Microsoft-Engage'21

Design Document - Microsoft Teams Clone

By: SANJAY

Agenda :

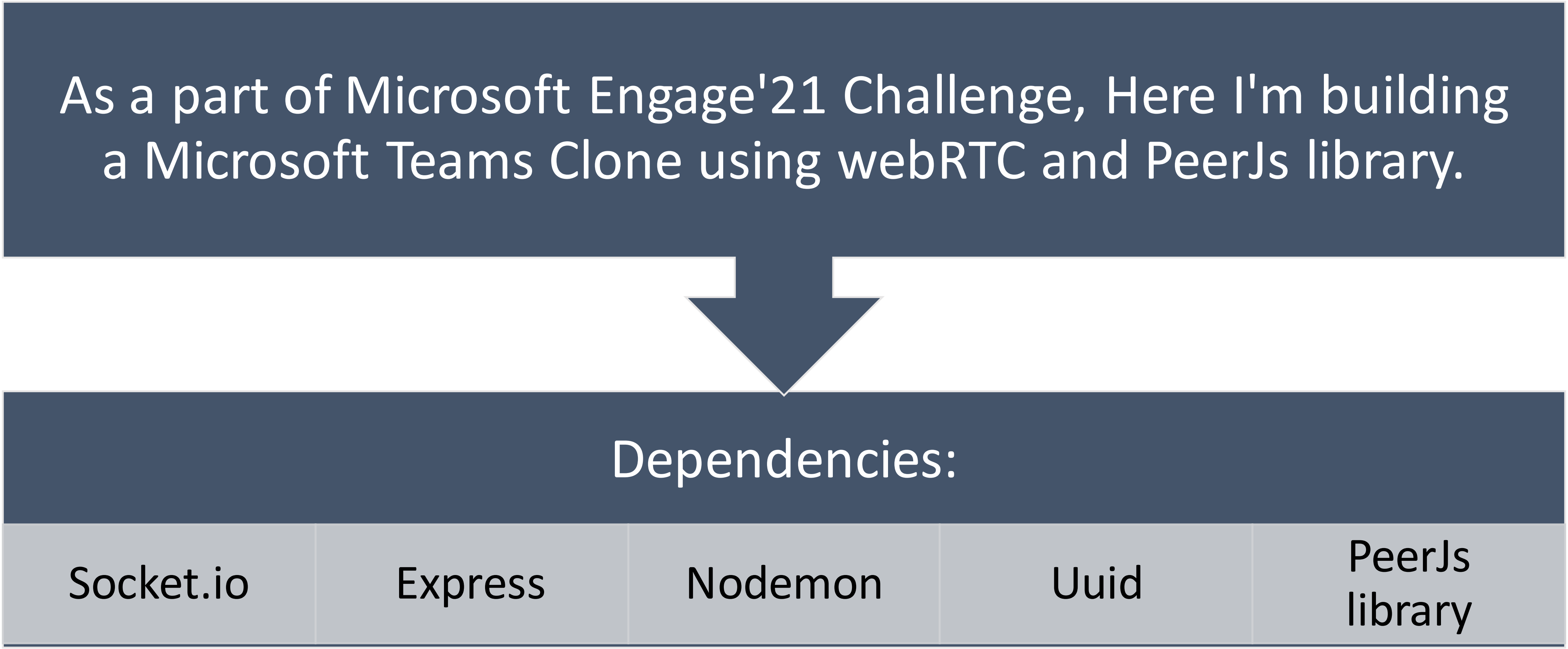
- ? Problem Statement.
- Project Overview
- ✓ Functional and Non Functional Requirements.
- Client Architecture.
- Proposed implementation Diagram.
- Tech Stack Used
- Features.
- Adapt feature
- Deployment

Problem Statement:

Build Microsoft Teams clone

It should be fully functional prototype with at least **one mandatory functionality** - a minimum of two participants should be able to connect with each other using your product to have a video conversation.

Introduction

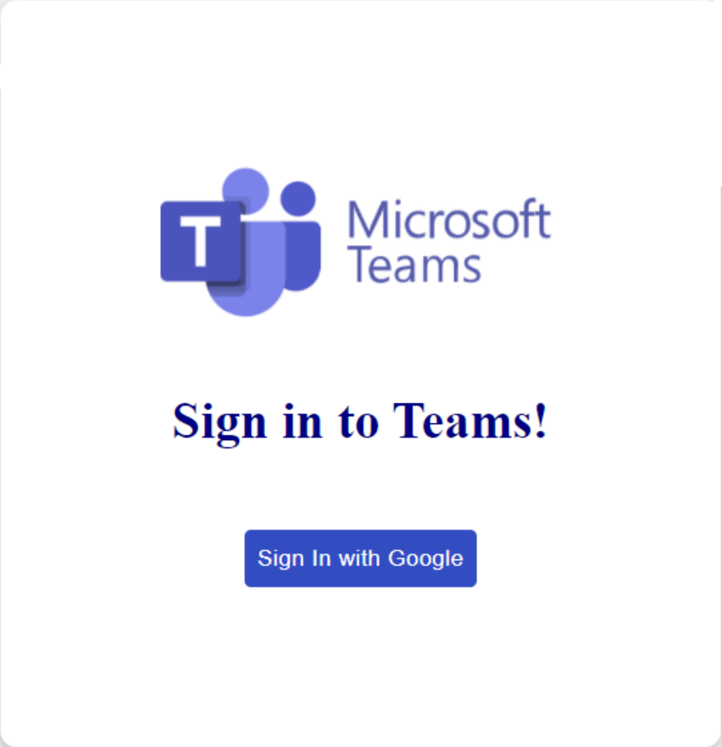


As a part of Microsoft Engage'21 Challenge, Here I'm building a Microsoft Teams Clone using webRTC and PeerJs library.

