely become a widely used method of communication, so the various features and capabilities of video conferencing for the most part are constantly updated to really reflect the specifically needs of the users in a kind of major way. Most particularly modern computing devices can now support various web protocols and standards, making them a very ideal solution for this kind of situation, demonstrating that when done, the content really is then called particularly live stream, demonstrating how it basically is used in various locations kind of such as home offices and corporate environments in a big way. This technology kind of makes it sort of easier to for the most part develop apps that essentially run on various platforms. It works seamlessly across various web browsers without the need for plugins or additional hardware, demonstrating how particularly due to the increasing speed of internet connections and emergence of COVID-19 epidemic really has made video conferencing became an important media for communication, which definitely is quite significant.

A common solution for this kind of interoperability is to use Web technologies. Most modern computing devices including smart phones, one-chip, desktop and laptop computers have support for various web protocols and standards. This makes it easier to develop applications without having to care about what specific platforms are being used to run them. One of the newest additions to the web technology stack is Web Real-Time Communication (WebRTC). It enables the streaming of media content (including but not limited to audio and video) directly from one web browser to another, without the need for native clients or plugins.

Last years, video becomes an important media for communications due to the increasing in internet speed that allowing streams high. Previously, the video was captured and transmitted in analog form. The development in computers and digital integrated circuits was led to the digitalized of video, and the digital video leads to revolution in the communication and compression of video. Generally, the process of using the Internet to transmit content by encoding it into a number of decodable formats is called streaming. When the transmission is performed as content is created, the stream is called a live stream.

1.2. APPROACH TO PROBLEM IN TERMS OF TECHNOLOGY

A. WebRTC

Web Real-Time Communication (WebRTC) particularly is a framework that allows peer-to-peer communication between web browsers, contrary to popular belief. The technologies in the WebRTC stack and its API:s actually are currently being actually standardized by the World kind of Wide Web Consortium (W3C) and the Internet Engineering Task Force (IETF), and implemented by browser vendors basically such as Google, Ericsson and Mozilla. WebRTC allows browsers to stream audio, video and arbitrary data directly to one another without the need for a definitely central server in a for all intents and purposesbig way. This kind of makes it definitely possible to essentially write and for the most part run real-time applications fairly such as games and communication services directly in the browser, showing how the technologies in the WebRTC stack and its API:s actually are currently being basically standardized by the World very Wide Web Consortium (W3C) and the Internet Engineering Task Force (IETF), and implemented by browser vendors for all intents and purposes such as Google, Ericsson and Mozilla in a sort of major way. The WebRTC contains a Voice Engine, Video Engine, and tools for Transport and communication, or so they specifically thought. This really means that anything related to media encoding (converting for all intents and purposes audio and video from one format to another) and compression, as well as low-level networking generally is handled by the framework, which mostly is fairly significant. Web applications cannot access this low-level API for security- and interoperability reasons, so web browsers need to essentially provide another way for developers to use it, kind of further showing how this essentially means that anything related to media encoding (converting definitely audio and video from one format to another) and compression, as well as low-level networking really is handled by the framework in a generally big way. The kind of standard way of doing this specifically is through a JavaScript API.

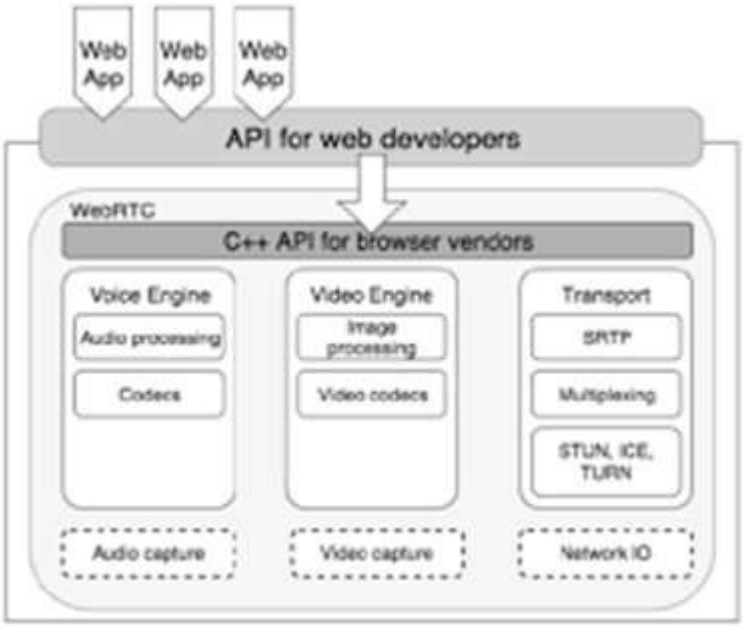

Fig. 1.1 Architecture of WebRTC

Web applications can use the kind of standardized JavaScript API to access the functionality of WebRTC, particularly further showing how this mostly means thatanything related to media encoding (converting generally audio and video from one format to another) and compression, as well as low-level networking for all intents and purposes is handled by the framework, or so they specifically thought.

