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|  | **AI Advancements** |

Medivox Basic Prototype

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| **PROJECT TITLE** | Medivox Basic Prototype |
| **COMPANY NAME** | Supanova Health Pty Ltd |
| **CLIENT** | Not specified |
| **PROJECT MANAGER** | Samuel Cunningham |
| **AUTHOR** | Samuel Cunningham |
| **START DATE** | 09/02/2025 |
| **END DATE** | Not specified |
| **PROJECT DESCRIPTION** | Developing a basic prototype of an AI speech-to-speech agent for reliable interpretation in healthcare settings, focusing on English to Mandarin and Italian translations. |

Client Approval and Sign-Off

Name:

Date:

Signature:

Contractor Approval and Sign-Off

Name:

Date:

Signature:

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Change Logs

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| **Revision** | **Change Description** | **Approval Date** | **Author** |
| 1.0 | Initial Draft | 29/07/2025 | Samuel Cunningham |
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1.0 Scope

This project is developing a basic prototype of the Medivox application, which is an AI speech-to-speech agent designed for reliable interpretation in healthcare settings. The prototype will focus on translating between English and Mandarin, as well as English and Italian, utilising a combination of speech recognition and machine translation technologies. The system will incorporate a speech-to-speech translation pipeline that leverages both open-ended translation and template matching to ensure accurate communication between doctors and patients.

AI Advancements will play a crucial role in the project by implementing the necessary backend logic and user interface. The development will involve creating a web-based application hosted on Microsoft Azure, ensuring data privacy and security. The project will also include the integration of various APIs for translation and back translation, as well as the establishment of a multilingual template database to facilitate effective communication.

2.0 Contract Structure

Not specified

3.0 Key Deliverables

* A basic prototype of the Medivox application showcasing the speech-to-speech interface.
* Implementation of a one-directional translation engine for English to Mandarin and Italian.
* Development of a multilingual template database for effective communication.
* Integration of APIs for open-ended translation and back translation.
* A web-based user interface for doctors and patients to facilitate communication.

4.0 Plan

Website Interface:

* Develop a basic user interface for two phones (doctor and patient).
* Doctor's screen:
* Include a button to record audio.
* Display progress for translating audio, converting to speech, and playing to the patient.
* Disable the record audio button during processing.
* Show the translated result sent to the patient, indicating where template matching was used.
* Patient's screen:
* Allow language selection (Italian and Mandarin).
* Indicate when the doctor is speaking.
* Show processing status for audio translation.
* Play audio upon completion of processing.
* Display translated text on the screen.
* Incorporate Medivox branding into the interface.
* Use React.js for interface development.

AI Backend Logic:

* Host all models, data, and code on Azure for secure application development prioritising data privacy.
* Implement a speech-to-speech translation pipeline using LiveKit and OpenAI APIs.
* Integrate OpenAI API for open-ended translation and placeholder translation.
* Use Google Healthcare Translation API for back translation.

Template Search Engine:

* Create a multilingual database for templates with fixed and variable components.
* Implement semantic search among templates using vector-based similarity.
* Ensure one-to-one matching of placeholders in templates with input utterances.
* Handle errors for empty mandatory placeholders and retrieve matching templates in the target language.

Hosting:

* Host the application on Microsoft Azure.
* Ensure the application is cloud-based and accessible via Supanova Health’s web domain (supanova.health).

Agent-Based Architecture:

* Structure the application as a speech-to-speech interactive AI agent.
* Design for future expansion and scalability using generative AI technologies.

5.0 Assumptions

* The client will provide API keys, data, or system access as needed for development.
* The hosting environment on Microsoft Azure is set up and accessible for the development team.
* Project stakeholders will be available for scheduled meetings to discuss progress and feedback.
* The client will supply pre-translated templates for system use to ensure accurate translations.
* The client will provide necessary medical terminology and context to enhance translation accuracy.

6.0 Timeline

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| --- | --- | --- |
| **Milestone** | **Description** | **Estimated Time (Days)** |
| 1 | Website Interface | 1 |
| 2 | AI Backend Logic | 3 |
| 3 | Hosting | 1 |

Total Duration: 5

7.0 Budget

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| --- | --- | --- | --- |
| **Category** | **Time (Days)** | **Day Rate** | **Cost ($)** |
| Developer Effort | 5 | 1600 | 8000 |
|  |  | Total Cost | 8000 |
|  |  | + 10% GST | 8800.0 |

8.0 Delivery Team

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|  | Sam is an experienced AI Engineer and the Director of AI Advancements. He has led numerous AI projects including chatbots, document processing systems, and automated reporting tools. Sam specializes in large language models and conversational AI. |

Samuel Cunningham

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|  | Sean is an AI Engineer with expertise in machine learning and data science. He has developed multiple AI solutions including ECG analysis systems and automated document generation tools. |

Sean Oldenburger

9.0 Past Projects

* AI Educational Tutors
* We built personalised AI tutors for all online training courses on the Coursebox AI platform. This included a feature which automatically generates AI instructional videos for all course pages with human avatars and chatbots on each page which understand the course content and assist the learner.
* WADSIH AI Workshop Summariser
* As part of the Curtin Senior Leaders Forum 2024, we were contracted by the WA Data Science Innovation Hub (WADSIH) to develop a live AI workshop tool. The tool took input from 150+ Curtin employees spread across 15 groups. Our tool showed live insights into trending topics, real-time quotes, and generated a Word document report and PowerPoint summary for each group.