

Product Concept

The goal in Phase II is to create a more mobile version of the translation system by replacing the PC component and LD with a mobile device and adding reconnection and retry logic on the ESP-end for a more reliable system. The ESP32 and MAX9814 mic will stay in charge of capturing audio and transmitting it over Bluetooth Classic (using the Serial Port Profile). As the processing host, the phone will handle speech-to-text, translation, and a new text-to-speech function using.

While the first prototype displayed the translated text on an LCD connected to the ESP, in Phase II the phone's UI will instead display the translation. The phone will also transmit the converted audio over Bluetooth to any paired headphones or earphones, if any.

Resources

Materials

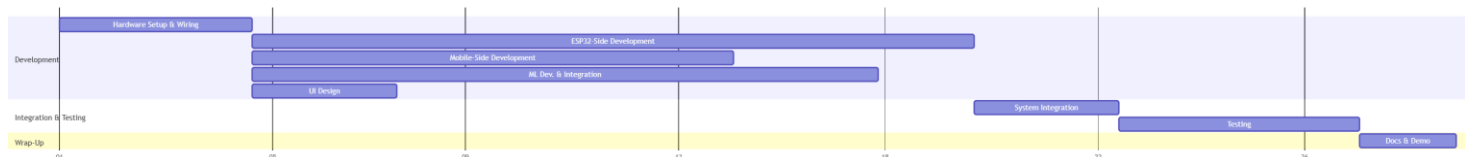
- ESP32 – Phase I
- MAX9814 modules – Phase I
- Android phones
- Bluetooth headphones or earphones

Human Resources

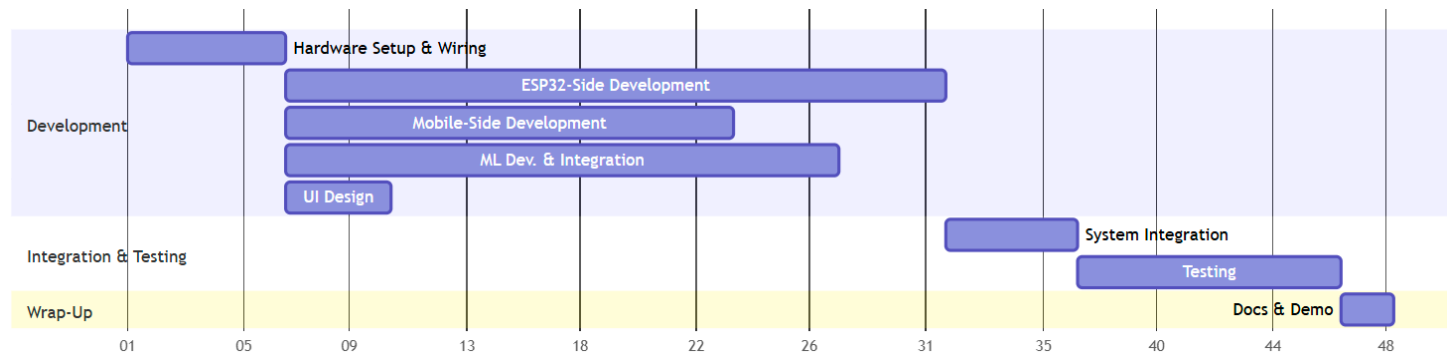
Role	Person-Hours
Embedded Software Engineer	600
Mobile Application Developer	400
ML Engineer	500
UI Designer	100
Test	200
Project Manager	120

Schedule

Best-Case



Worst-Case



Test Plan

1. Individual unit testing
 - [ESP32] audio capture and transmission
 - [Mobile] audio receival and reconstruction
 - [Mobile] sound-to-text
 - [Mobile] translation
 - [Mobile] Text display
 - [Mobile] text-to-speech
 - [Mobile] Audio transmission to paired headphone / earphone
2. Integration testing
3. Quality & Stress Testing
 - Battery life
 - Latency
 - Mobile-side processing consistency and accuracy
4. User testing and Feedback

Marketing Assessment

This project aims to produce a self-contained translation device with offline capability and real-time responsiveness for smoother multilingual conversations. The initial target market includes international travelers and small business professionals who need fast, reliable translation without relying on cellular data. We plan to ship 500 units to early testers in Year 1 and expand to 1,000 units sold in Year 2.