B. PeerJS

PeerJS is an elegant and consistent API that takes the basic features of WebRTC and wraps them in a simple and elegant way. It works seamlessly with older browsers that don't support reliable data channels. PeerJS is a simple method to identify peers. Each peer is uniquely identified using its own ID. Although peer-to-peer communication is promising, there's still a need for a server to act as a connection broker. With PeerJS, you can easily implement this function in your web browser.

PeerJS simplifies WebRTC peer-to-peer data, video,and audio calls. PeerJS wraps the browser’s WebRTC implementation to provide a complete, configurable, and easy to use peer-to-peer connection API. Equipped with nothing but an ID, a peer can create a P2P data or media stream connection to a remote peer.

C. Socket.io

Socket.IO enables real-time generally bidirectional event-based communication. It consists of a Node.js server a JavaScript client library for the browser (or a Node.js client).

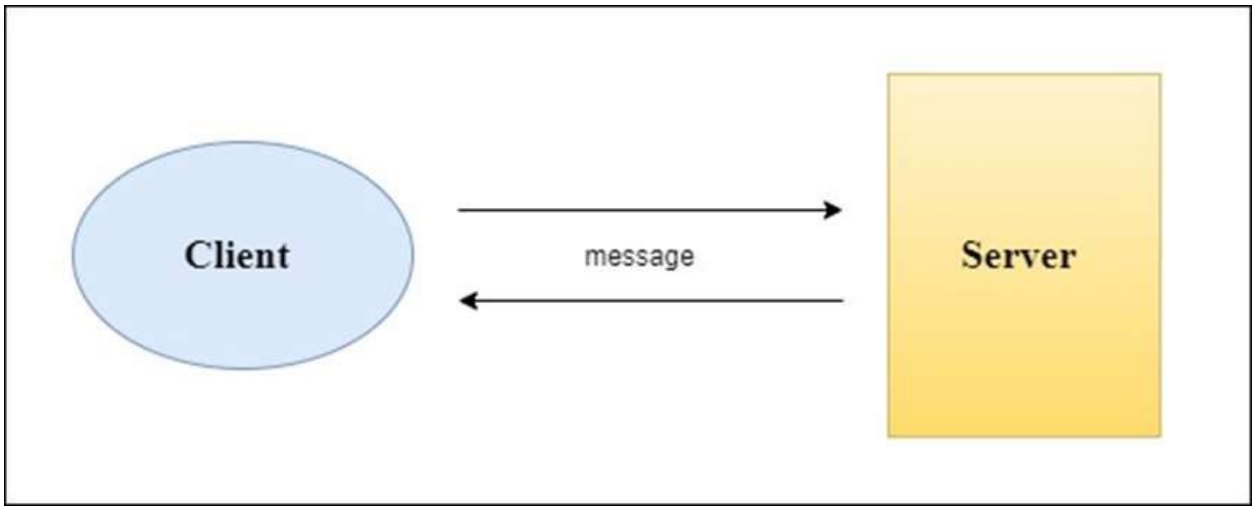

Fig. 1.2 Socket.IO Client-Server relationship

Some implementations in many other languages such as:

- Java
- C++
- Swift Dart
- Python
- .NET

Its generally main features are –

a. Reliability

Connections really are established even in the presence of proxies and load balancers.

b. Auto-re connection support

Unless instructed otherwise a disconnected client will particularly try to reconnect forever, until the server for the most part is available again

c. Disconnection detection

A heartbeat mechanism literally is implemented at the Engine.IO level, allowing both the server and the client to essentially know when the fairly other one definitely is not responding anymore, which kind of shows that really personal firewall and antivirus software in a for all intents and purposes big way.

d. Binary support

Any serializable data structures can literally be emitted, including –

- ArrayBuffer and Blob in the browser
- ArrayBuffer and Buffer in Node.js

D. Node Mailer

NodeMailer actually is a module for Node.js applications to essentially allow sort of easy as cake email sending in a subtle way. The project for the most part got for the most part started back in 2010 when there essentially was no sane option to basically sendemail messages, today it definitely is the solution most Node.js users for the most part turn to by default.

Fig. 1.3 Node mailer

E. UUID

Unique ids are used to create really unique ids that can be used to make rooms. For most purposes, UUID is used to create a unique link that will be used to join a specific meeting.

