Anuvaad

Video Conferencing Solution

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Name of Startup : Anuvaad

Anuvaad

Video Conferencing Solution

Anuvaad is a video conferencing platform that aims to provide easy to use and feature-rich video conferencing experience to the Indian audience. It is adapted for use in Indian use and fosters the increase in the capability of Work from Home culture emerging in the industry to improve the productivity of the organizations.

The startup aims to provide its customers with the best experience of a furnished product that is tailored to their use.

Features Offered By Anuvaad Platform :

- Ease of use :
  - Anuvaad Focuses on Ease of Use and in providing an intuitive user experience
- The H.264 video codec will be used which is widely supported for by all browsers
- Efficient compression performed to improve the quality of the video on low bandwidth networks
- Multiple participants can participate simultaneously in one call (Virtually no hard limit on the number of participants, the server can be scaled up accordingly), Currently limiting service to 1000 live, 10000 live streams in a meeting
- Host Webinars / Lecture

Add on Features :

- Flexibility around notifications :
  - Users will be able to control the amount and type of notifications they want to receive so as to make the user experience less intrusive
- Dynamic links :
  - Automatic detection of content of the link sent in chat will be done to provide with a preview image
- Clear records :
  - History of the calls and meetings can be deleted
- HD Video and Voice :
  - (Done by the use high-quality wideband audio) using high data communication offered by WebRTC and hosted in the hyper-scale cloud
- Users can also dial into the audio using VoIP or a phone call
- Improvement in low light conditions using parameter adjustment (such as brightness, contrast)
- Minimal initial configuration required (Just Sign Up and Start using)

- No restrictions on users and length of calls
- Built-in time zone converter on webinar registration pages (To aid during international meetings)
- Provision to install add-ons on the software to enhance the user experience

Security / Privacy focus :

- Recordings are stored in secure containers in the cloud. These videos are encrypted at rest (AES-256bit) and are only accessible to the recording originator
- Two-factor authentication using SSO for internal event confidentiality
- User Authentication Options (Standard user password configuration)
- In-App - Permission-management :
  - To track and control the user resources being utilized by the app
- Intrusion detection technology would be used for the detection of suspicious activity by monitoring network traffic and providing alerts if such an activity is found. “Snort” is one of the widely used, open-source systems which would be used for the project.

Features During Call :

- Active Speaker Detection to show on screen the video feed / shared screen of the person speaking during the meeting
- Conduct Polls / Attendee feedback during/at end of webinar/meeting
- Breakout Sessions can be scheduled during meeting/webinar :
  - Inculcate breaks in continuous session
- Track questions and document responses using threaded Q&A.
- Panelists can prioritize questions, display answers publicly or privately, or assign the Q&A to a colleague.

- Webinar Timeline :
  - Timer and Timeline displayed during the meeting
- Lock Meeting to prevent other people from joining in
- Expel Participants by host :
  - Expel participants which are not required on the meeting
- Attention Indicator (Red, Yellow, Green Dot) :
  - Indicating the various levels of provisions, like connected microphone, video and activity on chat
- Live Subtitles on the video (if preloaded by the host or the participant)
- Reporting provides you with a complete, searchable transcription of your meeting.
- Voicemail transcription available to record certain parts of the meeting
- Ability to email the contents of the chat to yourself, both as a host and as a participant

Feature post-call :

- Sends a detailed report at the end of each meeting and the report can be used as a reference for the minutes of the meeting in the future
- Collect feedback
- Conduct feedback on group
- Recording/playback of the recorded video is seamless

Features while Recording call :

- History of calls and recordings

- Recording of the meeting :
    - By host, by the user (can be controlled by host permission)
    - Indication of the person recording displayed on the side
    - On the local device, on cloud

Features Related to Subtitles / Transcripts :

- Subtitles and closed captions can be added before the scripted webinars, for reference, or provision to add after the meeting is over by using the recorded video

- Business Intelligence Dashboard (Stats for Nerds):
    - To showcase stats of the usage to the user/host on a per meeting basis as well as the overall basis. Thus helping in improving the efficiency and strategizing better Conference call Dashboard

    - Daily usage
    - Host stats
    - Start time / End Time
    - Transcripts
    - Personal Call Analytics

Report Generation :

- Generate reports with the following inclusions :
    - Transcript of chat
    - Stats for Analysis

- Results of Polls Conducted
- The response of Attendee Feedback

- This report can be exported and can be used to gain insights and be referred back in the future to get information.

Features Pre-call :

- The meeting can be joined by using Meeting ID and Participant Passcode can be enabled for login into the meeting

- Call Forwarding :
  - Calls to join the meeting can be forwarded to other accounts

- Call me :
  - Call participants when the meeting is started to make them join the meeting by picking up the call

- Answer the phone call in the app to join the meeting

- Barge, Monitor, Whisper modes :
  - Join the meeting controlling you audio, video

- Easy invite :
  - Send the invitations to the members of my conferences by email

Features During Chat :

- Team Messaging / Chat with all creature comforts of Emoji/stickers / GIF support and File Sharing

- Chatbot Integration

- Chat
- Attendees can engage in private or public chat conversations with the instructor, another attendee, or the entire class

- Smart Presence
    - Available or busy

File Sharing Features :

- (Multimedia Incorporation) Screen Sharing for Mobile application as well as during Website use on PCs

- Digital Workspace / Whiteboard for sketching feature to host presentations (Also available during Chat)

- Multi-user Screen Share

- Share Content on Google drive, Dropbox, Onedrive

- File Sharing Supported in Chats using WebRTC

Integrations and creature comforts :

- Visual Roster :
    - Check the list scheduled meetings

- Address book import :
    - Import contacts from the phone address book

- Automatic Group Inclusions :
    - Relevant people get added into the group using the relevance of organization and department

Collaborations and Integrations :

- All platforms supported Chrome / Firefox / Opera / Edge / IE 11 (Older versions of IE will work using a plugin) / Android / IOS / KaiOS (Feature Phones Like Jio Phone 2)
- Calendar Integration to Schedule meetings

User Identification and setup :

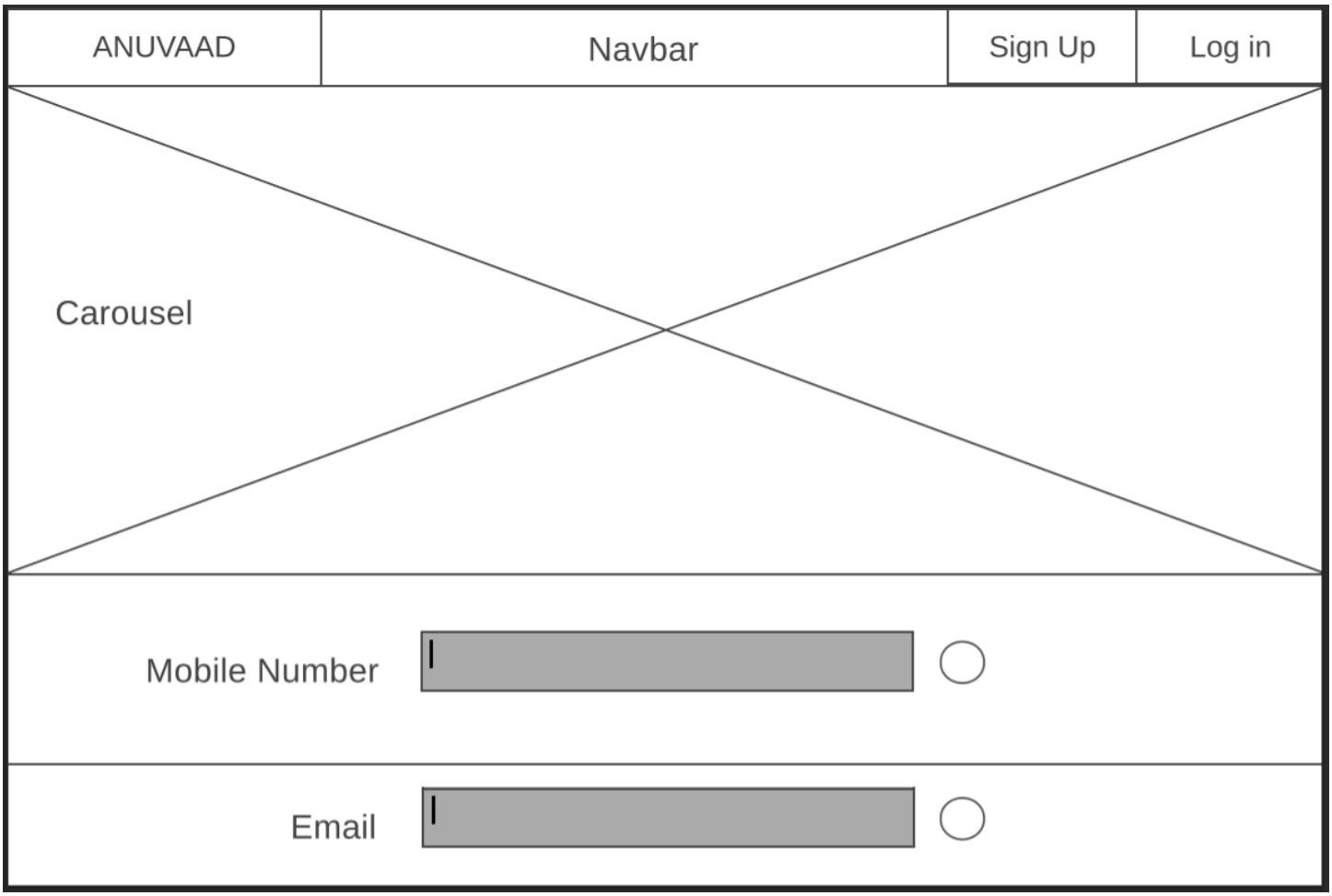
- User Creation to be linked via Phone number to improve ease of use (so all the contact can to imported using Phonebook)
- Backup of Chats to drive
- Two-factor Authentication
- Username, password (SHA-256 salted hash), email, name, title, company, and profile picture stored in the profile
- One global Account: multi-login feature - 8 devices
- Automatic group creation with regards to the department and office communicate seamlessly between the department

Support and Customer Service :