Dependencies:

- Socket.io
- Express
- Nodemon
- Uuid
- PeerJs library

Project Overview

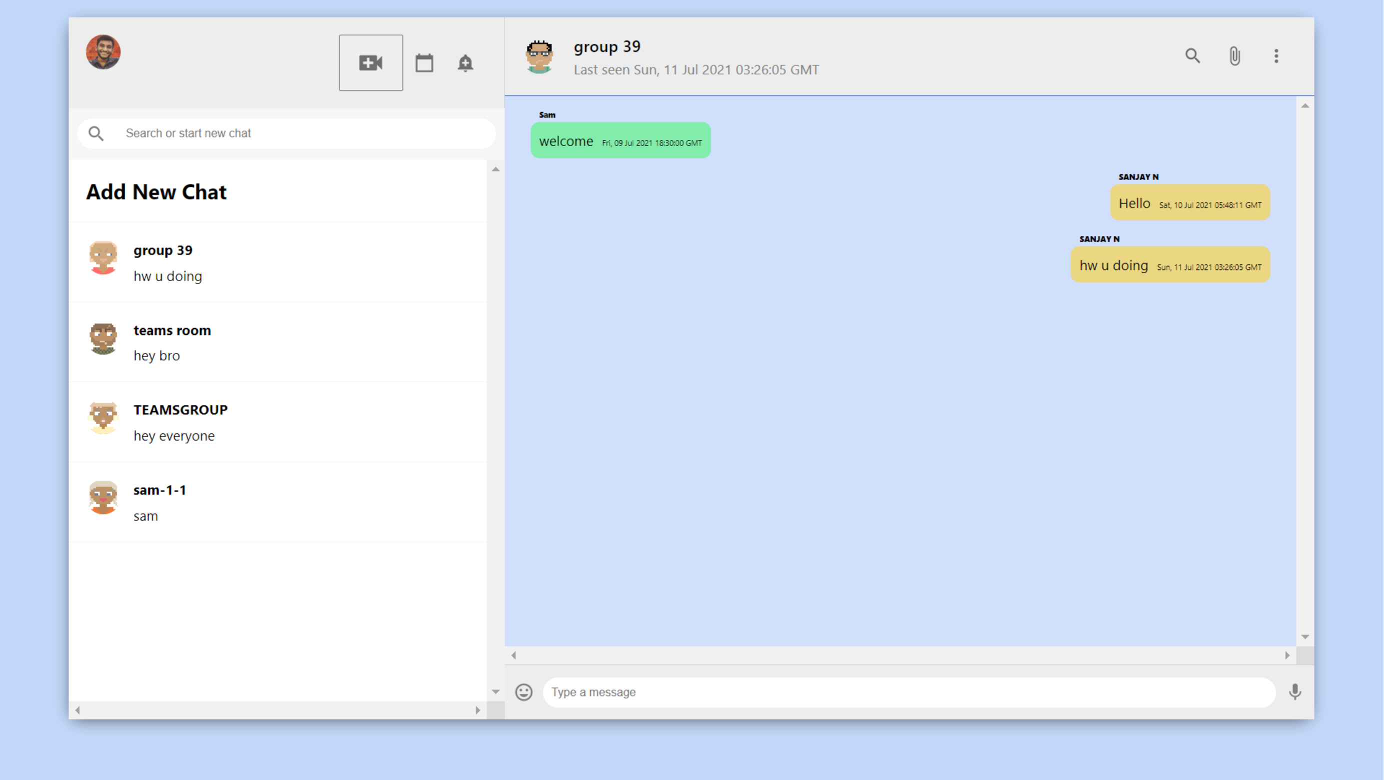


Sign in to Teams!

- Sign up to Teams with your Google account.

Home page

- Here it sets Default avatar as your Gmail avatar.
- you can create group and able to chat with other members.
- All the data will be saved in the data base.
- Able to see last seen, Timestamp etc.
- By clicking on the video Icon , it will take you to video conferencing page.