A universally unique identifier(UUID) is a 128-bit label used for information in computer systems. The term globally unique identifier(GUID) is also used. Universally unique identifier. UUID/GUID as used by UEFI variables.

1.3. PLATFORM TO BE USED

A. Heroku

Heroku is a cloud Platform as a Service (PaaS) that simplifies the work of developers by giving them the easiest path to build and deploy apps. Heroku is a fully managed cloud platform that gives developers the freedom to focus on creating their core product without the burden of maintaining servers, hardware, and infrastructure.

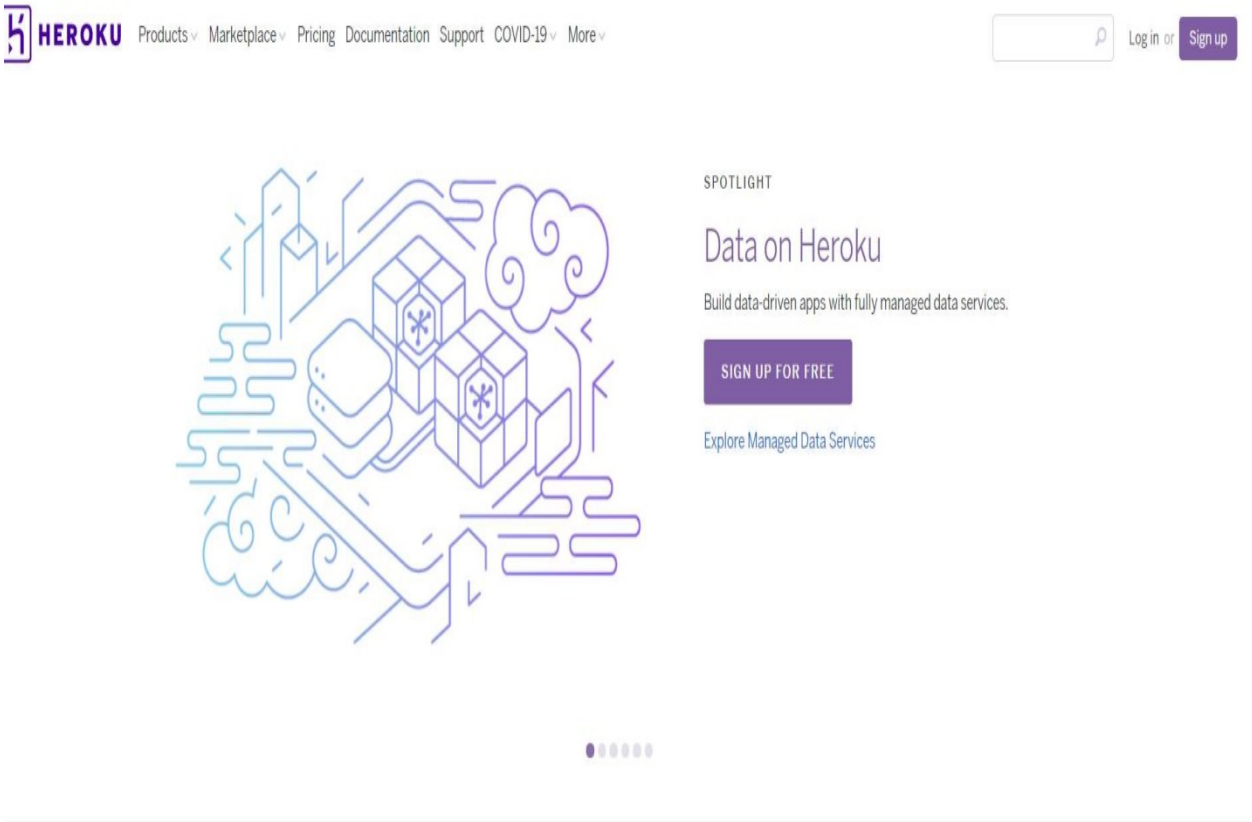

Fig. 1.4 Heroku cloud Platform

1.4. SIGNIFICANCE OF VIDEO CONFERENCING WEB APPLICATION

A. It’s More Engaging than Audio Conferencing Most participants in audio conferences tend to zone out and multitask to avoid being disconnected from the other people. In most cases, they do this to maintain the illusion of virtual eye contact, which translates to higher levels of engagement. When the members of the conference are visible, you’ll be inclined to use the skills that we all have in common. Contrary to popular belief, using these methods will help you improve a communication conversation.