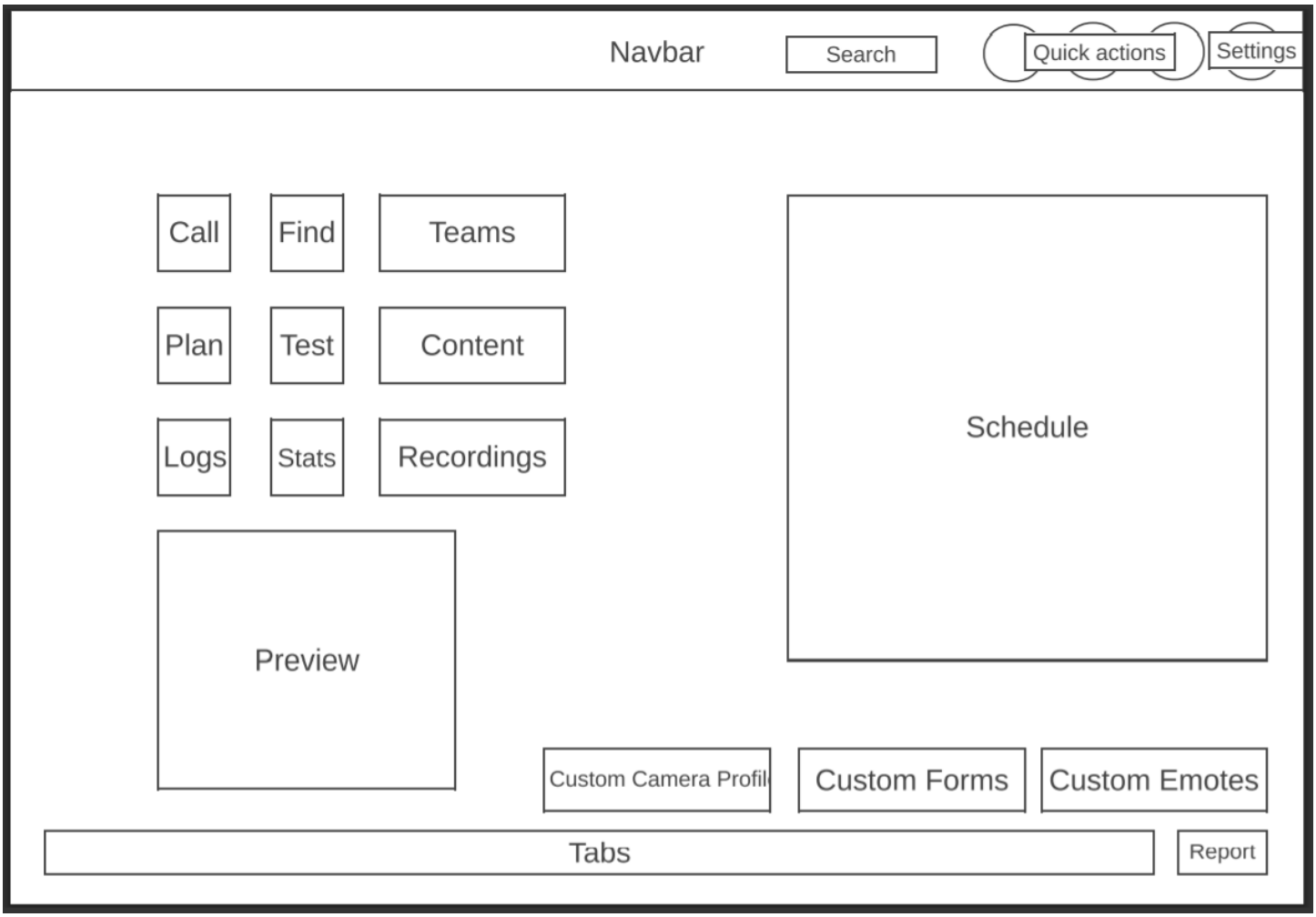
- Constant real-time monitoring of our network for any quality of services (QoS) issues

Wireframe of the Website :

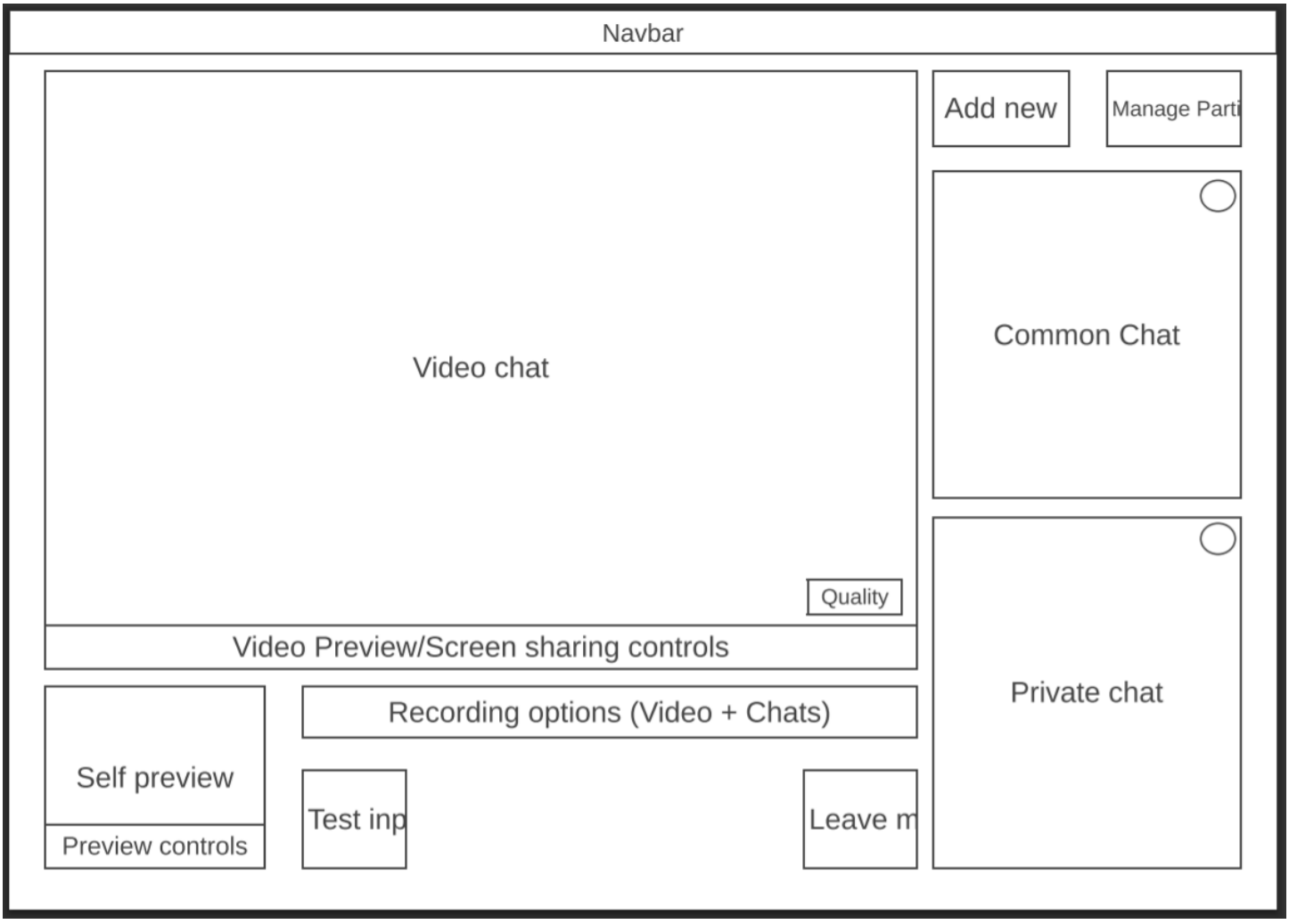
Home Page :



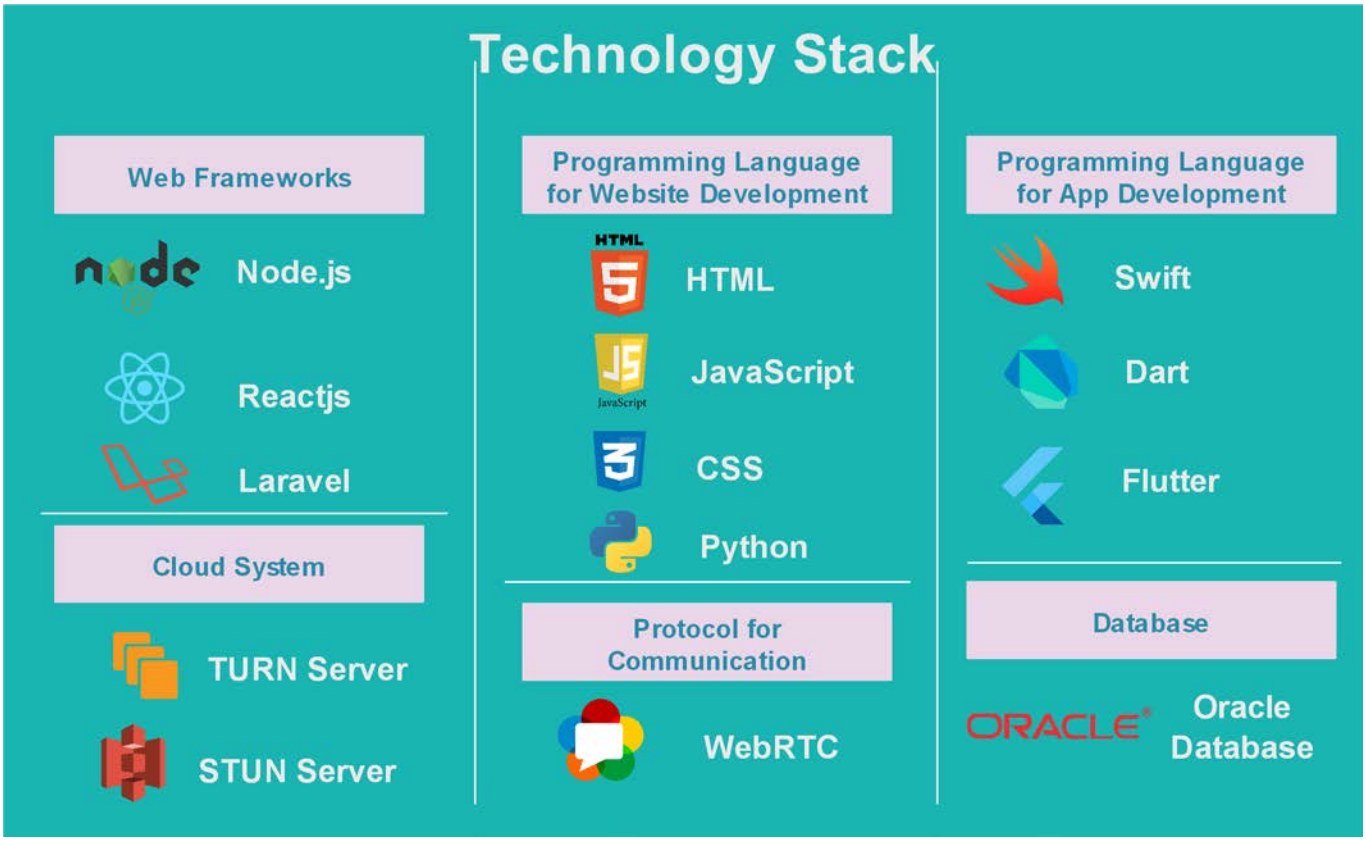
Page Before starting a meeting :