Search or start new chat

Add New Chat

group 39
hw u doing

teams room
hey bro

TEAMSGROUP
hey everyone

sam-1-1
sam

group 39
Last seen Sun, 11 Jul 2021 03:26:05 GMT

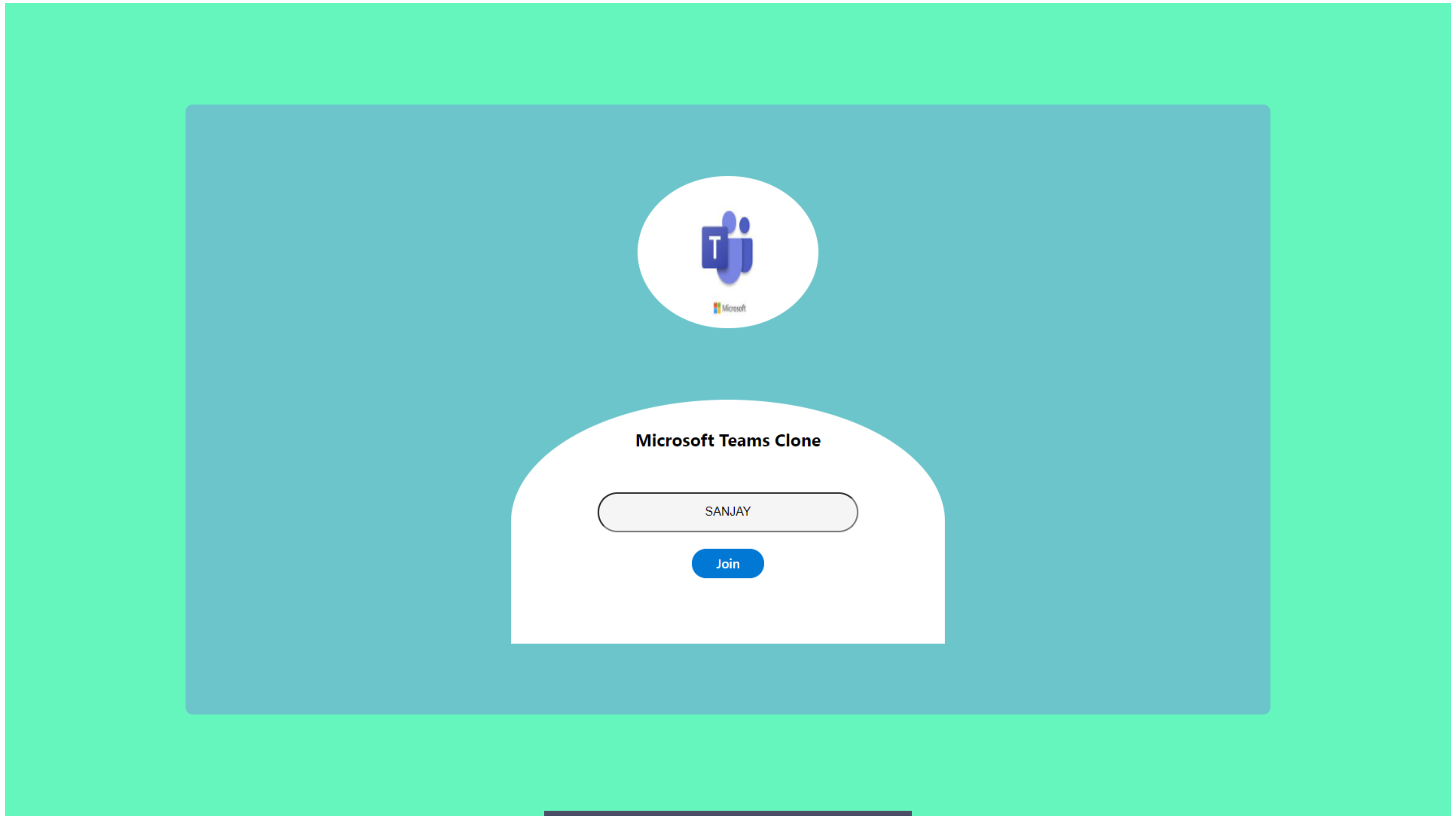
Sam
welcome Fri, 09 Jul 2021 18:30:00 GMT