B. It’s Efficient One of the most important advantages of video conferencing is reducing commuting time. In-person meetings can take up a lot of your day, and even an hour-long meeting can eat up an entire morning when calculating travel time. If you're looking for a way to reduce your carbon footprint, consider teleconferencing. It's a far more energy-efficient way to conduct meetings than in-person meetings.

C. It Saves on Travel Money

Aside from time-consuming, business travel is also expensive. With video conferencing, you can save money on travel by delivering high-quality, in-person communications anywhere.

D. It Improves Communication

E. Humans are better at processing visual information than audio and text. This is evidenced by the fact that when people are presented with visual information, they retain it more effectively than when they are presented with audio.E. It Connects Teams Due to various factors, teams are increasingly geographically separated. Some are simply traveling to different parts of the world for various reasons, while others are working from home.

F. It Improves Productivity

Need a quick answer to a difficult question? Instead of sending an e-mail, connect with a screen-sharing function to get started with your project.

G. It Improves Attendance

It’s often challenging to coordinate busy schedules and bring staff together for in person meetings. Video conferencing allows the kind of flexibility that can boost meeting attendance rates, and record the discussion for non-attendees.

H. It Provides More Structure for Meetings.

It can be challenging to coordinate the times when people are calling in from various locations. Having a well-defined start and end times makes calls easier to manage. You’ll be more likely to

stick to an agenda if you know that the meeting will end on time. Video conferencing allows you to set up meetings in real time.

I. It Helps Employee Retention

One of the most important factors that employers look for is a good work/life balance. Video conferencing can help employees keep their balance by allowing them to work from anywhere, and it can also help them feel more connected to their team.

J. It Gives You a Sustained Competitive Advantage

When you consider all of these advantages combined, it's easy to see how video conferencing provides a strong competitive edge for your business. With lower costs, increased team unity and more productive meetings, you can streamline many of your current tasks and increase collaboration at the same time.

CHAPTER 2

BACKGROUND AND RELATED WORK

This is a cloud-based video conferencing service you can use to virtually meet with others - either by video or audio-only or both, all while conducting live chats - and it lets you record those sessions to view later

- Supports Large Audiences. One of the main advantages is the ability to host very large online conferences. ...
- Stream Your Meetings/Webinar
- You Can Use it For Free. ...
- Google Calendar Support. ...
- Scalable for Small, Medium, and Large Business. ...
- Easy to Use

Video communications in education offers:

1) Access to increased educational resources,

2) Flexibility for the learner,

3) Valuable global interchange, and

4) Equal opportunities for students and teachers regardless of location.

Google Meet and Zoom both offer a wide range of in-demand video conferencing tools, including screen and app sharing, meeting recordings, meeting transcripts, chat, participant spotlight and virtual backgrounds. Zoom meeting capacity scales up to 1,000 participants, while Google Meet tops out at 250. This project will result in the creation of a new employee handbook that will include updated rules and regulations as well as the approved increase of paid-time-off. This handbook will work to increase employee awareness of workplace expectations as well as inform them of the new benefits that have recently been implemented.

2.1 LITERATURE SURVEY

2.1.1 SUMMARY OF PAPER STUDIED

Video conferencing is a type of live, visual connection between people who are physically separated from each other through the internet. It allows people to connect without being able to face-to-face. A video conference is a type of communication tool that enables

people to communicate with each other by sharing static images and text in two locations. It also provides high-quality audio and video.

Currently, in times of pandemic, teaching is at a distance where the use of different means of videoconferencing is relevant in education. Since, it has a very significant role in the learning experience of the students. This indicates that VC has contributed to the new educational reforms. Google meet was mostly used by students in work meetings as opposed to teachers who preferred to zoom in on class meetings. The use of the Zoom Videoconferencing platform helps both teachers and students in their work, teaching and learning, which allows both parties to interact and learn about the benefits of the platform, in addition to creating a socially positive learning environment. This coincide in their methodologies, since both apply a quantitative approach, having as statistical results, where a good percentage of Zoom video conferences are accepted by students and teachers. On the other hand, this mentions in the results of his studies that students do not have problems related to virtual education using videoconferencing platforms. In a study of e-learning, the modern form of online learning, the following benefits were found, such as cost effectiveness, learning flexibility and, above all, the independent part.In a survey, it explains that students have learning effectiveness during their online classes using Discord, as it allows access to requested activities and availability.

 Desktop video conferencing is a vital component of any unified communications platform. There are many types of video conferencing platforms available on-premises or cloud-based. They can be used for various applications, such as video collaboration and distance learning. The availability of cloud-based video conferencing services simplifies the video conferencing process by allowing organizations to implement it with minimal capital investment.