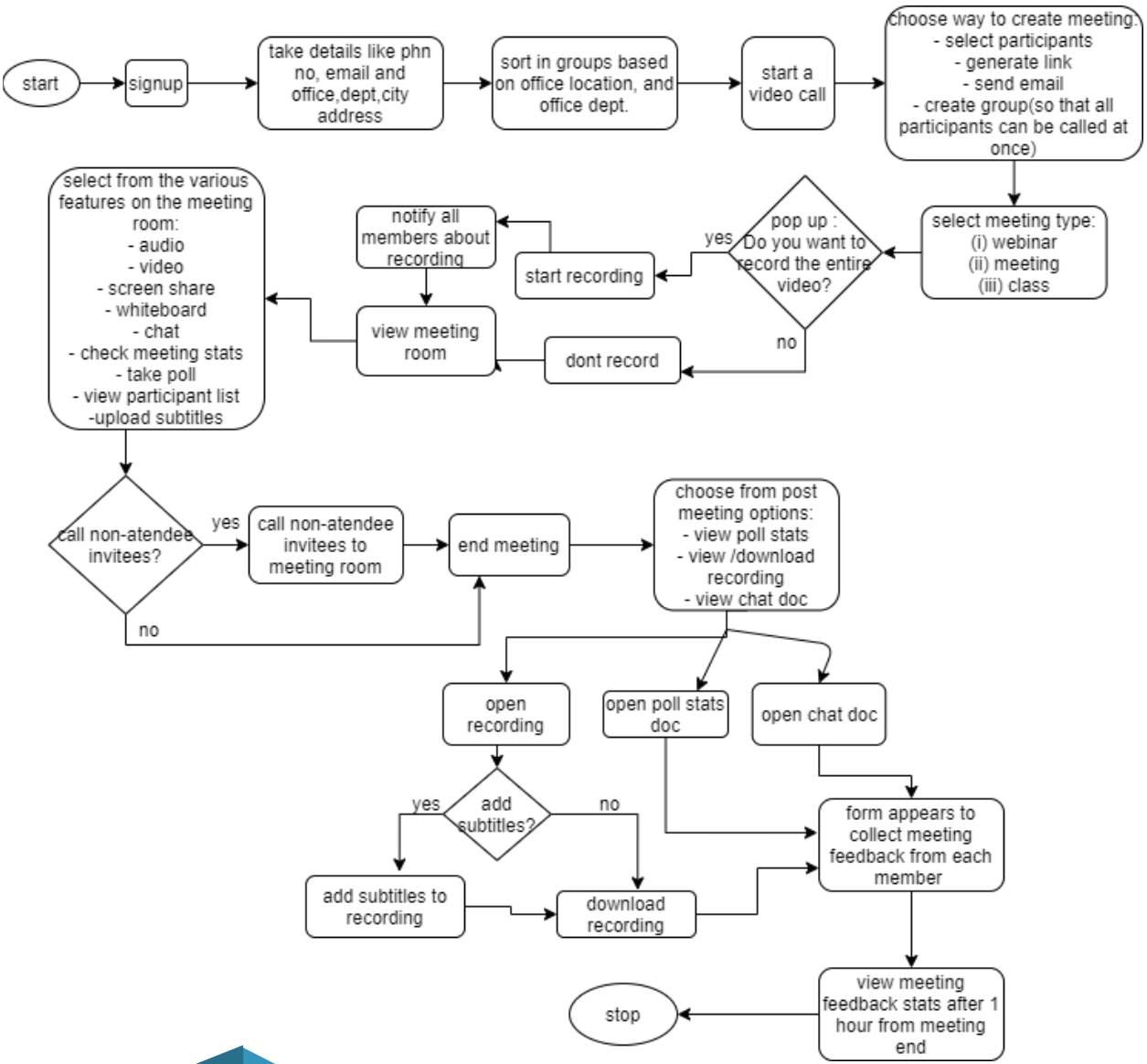
Page during the meeting :



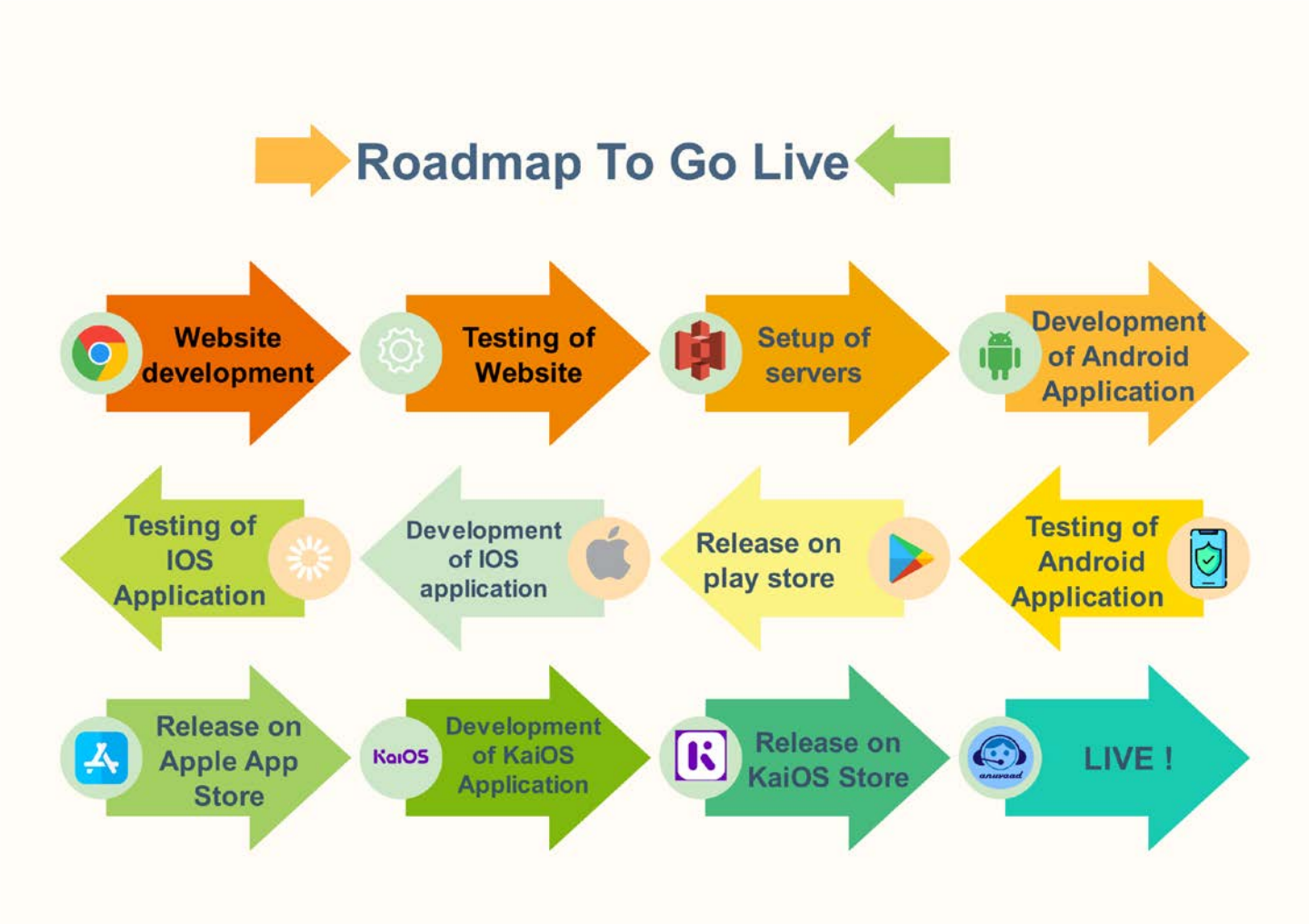
Technology Stack :



Process Flow :