SANJAY N
Hello Sat, 10 Jul 2021 05:48:11 GMT

SANJAY N
hw u doing Sun, 11 Jul 2021 03:26:05 GMT

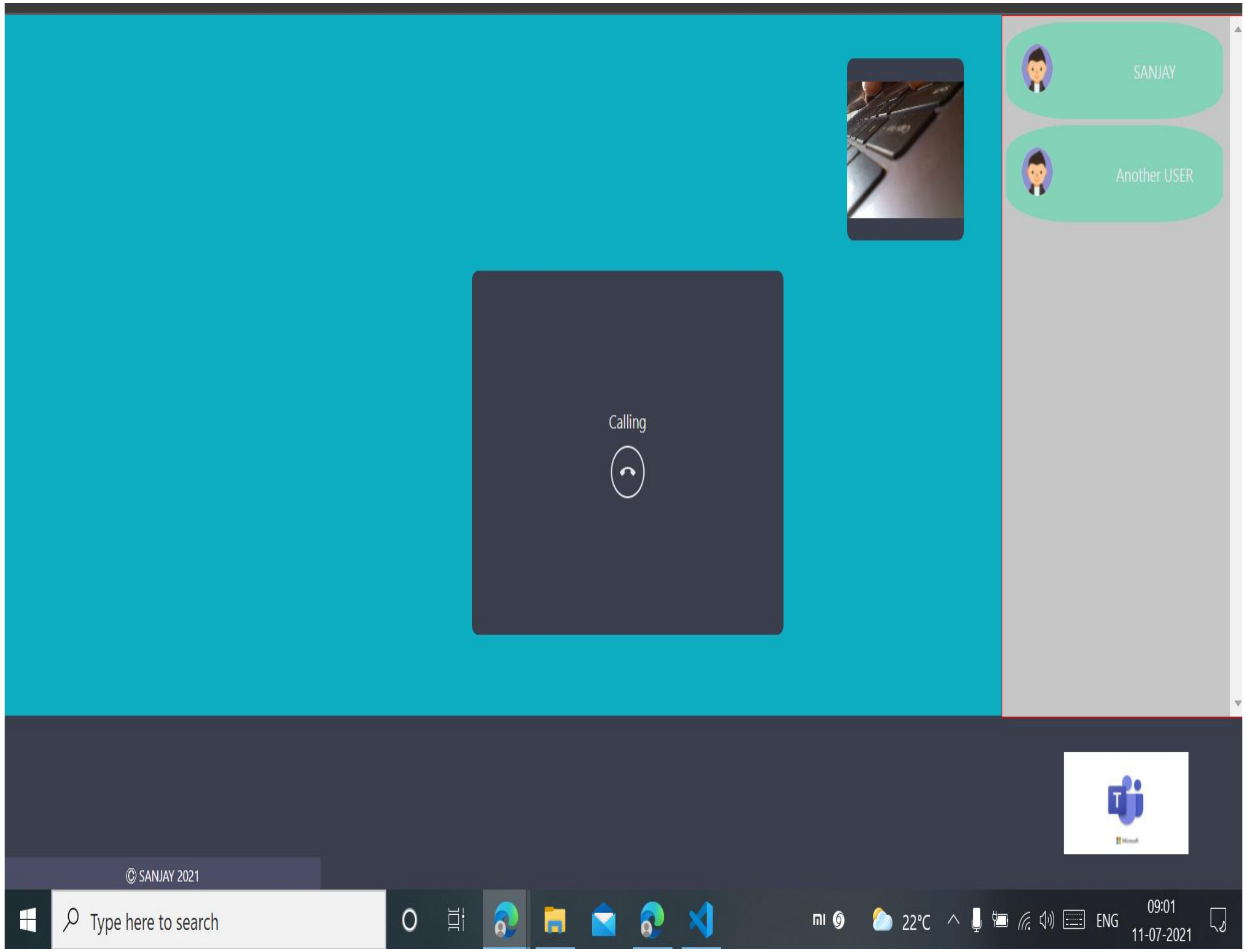
Type a message

Video conferencing Landing Page



Microsoft Teams Clone

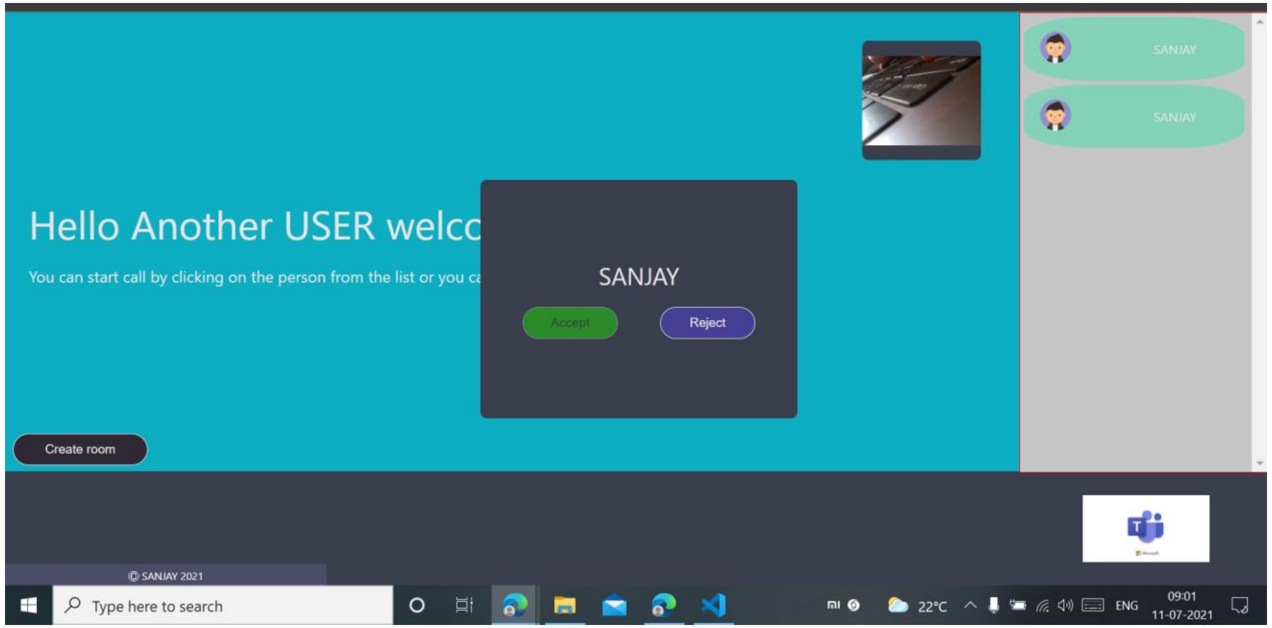
SANJAY



Dashboard

- You can call anyone By clicking on the user.
- Can create room for group call.
- While call is on
    - You can mute incoming person audio/video
    - Share Screen
    - Chat
    - Disconnect