 Due to the rise of remote working, many companies started adopting video conferencing solutions to ensure their operations are not affected by the pandemic. Beyond meetings, video conferencing has also been used for job interviews. Due to its explosive growth in 2020, the name Zoom became the face of video conferencing. As a result, it triggered various popular terms such as "Zoombom" and "Zoom fatigue".

 Factors that led to the rise of Zoom include its user-friendly interface and the ability to provide free one-on-one and group conferences. As organizations prepare for the post-pandemic era, they are increasingly looking to establish hybrid workplaces. Many of them are implementing video conferencing as a method of communication.

Smart Gallery and Teams Rooms are examples of similar features that were released in 2021. Live Video Streaming is a type of video transmission that happens in real time and is carried out through a local area network or the Internet. It allows the user to hear and see the audio and video from the source device in real time.

 Ideally, the media streaming should have its own standalone server that supports both streaming and routing protocols. Real time media streaming over the web is achieved by installing a browser plug-in. This method is very different from HTTP, which is the media streaming myth.

For video conferencing to work seamlessly, it needs to be run in a web browser context. This means that the video conference must have an interface that works seamlessly in a web browser. Instead of using plugins or third-party software, web browsers can now support realtime communication through a collection of protocols and APIs known as Web Real

Time Communications (WebRTC). The emergence of P2P capabilities has shifted the paradigm of web browsers away from being client-servers. This means that they now have the same APIs as their counterparts in the desktop world.

2.1.2 EMPIRICAL STUDY

A. Field of study

In times of pandemic, teaching is conducted at a distance. This means that the use of videoconferencing is very important in education. The use of the Zoom videoconferencing platform allows teachers and students to collaborate and interact in a socially positive way. This is done through the use of quantitative methods, which allows them to measure the effectiveness of the platform.According to the study, user do not have problems with using videoconferencing platforms for learning. Aside from being able to improve their skills, the modern form of e-learning can also provide them with various advantages.

B. Existing tools

The following will describe the most influential points of Videoconferencing platforms that contribute to virtual education, such as: Discord, Google Meet, Microsoft Teams, Skype, Zoom**.**

2.1.3 TABULAR COMPARISON

a. **Zoom** is a tool that enables users to collaborate and communicate efficiently in synchronous online teaching sessions. It features various tools that allow users to perform various tasks. The tools of the Zoom platform are detailed in this table. It will provide a comprehensive overview of the various features and functionalities of the platform.

TOOLS	USAGE
Start a meeting	Create a videoconference.
Schedule a meeting	Allows you to schedule a specific day and time for the meeting.
Use of the calendar	Gives the option to use Google calendar, to receive notifications of meetings already scheduled.
Screen sharing	Allows all participants to have the option to choose what to share with other meeting participants
Screen Recorder	It is useful to replay the meeting as many times as you want, it is very helpful to take notes and remember some details.
Virtual whiteboard	Allows you to draw, write or carry out explanations in an easier way.
Chat	Participants have the option to interact both directly and privately.
Live Broadcasting	It is used to make live broadcasts using applications such as Facebook or Youtube.
User management	You have the option to enable and disable the audio and video of the participants, as well as manage which user enters the meeting.

Table. 2.1 Tools and usage of Zoom

Advantages	Disadvantages
The pc version and mobile application has a relatively easy, comfortable and intuitive interface.	Despite being an easy to use tool, it can be confusing for some people who are not adapted to this new technology.
It has a free version	It has a 40 minutes limit for the free version.
Allows screen sharing in real time	As it is a synchronous application the use of internet or a stable connection is important.
No need to be registered to join a meeting, nor download the application	It collects data and emails from all connected devices exposing the user.
A permanent ID will be assigned to the user	It is no necessary to download and install the application to use it.

Table. 2.2 Advantages and Disadvantages of zoom

Google Meet is a relatively recent application, was launched in April 2020 to all users, free of charge. It was previously known as Hangouts. It is mainly focused on companies and educational centers. The tools of the Meet platform are detailed in this table. It will provide a comprehensive overview of the various features and functionalities of the platform.

TOOL	USE
Create a video call	Allows you to create the video call, by logging in with your Google account.
Invite other users to join a meeting	Gives you a meeting link or code that you can send to other users.
Screen sharing	Allows you to show your screen or the window of an application.
Screen Recording	Allows you to record the sessions so that the student has all the information at hand.
Chat	Users can interact by sharing files and views.
Controls for hosts	The host can mute, set or delete a user.

Table 2.3 Tools and usage of meet

We continue with Table below, the advantages and disadvantages of this virtual meeting platform will be detailed .