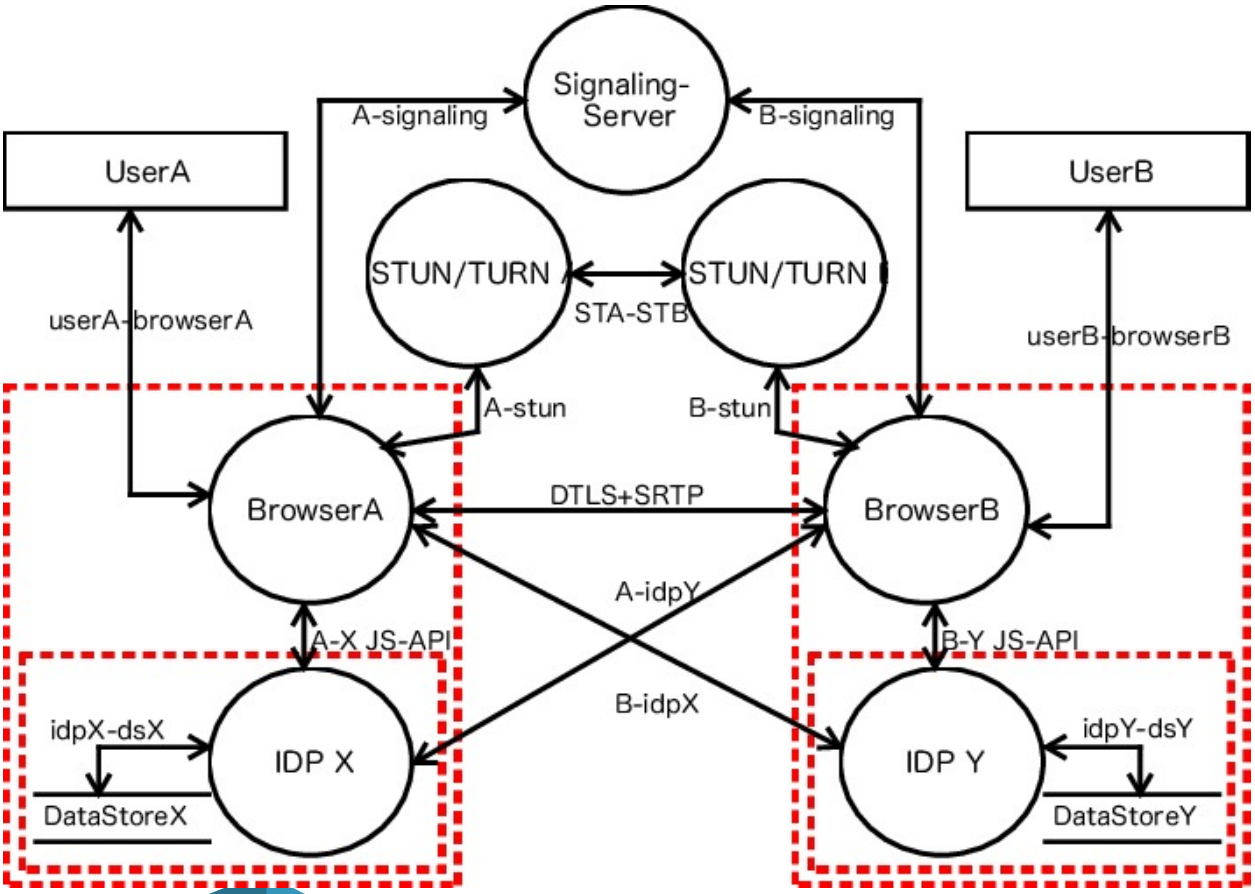


Roadmap to Go Live :

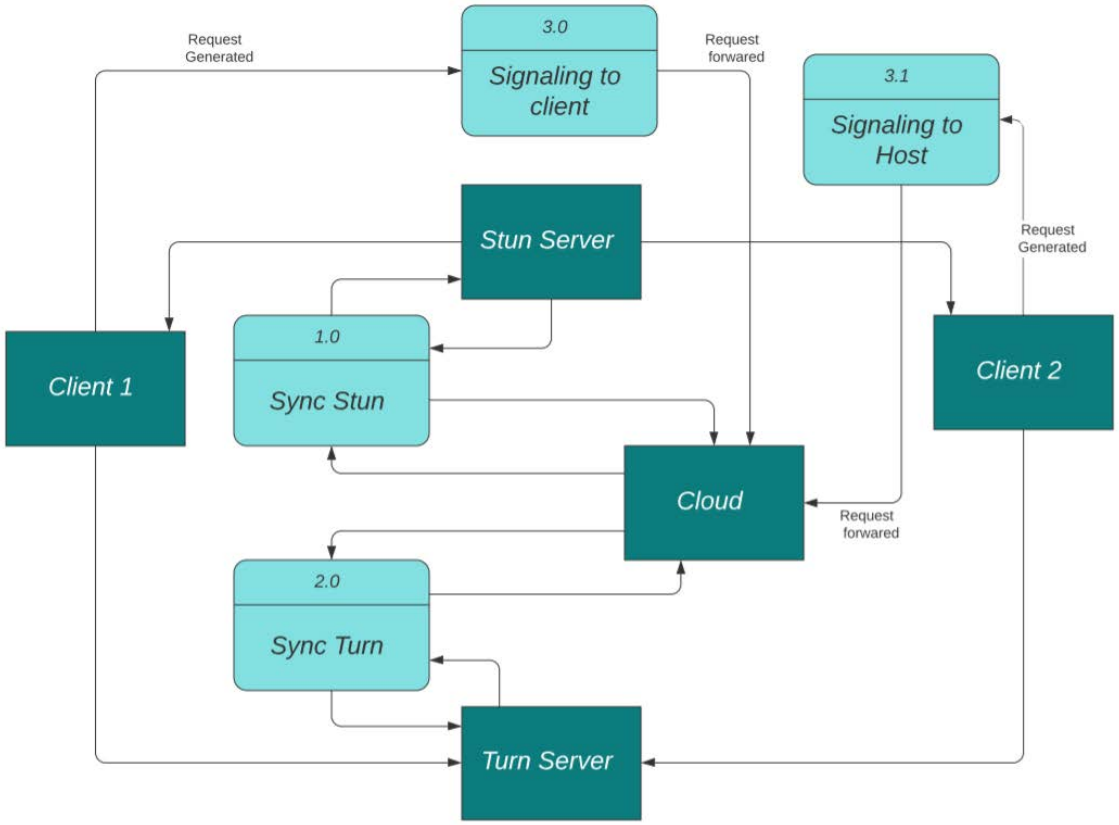


Working of the Platform :

Our solution aims to use the WebRTC Protocol to enable communication between multiple clients using a singular star connection at the server thus avoiding various hurdles that arise while using P2P mesh networks. The client / Users will be supposed to connect to STUN (Session Traversal of User Datagram Protocol [UDP] Through Network Address Translators [NATs]) TURN (Traversal Using Relays around NAT) Servers which relay the information to the receiving clients thus providing a lag-free 2-way communication system.
Since the majority of the data transfer is going to rely on UDP packets it will provide faster communication as will not pass through already congested TCP data channels.