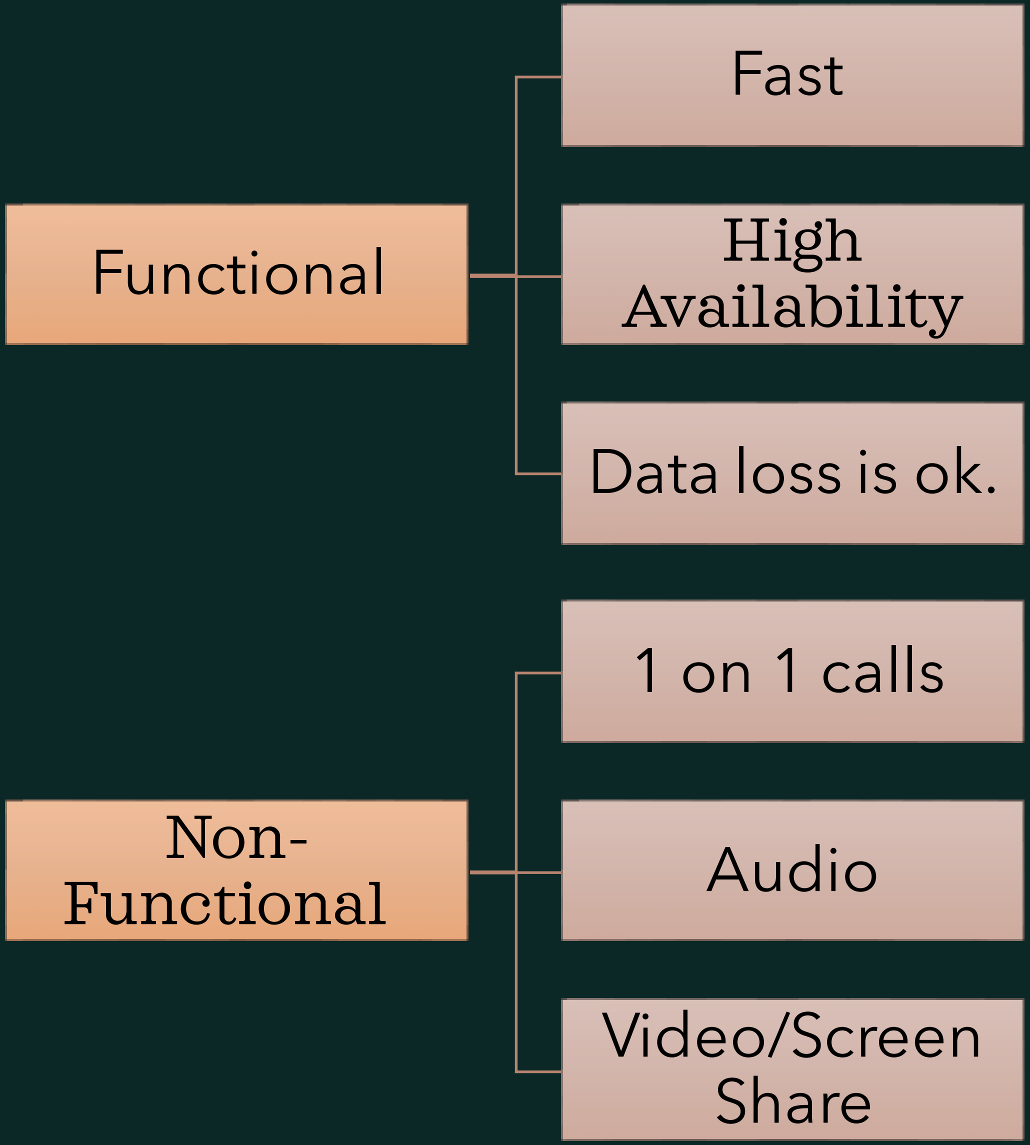
- Callee can be able to Accept and Reject the call