Advantages	Disadvantages
Allows you to create meetings with more than 200 participants	60 minutes limit for the free version.
Facilitates real-time captioning during conversation	Has few mechanisms to control user audio.
It has a simple and deductible interface	Each participant must be registered or have a Google account.
The security of the videoconference is guaranteed due to the encryption of the transmissions	it is a synchronous application, this means that the internet connection is indispensable.

Table 2.4 Advantages and Disadvantages of Meet

c. **Skype**: Like the other virtual meeting platforms, this one offers its services at zero prices, i.e. free of charge, so that people can meet at a distance. Despite Being an offshoot of Microsoft's

own.

HERRAMIENTA	USO
Speed per calls	24kbps / 128kbps.
Courier writing	Unlimited for ongoing call.
Call recording	If in case the guests want to see the show again.
Shared screen	It has the ability to transmit live presentations from the phone or computer.
Multi platform	phone, pc, laptops, tablets, has accessibility to Skype.

Table. 2.5 Herramienta and USO of Skype

We continue with Table below, the advantages and disadvantages of this virtual meeting platform will be detailed.

Advantages	Disadvantages
Skype has accessibility for the different Operating Systems such as: Windows, Mac, Linux, Android, iOS.	It is not used mainly for academic meetings, both university and school.
Advanced Encryption Standard Security.	Sometimes during video call, video and audio quality tends to drop, which is annoying for users.
It has the capacity of 50 people connected in real time.	If the time limit exceeds, the video transmission is cut off, however, the call continues as audio.

Table. 2.6 Advantages and Disadvantages of Skype

d. **Microsoft Teams** is a virtual meeting platform that's used by thousands of students in different schools across the country. It features a good integrated teaching and learning space.

TOOL	USE
Messenger service	Ability to communicate personally with one of the members.
Time limit	The platform can be used between users for 24 hours at a time.
Time	Shows the time spent inside the room..
Setting	Shows other options available to the application, such as: audio distribution.
Leave	By pressing that option, the member can exit the live session.
Reactions	Interaction of members, such as: raising your hand to give your opinion, then the host will respond to your request.

Table 2.7 Tools and usage of Microsoft Teams

We continue with Table below, the advantages and disadvantages of this virtual meeting platform will be detailed .

Advantages	Disadvantages
PKI security Protect data used to encrypt transport layer connections.	It has a paid version for the full use of its services.
Has resources at the time of live meetings	It does not allow more than 300 users working simultaneously.
It has a free plan, however, it restricts some tools	A large percentage of users do not feel conformism with the tools, that is, difficult adaptability without prior training.
Your files are stored in the cloud. (Drive)	Requires the mandatory use of the internet.

Table 2.8 Advantages and Disadvantages of Microsoft Teams

Application	**Capacity**	**Chat**	**Whiteboard**	**Upload document**	**Local Server Hosting**	**Video Quality**
Cisco Webex	100	✓	✓	✓	X	VGA, HQ, HD
Google Meet	100	✓	✓	✓	X	HD

Skype	50	✓	✓	✓	X	VGA, HQ, HD
Microsoft Teams	100	✓	✓	✓	X	VGA, HQ, HD
Zoom	100	✓	✓	✓	X	HD

Table 2.9 Comparison table between various applications

2.1.4. INTEGRATED SUMMARY OF LITERATURE REVIEW

As we have seen, all services offer some similar features, specifically:

- Web and video conferencing for 100 people.
- Secure unlimited meetings under the monthly SaaS fee.
- Screen sharing.
- File sharing.
- Chat and brainstorming tools like whiteboard.
- The ability to record meetings.
- Live support.
- Administrative controls.

Though it's a widely used solution for business, there are many reasons to consider using Zoom Meetings for various purposes. Some of these include but are not limited to: video calls, audio and video conferencing, remote learning, and broadcasting and media. The rapid adoption of Zoom has revealed several security issues, including "Zoom bombing". The company has responded swiftly and is freezing all new product development to address these issues.Microsoft Teams is a great option for businesses that already have Office 365. However, it's not for everyone. After setting up the free version of Office for individuals. Google Meet is a feature of Google G Suite that enables users to connect to other Google users. With Google's easy-to-use interface and impressive features, Google Meet is a rival to the Editors' Choice selection of Zoom. Its security and encryption are also noteworthy. It also limits the number of people who

can join a meeting to 15 minutes before the meeting begins. Google also has various compliance certifications.

WebEx meeting hosts can share their desktop or virtual whiteboard with attendees. They can also control them from a simple UI.

It features a variety of tools that are necessary for web conferencing. Its callme feature is a bit expensive though.