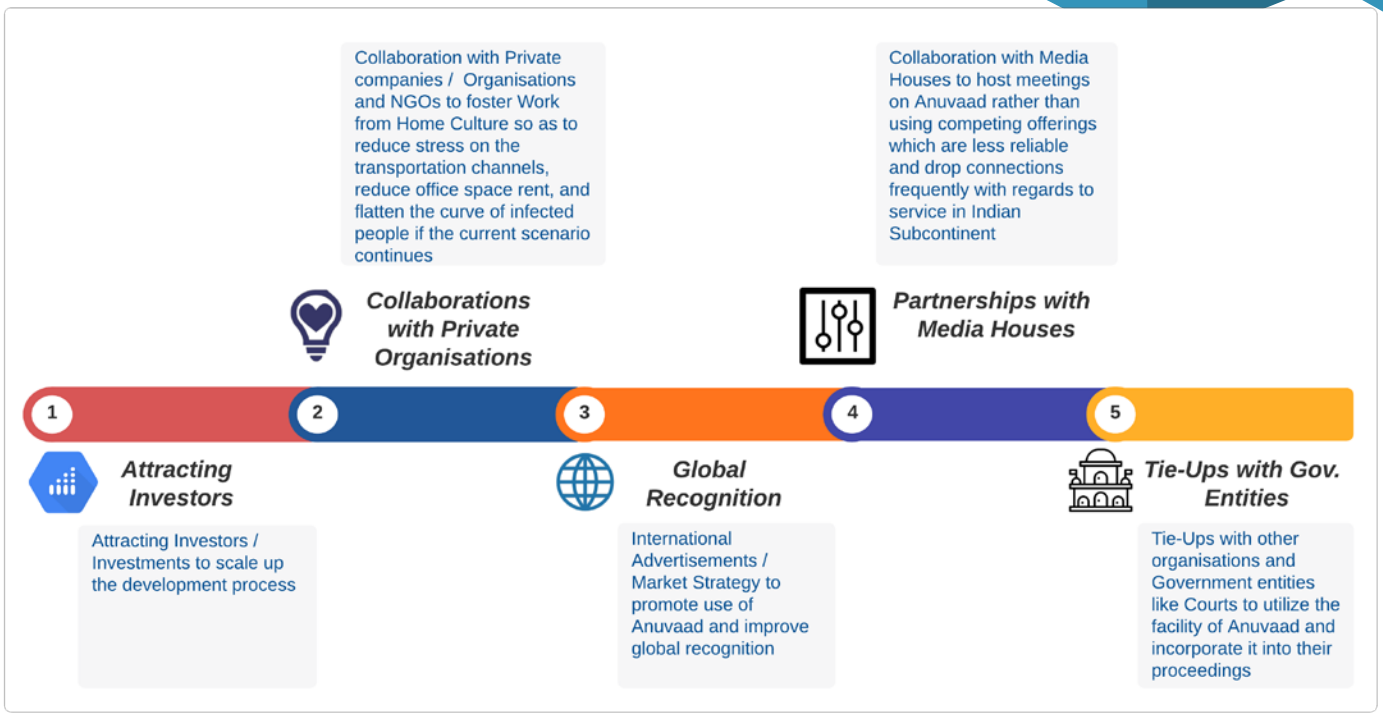


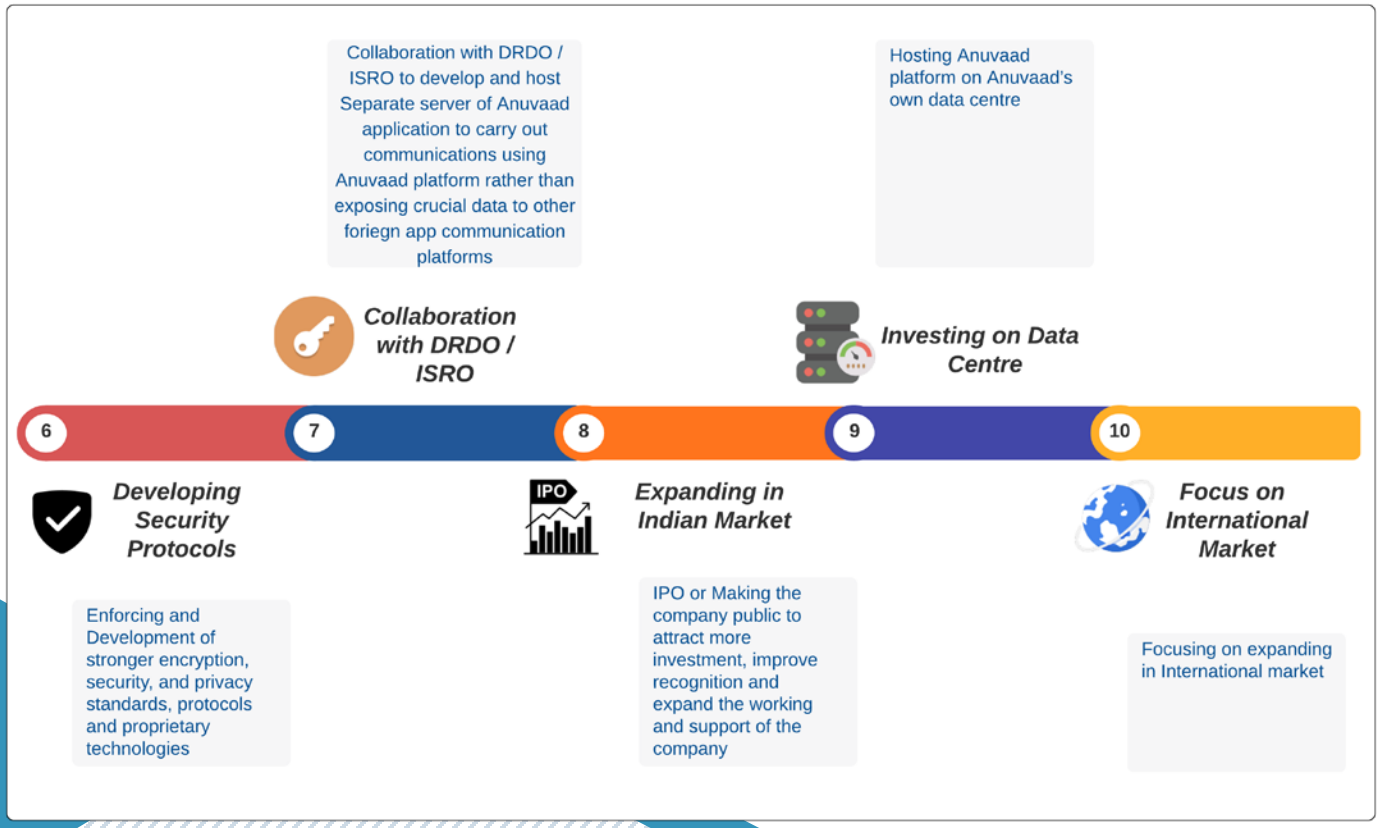
Data Flow Diagram :



Goals to be achieved in the Short term

Long Term Goals :





Responses to questions asked :

1. Succinctly explain your understanding of the Problem Statement.

Ans :
The problem statement focuses on enabling people to carry out their work using digital measures. Due to the current situation of the pandemic, organizations require people to work from home and adapt to a new lifestyle while maintaining social distancing and avoiding human contact. Work from home would be highly dependent on the communication utility and reliability that we provide to our workforce. Furthermore, these digital means of communication need to be audiovisual and also be made keeping in mind the idea of ease of use. These utility platforms are also needed to keep in mind the specific needs and requirements of the working environment of particular organizations while upholding the software interoperability in order to ensure easier usability amongst users.

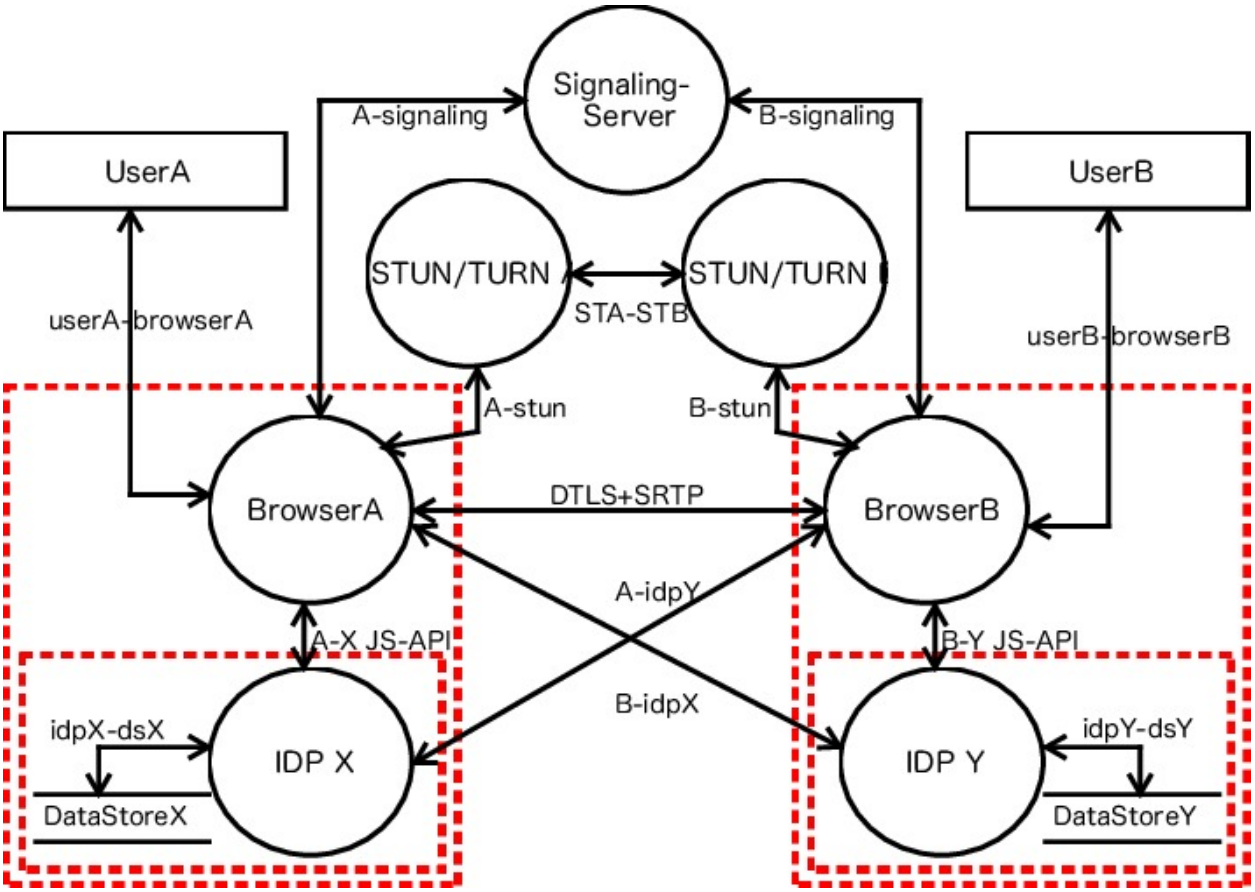
2. What is the research & development work that has already been done in this area? (Both Globally & India)

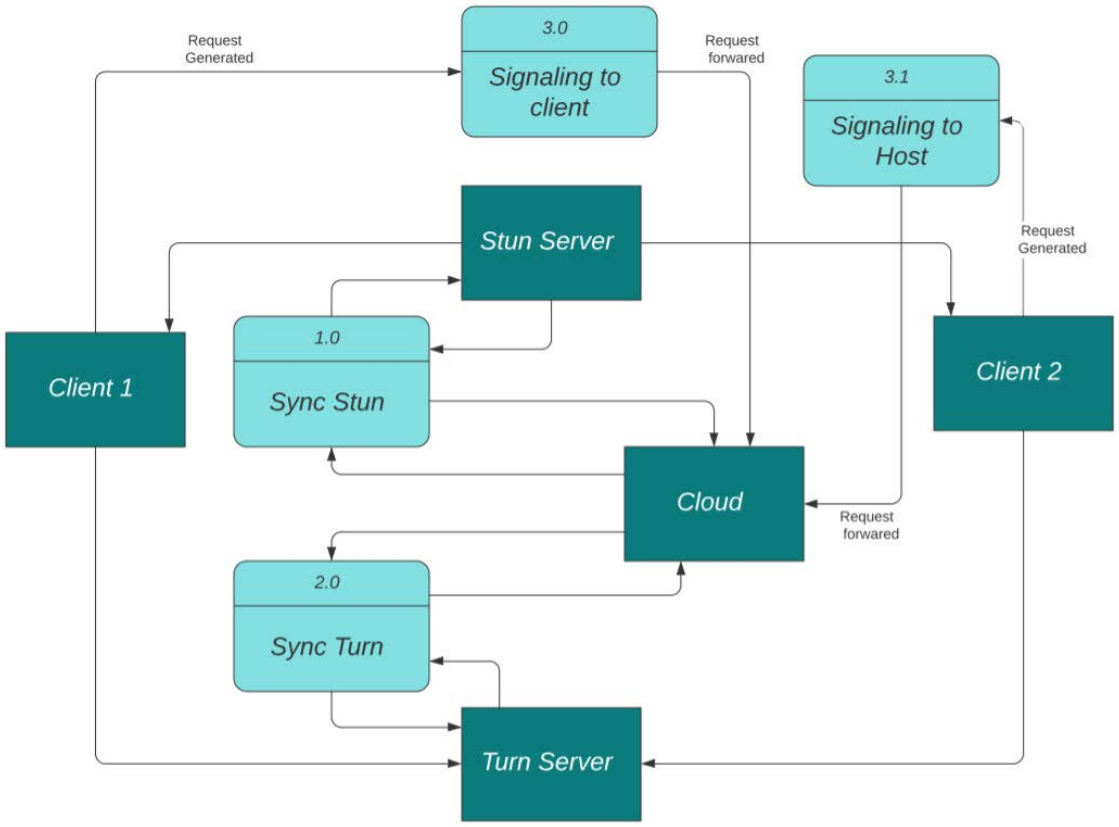
Ans :
Various platforms offering audiovisual communication already exist in the market, but these offerings come with various pros and cons that one needs to keep in mind while deployment in an organization. The majority of these services work on RTP (Real-Time Transport Protocol) and RTMP protocol (Real-Time Messaging Transport Protocol), which encounter the issue of interoperability with various standards while not being compatible with the modern file sharing formats. The newer WebRTC protocol is better in supporting various modern formats along with higher resolution video conferencing. The main issue currently with these services is that they are not tailored to the Indian audience, and are not priced according to the Indian market.