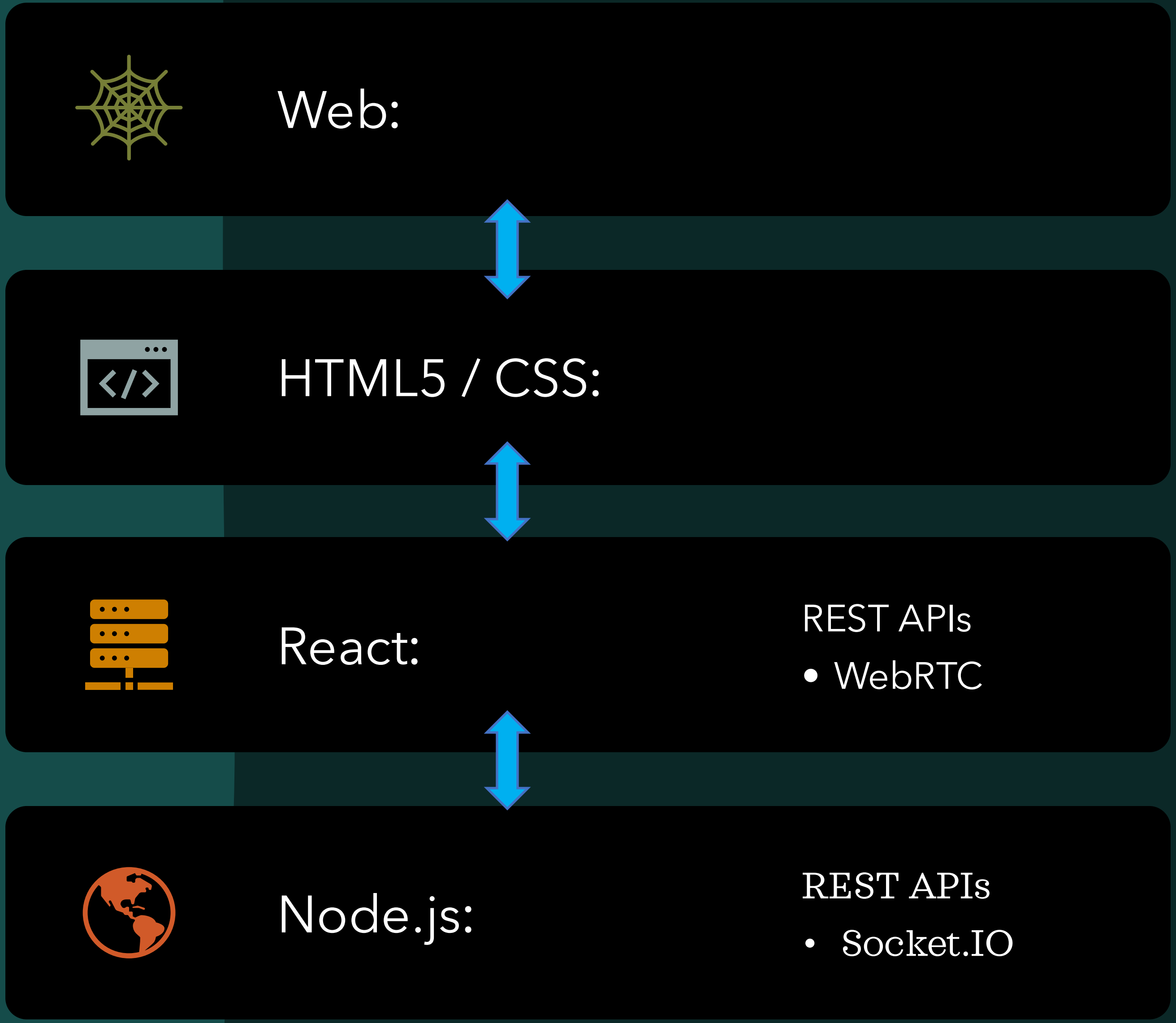
Hello Another USER welc

You can start call by clicking on the person from the list or you ca

Functional and Non-Functional Requirements



Client Architecture:



Web:

HTML5 / CSS:

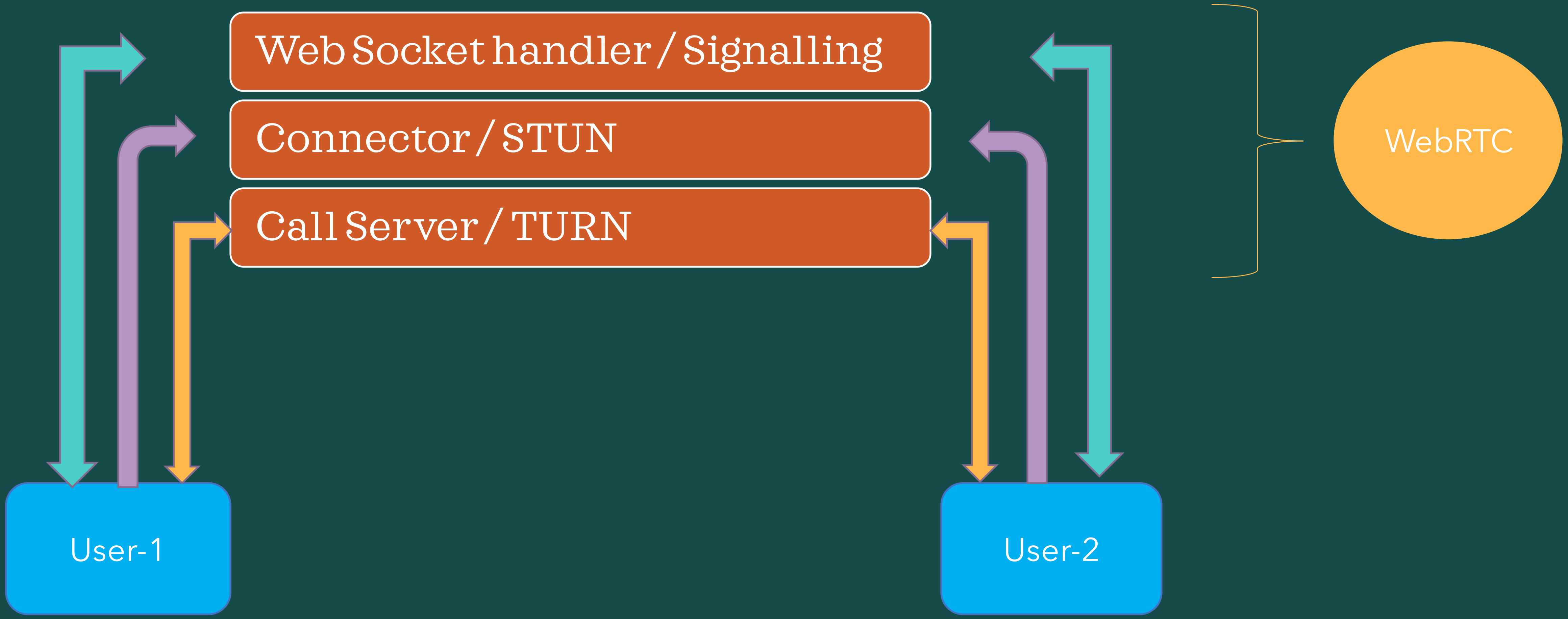
React:

REST APIs
- WebRTC

Node.js:

REST APIs
- Socket.IO

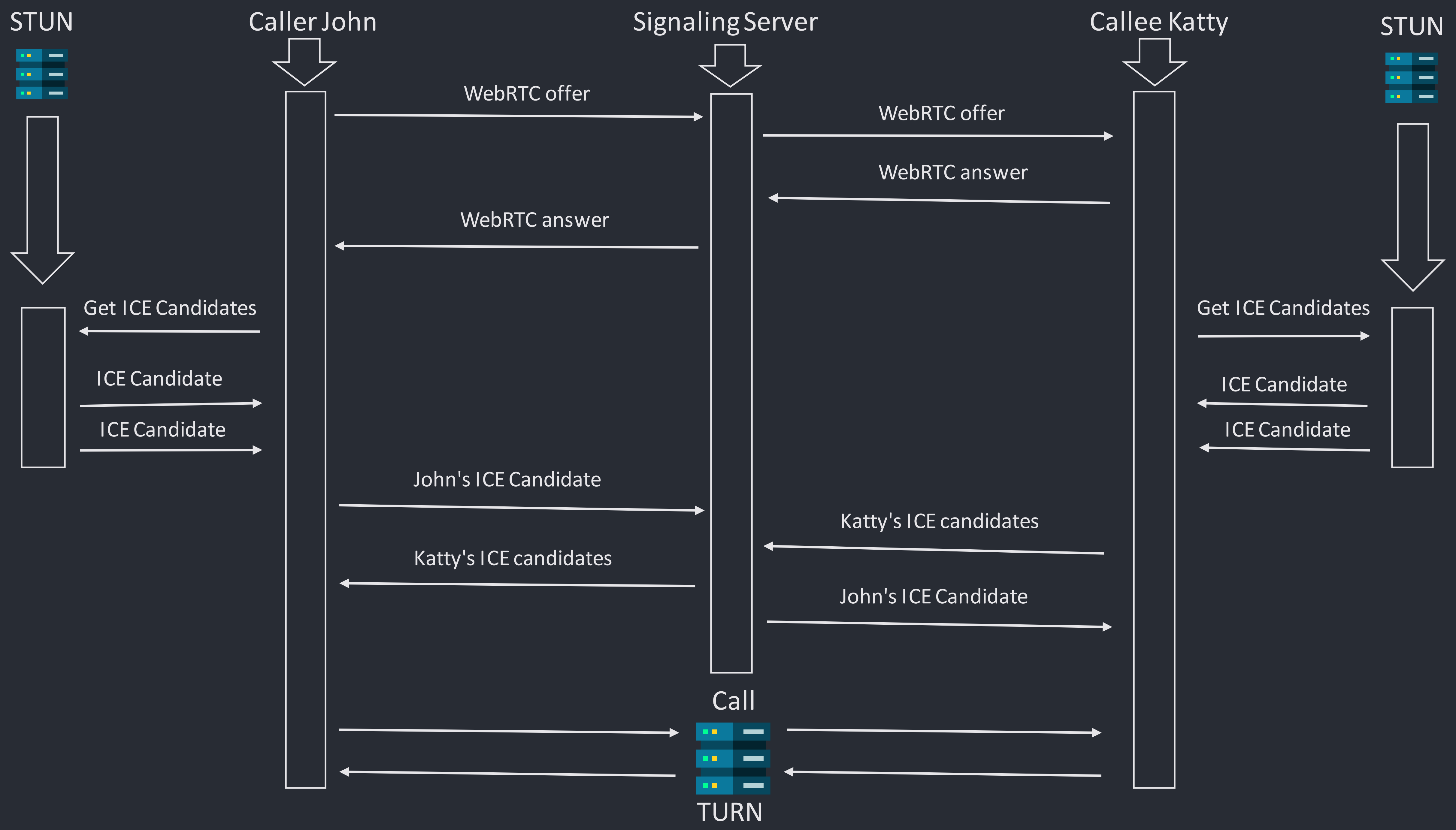
Proposed Implement Diagram: User Diagram protocol (UDC)



Web Socket handler / Signalling

Connector / STUN

Call Server / TURN

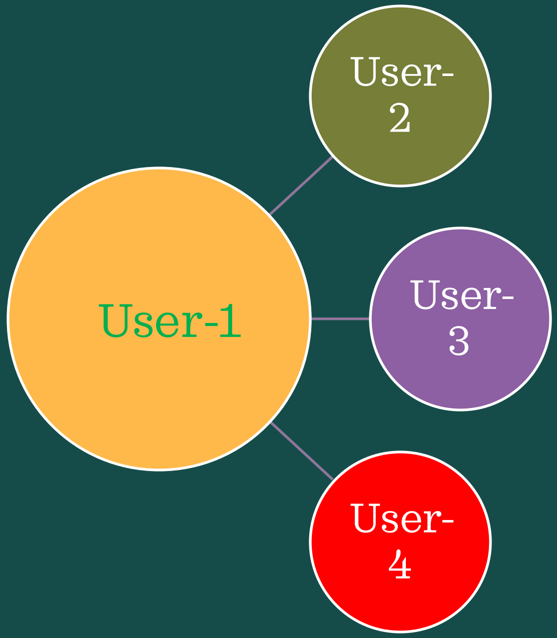

STUN
Caller John
Signaling Server
Callee Katty
STUN
WebRTC offer
WebRTC offer
WebRTC answer
WebRTC answer
Get ICE Candidates
Get ICE Candidates
ICE Candidate
ICE Candidate
ICE Candidate
ICE Candidate
John's ICE Candidate
Katty's ICE candidates
Katty's ICE candidates
John's ICE Candidate
Call
TURN

Tech Stack used:

- React Js
- Firebase
- PeerJs
- WebRTC
- Twilio Turn Server
- Node.js

Features.