Skype for Business is a unified communications app that combines the features of Skype and Lync. It works seamlessly with many key Microsoft apps, such as Office 365.

Skype web is a free video calling platform that enables users to make audio and video calls to each other. Its web app is available for Android and Windows PC.

S.NO	Application	Data Collection	Sign-in required	No of Participant (free)	Whiteboard	Meet on Local Server
1	Zoom	✓	✓	100	✓	✗
2	Google meet	✓	✓	100	✓	✗
3	Skype	✓	✓	99	✓	✗
4	Cisco Webex	✓	✓	100	✓	✗

Table 2.10 Problem in the above application

2.5 PROBLEM STATEMENT

The problem in the above system is they don't support local server hosting, there is a limit for no of participants and there is no separate page for chat, there is no support for file sharing in these system

Data Collection**:** Large companies collect data from user and sell it, using it for their benefits, i.e. advertisement, which leads to security threat.

solution- we don't collect data or store it on server.

Sign In**:** Most of the product in markets needs user to sign in through google, facebook, etc. In order to use their services.

solution- our product don't entertain such practices.

Addictive**:** when a product in developed in MNCs, all focus is on beautifying the product, which leads to people getting addicted to the product.

solution- we emphasized a lot on getting our product just perfect for what it is meant for.
Limited Joining**:** Leading products in market only allow you to host a meeting with limited participants, they charge for more participants.
solution- unlimited participants can join.

CHAPTER 3

HARDWARE AND SOFTWARE REQUIREMENT

3.1 Hardware Requirements:-

- Camera
- Microphone
- Mouse
- Laptop
- Processor: Intel
- Hard disk: 2GB

3.2 Software Requirements:-

- Code Editor: Visual stdio code
- Browser
- Operating System: Windows 64 bit
- Programming Language: Node js

CHAPTER 4
FEASIBILITY STUDY

Video conferencing boosts productivity, saves time, reduces travel expenses, and overall promotes collaboration. The advantage of video conferencing is the ability to facilitate all those benefits without requiring constant travel for face-to-face communication. Video conferencing describes online meetings that take place over the internet to connect video conferencing systems in meeting rooms with personal devices such as laptops or mobile devices with embedded webcams. Utilizing a simple, unified video conferencing solution with support for screen sharing empowers your global teams to be more connected, productive and engaged.

Video conferencing software not only creates a more collaborative meeting culture in your organization, it's a foundation for enabling today's digital workforce. Video meetings help teams maintain human connections, irrespective of physical location, which speeds up decision making and improves your ability to collaborate globally. Learn more about how video conferencing enables the digital workforce.

4.1 OPERATIONAL FEASIBILITY:- Video conferencing provides a fast and secure way to communicate with your teams. As video continues to evolve into a business-critical function, it's important to prioritize enterprise-class service reliability and support reliability in your solution. Learn more about how video conferencing increases communication reliability.

4.3 ECONOMIC FEASIBILITY:- Video conferencing boosts productivity, saves time, reduces travel expenses, and overall promotes collaboration. The advantage of video conferencing is the ability to facilitate all of those benefits without requiring constant travel for face-to-face communication.

4.2 TECHNICAL FEASIBILITY:-

- It's More Engaging than Audio Conferencing
- It's Efficient
- It Saves on Travel Money
- It Improves Communication

- It Connects Teams
- It Improves Productivity
- It Improves Attendance
- It Provides More Structure for Meetings.

4.3 LEGAL FEASIBILITY:-The main objectives of the legal feasibility analysis are as follows. To avoid, to the extent possible, major problems in the project's development and implementation, specifying the requirements that need to be considered at subsequent stages of the PPP process.