3. Briefly describe how you approach solving the problem statement. (You may use flow charts & diagrams)

Ans :
Our solution aims to use the WebRTC Protocol to enable communication between multiple clients using a singular star connection at the server thus avoiding various hurdles that arise while using P2P mesh networks. The client / Users will be supposed

to connect to STUN (Session Traversal of User Datagram Protocol [UDP] Through Network Address Translators [NATs]) TURN (Traversal Using Relays around NAT) Servers which relay the information to the receiving clients thus providing a lag-free 2-way communication system.
Since the majority of the data transfer is going to rely on UDP packets it will provide faster communication as it will not pass through already congested TCP data channels.
A Network Intrusion Detection System (NIDS) would be deployed or placed at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack.





4. What will your innovation focus on? Application of existing technologies in new areas (combination/ adaptation of existing approaches) Development of new technologies for existing areas Totally disruptive approach (Original/ New Concept)

Ans :

To enable the interoperability between various platforms the core of the communication will rely on WebRTC which is an open protocol framework supported by all the major browsers, Android / IOS, and Kai OS (feature phones). Further, we focus on getting the most.

It focuses on software interoperability for ease of use and satisfying user requirements. For encryption, we aim to use AES 256 Bit end to end encryption to protect the privacy, improve the security of the individuals.

Additionally, *Intrusion detection Technology* would be used for the detection of suspicious activity by monitoring network traffic and providing alerts if such an activity is found. “Snort” is one of the widely used, open-source systems which would be used for the project. A Network Intrusion Detection System (NIDS) would be deployed or

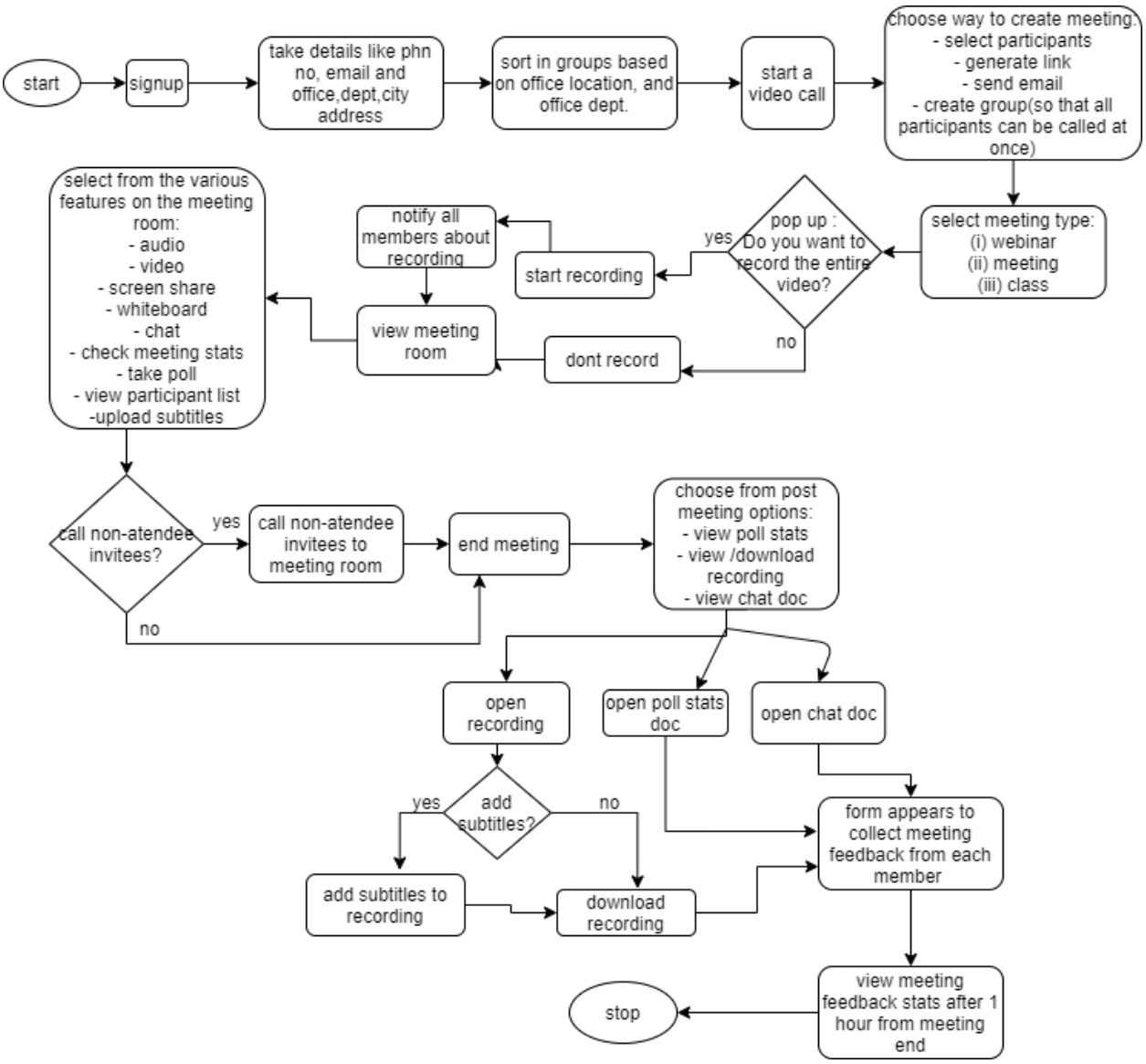
placed at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack.

Further, we aim to develop a revolutionary feature that generates reports with regards to stats for analysis of that chat, transcript of that chat, results of polls, and attendee feedback to gain insights into that meeting and refer it back in the future.
In conclusion, Anuvaad's platform will utilize various existing technologies for the most seamless experience and to increase efficiency moreover will incorporate newer technologies and techniques to provide with more features and creature comforts to improve our user experience.

5. Describe the following regarding your solution: Solution Type (Hardware/ Software) Process Flow (Process Flow Diagrams may be leveraged for explaining) Key Technology Involved Solution Capabilities (e.g. Preventive, Detective and/ or responsive), Features & Specifications Interoperability with existing technologies Scalability Resource Requirement & Management (e.g. Memory) Platform Dependence

Ans: Software based solution

Process flow of the software can be defined as follows:



Key Technology involved solution capabilities:

Prevention technology- Software-defined security functionality, makes it easier to deploy, configure, and scale security controls. All messages, chats, and calls will be end to end encrypted.

Responsive technology- We are aiming to make responsive web design so it is compatible with both mobile and computer devices.

Detection Technology- *Intrusion detection Technology* would be used for the detection of suspicious activity by monitoring network traffic and providing alerts if such an activity is found. “Snort” is one of the widely used, open-source systems which would be used for the project.

A **Network Intrusion Detection System (NIDS)** would be deployed or placed at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack.
Features interoperability with other video conferencing apps is high, as the best features from the available have been combined to provide the best feature-set. Some other features like meeting stats, polls, advanced security features have been included to make it an optimum software for government agencies.
Scalability resource management has been enabled due to the usage of cloud storage so that the user's devices do not face memory issues. All the chat and stats of the meetings can be backed up on the user's drive.
The software would be dependent on Windows and Android platforms, as they are the most widely used platforms in India and government agencies as well. We further plan to deploy the software on IOS as well, for widespread usage.

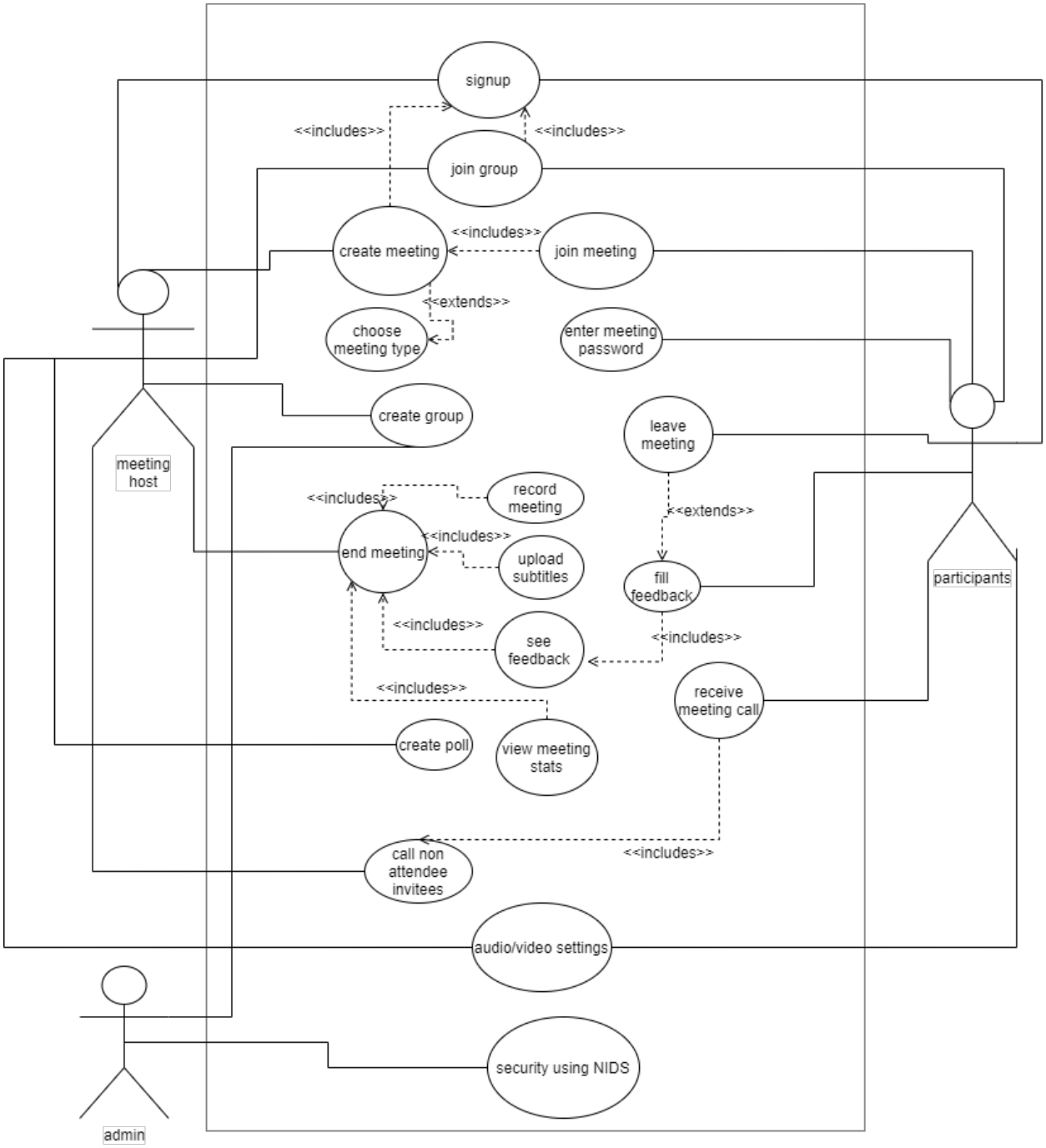
6. How would you estimate the Risk Mitigated/ Reduced by deploying your solution? (You may explain using Qualitative and/or Quantitative approaches) Business Use Case

