

6.111 Final Project Abstract

Conference Audio and Video Wireless Communication

Team member : Saher Ahwal, Wegene Tadele, Xianzhen Zhu

For this final project, we envision a digital system for group communications through audio and video. Whether you are an employee in a big company or a small one, teams and groups in your building need to meet and communicate to make plans and work on milestones. We propose a design of a wireless communication system, which enables short meetings and calls between groups and teams in the company within the wireless range. A certain number of bases are to be installed in different regions, and each connected to a keypad, camera, and a monitor. The system has no central base. Each base will transmit the audio and video signals to the bases it is communicating with. The following is a brief description of the system features.

The system will allow a base to call more than one base at the same time. If no one was available at a called base, the calling base will have an option to leave voicemail or record a brief video (video mail). A caller at the base will be able to listen/view his voicemail/videomail respectively and delete them from memory as well. When the called bases pick up the phone, they have the choice to turn on video. Each of the participants in the call can see the video of the others on their monitor where the picture of the one currently speaking highlighted to others. A participant in a group call has the option to add a new person to the same call. If one tries to call a busy base (in active call), the busy tone should be heard by the caller.

The project will be divided into multiple phases. In the first phase, *wired* voice communication is implemented with features like: voicemail, ringtones, busy tone, and keypad. The next phase of the project is dealing with the video communication and incorporating wireless into the communication.

As a stretch goal, we can implement a simple phone on each base to be connected to the lab kit and the FPGA. Furthermore we can add new features of changing ringtones or changing video views on the screen.