- Call server – More participants can have conversation with each other I.e. Group calls

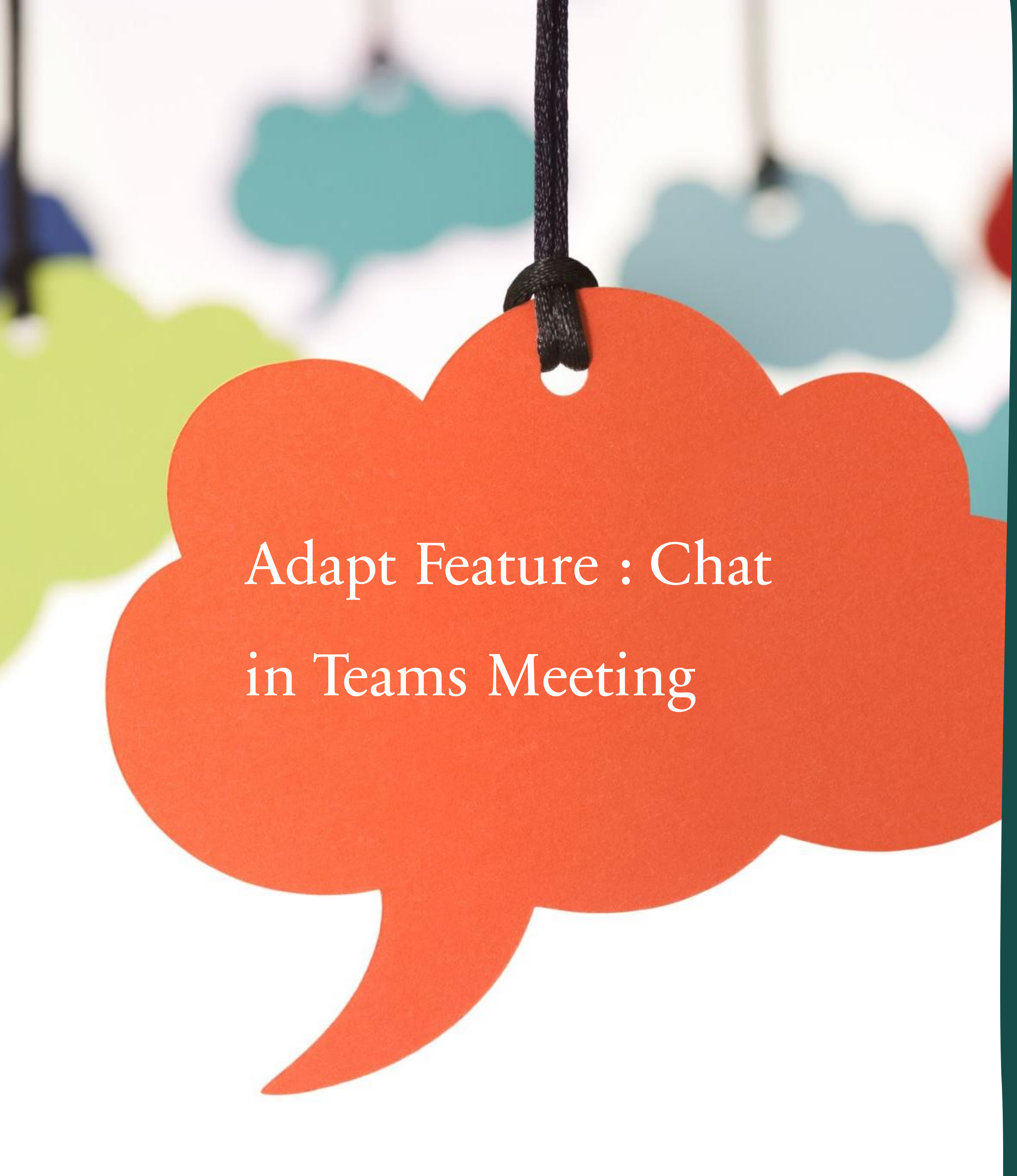


User Interface :

- Mute Option
- Screen Sharing
- Real Time chatting
- Disconnect Option
- Accepting or Rejecting a call

Back end :

- Firebase:
  - User Authentication using Google.
  - Sets your Gmail Avatar as Default Avatar for your profile.



Adapt Feature : Chat in Teams Meeting

- Included a chat feature in my application where meeting participants can share info without disrupting the flow of the meeting. Through this chat feature, and participants should be able to:
  - View & Send messages.
  - Continue the conversation after the meeting.
  - Start the conversation before the meeting.

Bibliography & Resources

- React – A JavaScript library for building user interfaces (reactjs.org)
- Getting started with WebRTC
- PeerJS Documentation
- React Chat Tutorial: How to build a chat app (getstream.io)
- Tutorial: Build a React.js Chat App (scaledrone.com)
- Let’s Build a Video Chat App with JavaScript and WebRTC | by Nil Madhab | JavaScript in Plain English
- www.youtube.com
- www.twilio.com

Thank you