Ans :
Our software may face risks from cyberattacks or physical or virtual damage to data centers. In order to ensure the mitigation/management, we would

- Ensure end to end encryption of all chats, calls, and messages.
- We would enable the meetings with passwords and put restrictions on the ability of users to share content, to ensure further safety.
- Display notifications on the meeting screen as well as the chatbox when any participant/user starts recording the meeting.
- Multi-factor authentication to access clouds.

7. Explain the business use case of your innovation (with Examples)

Ans :



Department wise deployment

8. What is the USP of your innovation? (For e.g. Time Saved, Improved Efficiency, etc.)

Ans :

The main focus of our innovation is the Ease of Use and Interoperability. As the platform is supposed to serve a wide audience it focuses majorly on ease of usability and user requirements. Similarly, it will offer a wide range of supported devices, thus improving the easier switching between platforms if the user desires for the same. The provision of recording, report generation with regards to stats for analysis for that meeting, polls conducted, attendee feedback, and transcript of chats help in obtaining insights from the meeting and in referring back to in the future. Security has been ensured by deploying a Network Intrusion Detection System (NIDS) at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack.

9. Does your innovation require the assistance of existing products?

Ans :

The platform is completely software-centric and does not rely on any hardware additions. It will be based on Open Standards and Frameworks and will not rely on patent/license agreements with any other existing companies. Further, as it will be hosted on Government hosted servers, the reliance on other Server /Cloud hosting services will also be mitigated/avoided.

10. Does your innovation have relevance to an existing or emerging technical standard? (A technical standard is a set of requirements for ensuring interoperability among devices or promoting the reliability, productivity, efficiency, or safety of devices)

Ans :

The Core of the platform is dependent upon WebRTC open protocol which has compatibility with virtually all platforms. Also, it aims to include all open standards in the development process so as ensure high interoperability amongst all the devices. The platform will be using AES-256 Bit (Advanced Encryption Standard) and SHA-256 Encryption to promote the privacy and security of the communicating parties. The use of the STUN TURN server to host the communication relay thus enables the platform to be more efficient than older Mesh Network using RTP, RTMP protocols. Reliability is

ensured by a Network Intrusion Detection System (NIDS) that would be deployed or placed at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack.

11. Briefly describe key technical hurdles that need to be overcome to implement your innovation, and the resources required to do so.

Ans :
The key technical hurdle will be the development of the website and app itself. Since the protocols and server configurations according to our requirements are already in place the main resource allocation will be done in improving the UI/UX of the platform itself to make it more intuitive. Tech Giants take years and a huge amount of man-hours to perfect a product like this, so the aim to furnish Anuvaad in a limited time with limited resources will be a hurdle.
So the resources required will majorly be developer support.

12. Are there any key partners whom you plan to work with to develop the technology?

Anuvaad is currently an independent organization, working on implementing its vision for the platform. During its development process, we will, however, rely on some Cloud/Server Hosting Companies until the platform is deployed on government servers. Further to improve the interoperability of the platform on various devices some partnerships with parent companies will be needed (as in the case of Jio Phone 2). Also to add additional support / inter-application communication to boost the productivity with the platform, we will be required to partner up with other companies with offerings such as Whatsapp, Microsoft Teams (Anuvaad's Security and privacy of Data will be of the utmost importance during these partnerships)

13. How is your solution more appealing than existing products in the market (if any)? (In design, quality or additional features)

Ans :
Anuvaad is by all means adapted to be used to the Indian audiences, especially to be used as a productive tool for government organizations. The highlight of the platform will be its focus on user requirements. The UI/UX of the system has been made to maximize the ease of usability. The server-centric on-premise connection enables us to host multiple participants' video calls while allowing multiple people to share screen, mitigating all the cons that arise with the use of a P2P mesh network. The multi-platform interoperability enables users to be accustomed to the software. The link of the user profiles with phone numbers helps to ease the import of the contacts and the

algorithm automatically adds the personnel in the appropriate meetings groups to carry out their work. A Network Intrusion Detection System (NIDS) would be deployed or placed at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack. The capability to record video, store chat transcripts, stats for analysis, and reports generated from polls and feedback, helps obtain insight and refer to the meetings in the future.

14. Succinctly state why your company should win this award. (Please provide any additional information/supporting documents /testimonials that hasn't been covered in the above questionnaire, but that you feel will underpin your nomination)

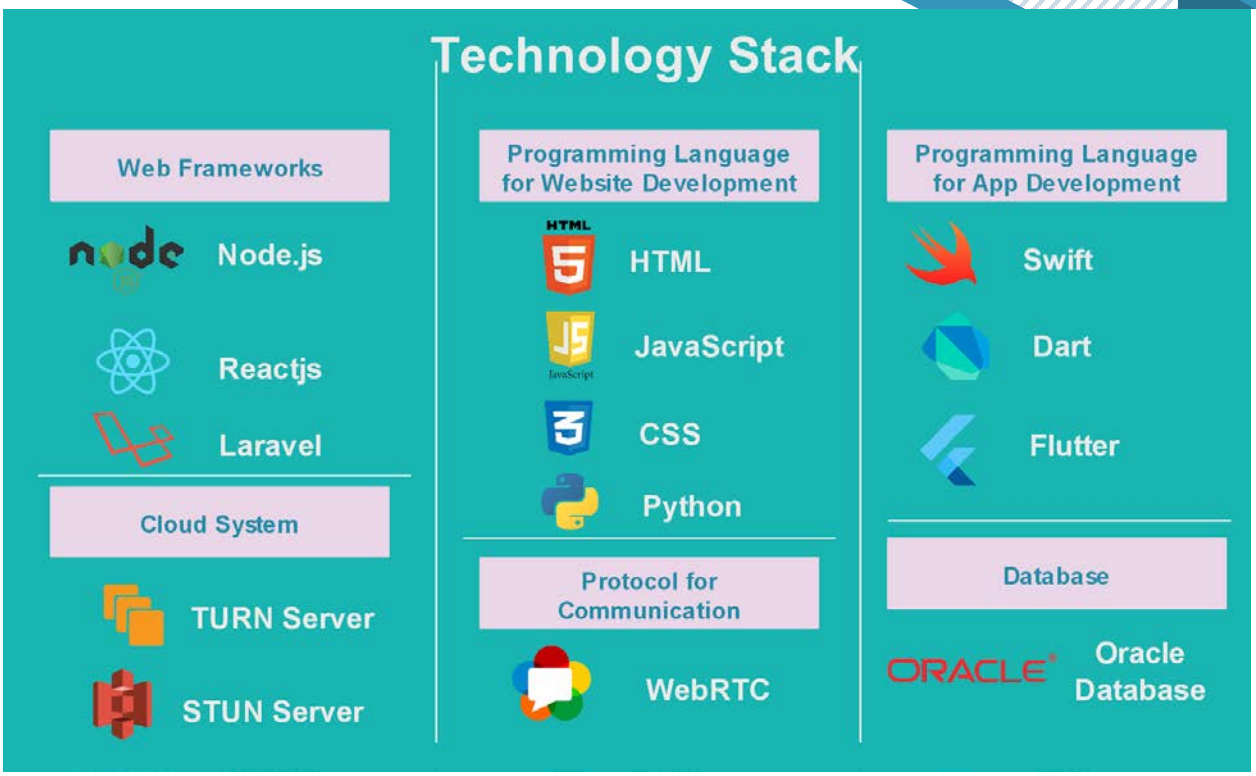
Ans :
Anuvaad with its members brings all the pros that come with a young startup, bringing the qualities of new insights and application of advanced technologies. Our members carry the experience of performing extraordinarily well in various hackathons, from being Grand finalists of Smart India Hackathon SIH 2019 (Software Edition) to being Semi-finalists in India Innovation and Design Contest IICDC 2019. Our team is no stranger to the development of utility platforms that are catered towards Government organizations. Being a young start-up our focus will be on the development and furnishing of the platform rather than cost-cutting on funds to attract higher profit margins. Thus enabling us to provide services at a lower price and more efforts on improving the customer experience. The flexibility and will to experiment with the aim of finding newer and more efficient ways of implementation of technology will help us bring innovation in the sector. Selecting us will help promote the generation of new jobs, support the indigenous development of software in the country, and help us realize our vision of sustainable development. Our enthusiastic team carries a very ambitious mindset of growth with heavy adoption in India, diversification of the provision of the utilities that our platform provides. Moreover, We at Anuvaad keep sustainable development goals as our core belief and do not plan to take any steps which can lead to harm to our environment or our economy. Our perspective towards probable growth and collaboration can be seen in the roadmap we have drawn in the upcoming section and in our proposal.

