Software Requirements Specification

For

Online Video and Audio Streaming Service Based on Decentralized Architecture

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1. Introduction

1.1 Purpose

The purpose of the document is to give a detailed description of Online Video and Audio Streaming Service Based on Decentralized Architecture. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. Users will be able to stream videos and audios via our network which are provided by and for the users.

1.2 Intended Audience and Reading Suggestions

The intended audiences of stakeholders for this specification of the Online Video and Audio Streaming Service Based on Decentralized Architecture include:

- User who is interested in listening music or watching videos
- Content creators who want to showcase their talent and upload their creations

1.3 Product Scope

The first and foremost goal of our proposed system will be to deliver media content requested by a user in a fast and timely manner, limiting the packet losses using a decentralized app (dapp). The user should be able to sign up/sign in to the network using a secure authentication system. The user should also have the ability to like or dislike a video/audio. The user should be able to upload his/her own content to the dapp system. The more the users are engaged in the system, stronger the network becomes. Future scope will include developing an Android application and if possible iOS clients for the service. On the Android and iOS clients, the users should be able to download the content.

2. Overall Description

2.1 Product Perspective

Our streaming service deals with streaming of videos an audios based on decentralized architecture. Users who are connected to the network will contribute to the system while watching video or listening to audios by simultaneously uploading some part of the media they are consuming.

2.2 Classes and Characteristics

The **User** has following objectives and characteristics:

- The user will have to enter his/her name, mobile number and an avatar to have a unique identity.
- The user will enter these credentials while signing up for the first time.
- The next time, the user will have to scan a QR code to log in.
- The user will also be able to update and delete his/her profile at any time.

The **Video** has following characteristics:

- The video will have a title and a description.
- It will also have a genre which will further tell the user, the type of media he/she is consuming.
- After the following criteria are met, the user then can upload the videos to watch.

The **Playlist** characteristics:

- The user will be able to create a playlist of media he/she likes.
- The user can then edit the playlist by adding or deleting media.
- The user can even create multiple playlists and delete the ones which are not needed.

2.3 Operating Environment

2.3.1 Hardware

- **Client Hardware**:
  - **Processor:** Intel Core 2 Duo or later.
  - **Memory:** 2 GB RAM.

- **Graphics:** Video card must be 256 MB or more and should be a DirectX 9-compatible.
- **Storage:** 2 GB available space

- **Networks**:
  - Internet, which is the global network used for communication and streaming media.

2.3.2 Software

- **Operating System:** Windows 7/8/10, MacOS, any Linux based OS.
- **Browser**, which is the software tool that runs on and user's personal computers that will allow them to stream media over the internet.

  Eg: Google Chrome, Mozilla Firefox
- IPFS

2.4 Data and Content Constraints

2.4.1 Database

- BigchainDB

2.4.2 Hardware Constraints

- None

2.4.3 Technologies Used

- JavScript
- JSX
- HTML
- CSS

2.5 User Documentation

- Type the system URL in the browser.
- The user should scan the QR code to sign in.
- The user can view the details in the profile section.
- The information filled by user can be submitted by clicking on submit button.

2.6 Assumptions and Dependencies

2.6.1 Assumptions

- The users are assumed to have working knowledge of how the browsers work.
- The users are also assumed to have preliminary knowledge of filling forms and submitting information on the internet.

2.6.2 Dependencies

- **Client Hardware**:
    - A compatible operating system with sufficient storage space.

- **Networks**:
    - **Internet**, which is the global network used for communication.
    - **Browser**, which is the software tool that runs on the user's computer to communicate via internet.

3. Other Nonfunctional Requirements

3.1 Performance Requirements

- There should be good internet connection to use system seamlessly.
- The unauthorized user is not permitted to use system.
- The system shouldn't lag on low performance machines.

3.2 Safety Requirements

- An unauthorized user is not permitted to use the system.
- Being decentralized it is not possible to hack the system, as there is no centralized server.

3.3 Interoperability

The decentralized streaming service shall interoperate with the following browsers:
- Mozilla Firefox
- Google Chrome

3.4. Maintainability

- The system shall permit some authorized users to maintain the repository.

4. Envisioned Future Enhancements

- There will be a recommendation algorithm based on user's likes to recommend which videos to watch next.
- There will also be an Android or iOS app based on React-Native which will enable users to access the website from their phones