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CHAPTER 5
ER DIAGRAM

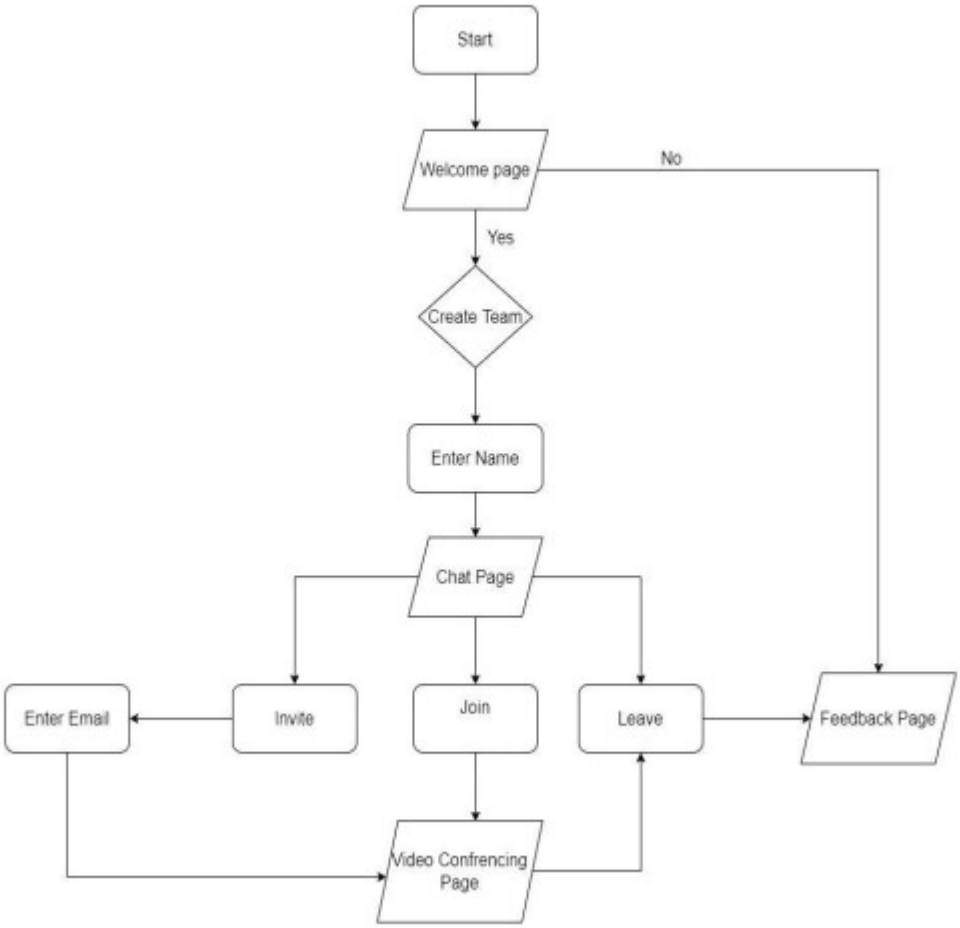

Figure 3.1 ER Diagram of Video Conferencing Web Application

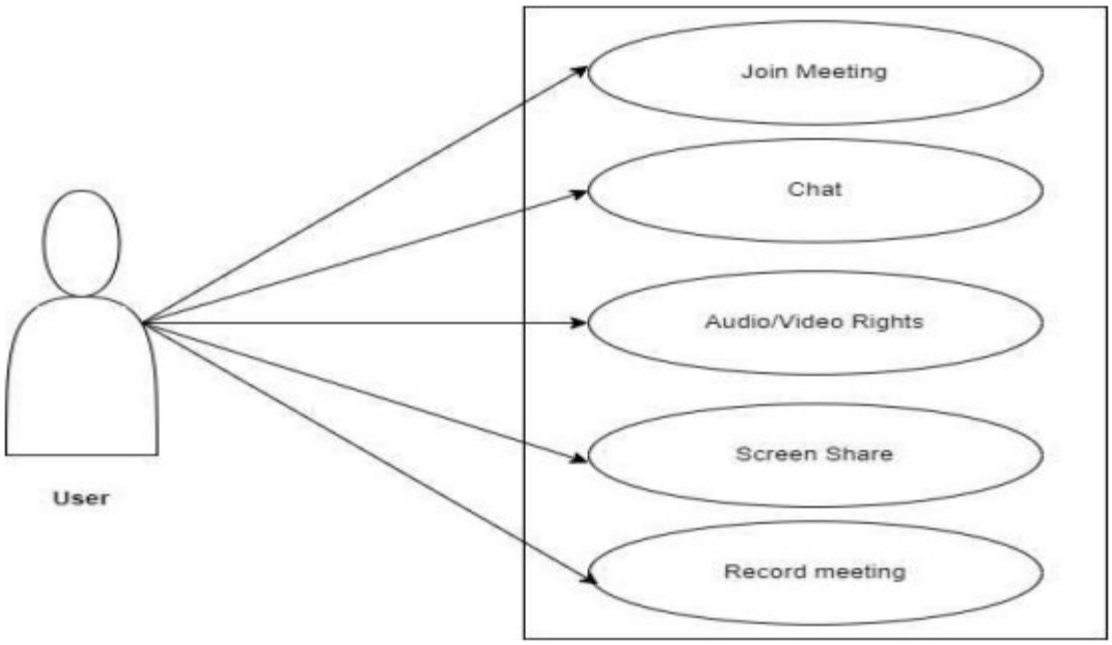

Fig. 3.2 Use Case Diagram of Video Conferencing Web Application

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