15. Briefly explain the following: o Technology Stack used to Develop the video conference App o Deployment strategy and work plan to go to Live Roadmap

Ans :

Technology Stack being implemented is as follows:

1. Encryption Protocol: AES - 256 Bit: It has a key length of **256 bits**, supports the largest **bit** size and is practically unbreakable by brute force based on current computing power, making it the strongest **encryption** standard
2. Programming Languages: Flutter, Swift, Dart, Python, HTML, CSS, Javascript: These are quite popular and are used and trusted by developers around the world.
3. Frameworks: Node.js, Reactjs, Laravel: A number of present-day applications are built using these.
4. Databases: Oracle Database: It is a database commonly used for running online transaction processing, data warehousing, and mixed database workloads. Thus, it is ideal for the purpose at hand.
5. Streaming Protocol: **VoIP** (voice over IP) is the transmission of voice and multimedia content over Internet Protocol (IP) networks. WebRTC is a free, open-source project that provides web browsers and mobile applications with real-time communication via simple application programming interfaces.
6. Cloud Servers for Communication Relay: STUN Server (Session Traversal of User Datagram Protocol [UDP] Through Network Address Translators [NATs]), TURN Server (Traversal Using Relay NAT). A **STUN server** is used to get an external network address. **TURN servers** are used to relay traffic if direct (peer to peer) connection fails.
7. A Network Intrusion Detection System (NIDS) would be deployed or placed at strategic points throughout the network, intended to cover those places where traffic is most likely to be vulnerable to attack.



Work Plan to Go Live :

1. Website development: First, the focus of work will be to develop a website, with maximum features
2. Testing of Website: It will also be passed through rigorous testing before it can be hosted online.
3. Setup of servers: Next, STUN and TURN servers need to be set up in order to facilitate communication between host and client. This will enable us to deliver a fast initial product.
4. Development of Android Application: This step involves widening the audience by potentially developing an application able to run on android based mobile devices. This will require significant changes to the camera input protocols.
5. Testing of Android Application: Testing is required to identify and remove bugs.
6. Release on play store: After thorough testing, the application will be made public by releasing it on the play store.
7. Development of IOS application: The user base will be further expanded by developing an IOS application.
8. Testing of IOS Application: Testing is required to identify and remove bugs.
9. Release on Apple App Store: After thorough testing, the application will be made public by releasing it on the App Store thus increasing the reach for the audience.

10. Development of KaiOS Application: KaiOS is a mobile operating system based on Linux, developed by KaiOS Technologies, a US-based company.
11. Release on KaiOS Store: This will enable us to broaden the user base further, reaching all levels and will require collaboration with companies like Jio to incorporate on their phones.

16. What is the planned roadmap for the company in the short and long term? (Share details about expansion plans, plans for ramping up production/development, collaborations/tie-ups being sought, garner support from relevant bodies/regulators)

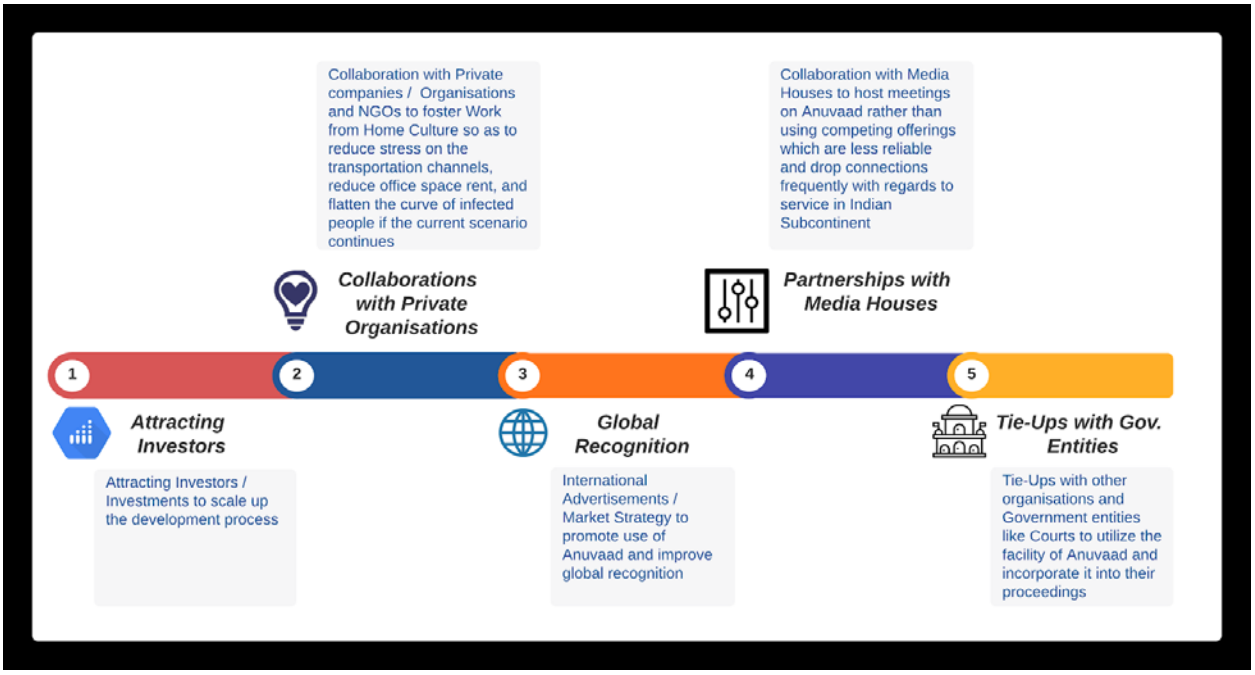
Ans: In the current scenario our short term goals are as follows

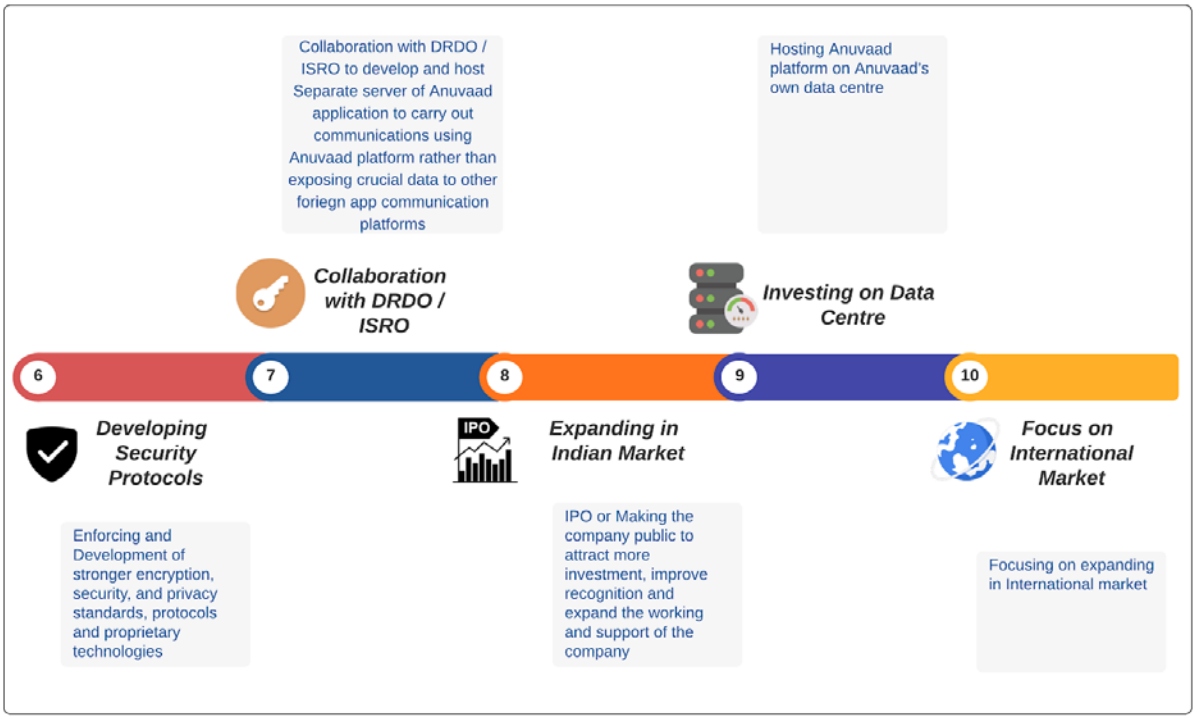
1. Development and Furnishing of Anuvaad Platform and Application
2. Hassle-free deployment of the service we provide
3. Public release of Anuvaad on Play Store / App Store and Website Listing
4. Advertisement and Marketing for mass adoption
5. Collaboration with Universities, Colleges, and Schools for online classes to help them continue imparting of education in the current condition of Covid-19

Our Long Term Goals for Development are as follows :

1. Attracting Investors / Investments to scale up the development process

2. Collaboration with Private companies / Organisations and NGOs to foster Work from Home Culture so as to reduce stress on the transportation channels, reduce office space rent, and flatten the curve of infected people if the current scenario continues
3. International Advertisements / Market Strategy to promote the use of Anuvaad and improve global recognition
4. Collaboration with Media Houses to host meetings on Anuvaad rather than using competing offerings which are less reliable and drop connections frequently with regards to service in Indian Subcontinent
5. Tie-Ups with other organizations and Government entities like Courts to utilize the facility of Anuvaad and incorporate it into their proceedings
6. Enforcing and Development of stronger encryption, security, and privacy standards, protocols, and proprietary technologies
7. Collaboration with DRDO / ISRO to develop and host Separate server of Anuvaad application to carry out communications using Anuvaad platform rather than exposing crucial data to other foreign app communication platforms
8. IPO or Making the company public to attract more investment, improve recognition and expand the working and support of the company
9. Hosting Anuvaad platform on Anuvaad's own data centre
10. Focusing on expanding in International market

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10
Developing Security Protocols
Expanding in Indian Market
Focus on International Market
IPO
Enforcing and Development of stronger encryption, security, and privacy standards, protocols and proprietary technologies
IPO or Making the company public to attract more investment, improve recognition and expand the working and support of the company
Focusing on expanding in International market