Requirements Document

For the project

Cloud Sound System

Prepared By

Dr. Mamdouh Farouk – Project Supervisor

Alyaa Gamal

Mai Medhat

Rim Abd-El-Raheem

Mennah Nabil

Ahmed Abd-El-Halim

Omar Swefy

Ahmed Hamdy Moneeb

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Executive Summary

Media is considered a huge part of our lives, especially what we hear or listen to, in all the places, Home, Work, while in the Mall, …. etc.

A big places like a university, malls, schools, cinema need to share audio among their users, they use complex ways and very difficult to implement Sound Systems, with of course a very difficult mission to maintain and manage such a system.

What we are building is called “Cloud Sound System” or just C.S.S, it will help them to share audio more easily by using wifi connected speakers and control them by a single web page (Dashboard). They control what they want to play on each single speaker, all from one single page and from anywhere in the world.

The system is an online audio system, to enable the user to listen , upload and share any audio among people and places.

The user can use many speakers in different places, which makes sharing and control the audio system an easier task .

The Cloud Sound System can be uses in home, to enable the user to play different audio in different rooms, each room can paly different audio and even control what their children listen to and give them a better experience.

The project will include a website and a mobile application(as a future development) to manage and control the speakers, attach new speakers to your system, who can use each speaker, what audio to listen to.

Background

The sound system concept originated in the 1950s. The idea then was to fill a truck with a generator, and huge speakers to set up street parties.

After that a new concept started to appear in the market which is a sound reinforcement system. It is the combination of microphones, signal processors, amplifiers, and loudspeakers in speaker cabinets that makes live or pre-recorded sounds louder and may also distribute those sounds to a larger or more distant audience. It may be very complex, including hundreds of microphones, complex live sound mixing and signal processing systems, tens of thousands of watts of amplifier power, and multiple loudspeaker arrays, all overseen by a team of audio engineers and technicians.

On the other hand, a sound reinforcement system can be very simple consisting of, for example, a single microphone connected to a 100 watt amplified loudspeaker for a singer-guitarist playing in a small room.

In both cases, these systems reinforce sound to make it louder or distribute it to a wider audience. They are both now refere to the idea. But the main concept for both is that it is very complex to build a sound system, and to maintain it.

For big places like universities, malls, schools, … etc, it is very difficult to build a sound system, you have to spread to many wires, you need engineers to maintain it.

Features

- Manage all your sound system form a single dashboard.
- Accessible from any device with an Internet connection.
- Enable reliable and secure communication between speakers and the cloud Sound system.
- User friendly website and dashboard.
- Integration and Sync between different speakers owned by the same user.
- One account to manage all the speakers.
- The Dashboard :
    - View the status of each one of the speakers.
    - Add new speaker to his account.
    - Control the speakers “On/Off”.
    - Media Controller “Play/Pause/Stop”.
    - Upload files to the cloud.
    - Manage the files lists.
- Create a playlist of some of the files.
- Stream live audio right from the dashboard to one or many speakers.
- Choose what to play on each speaker.

Quality assurance

- The confidentiality of the user's data.
- All the data is encrypted and the passwords are all hashed.
- The website and the dashboard has a good performance and a very low response time.
- Viewing the right data for each user.

Delivery Schedule

Phase Number	Delivery Date	Details
Phase One	Dec,2016	System architecture and a proof of concept
Phase Two	Feb,2017	The website V1.0 including a simple dashboard to do the basic functions. The Speaker as a prototype
Phase Three	June,2017	The website V2.0 with an enhanced dashboard to do more advanced features. Enhanced design. Enhanced Hardware.
Phase Four	2018	Integration with thirp-party sound application "Soundcloud, … etc"

Risks

1- Servers failures.
2- The speaker has been disconnected during playing an audio file.
3- The electricity is out.
4- The data usage is very high.

Limitation

1- No internet connection.
2- No Wifi coverage in the whole place.
3- The life span of the speaker based on its location.
4- The Quality of the device outdoors.