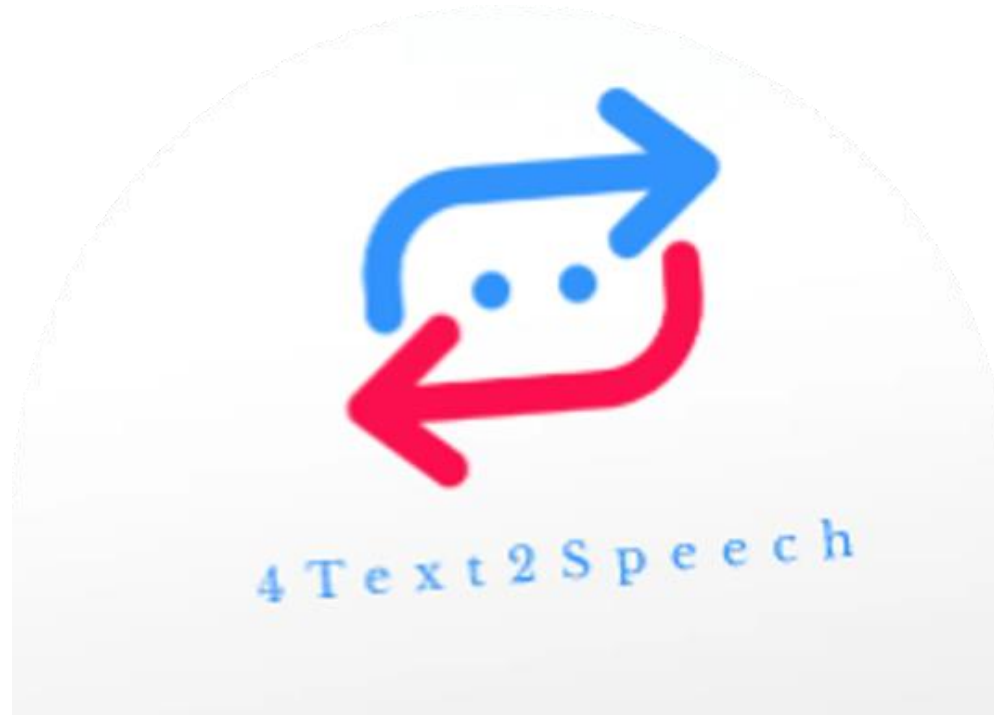


Mobile Application by Shahid A., Serigne S., Valentin M. & Jathushan K.



Problem Statement

- For partially blind people, it can be hard to navigate a visual world, both real and virtual.
- Other alternatives such as a Live Text (built in iOS feature) require text selection and are not functional on every application.
- Current applications are not user friendly.

Client Needs

Number	Need	Importance (1-5 Scale)
1	The application will be able to read out loud the text on an image with a reasonable response time.	5
2	The application will be easy to use and of minimal cost.	5
3	The application will allow the user to select common file types from their device.	5
4	The reading speed of the application will be convenient for the reader.	4
5	The application will allow the user to access their camera to take pictures.	3
6	The application will propose different voices to choose from.	2
7	The application will consider more languages to accommodate more users.	1

Legend

5: Extremely important

4: Very Important

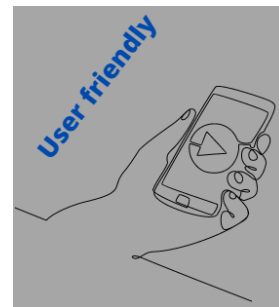
3: Important

2: Somewhat important

1: Not important at all

Our Solution

- Create a mobile application that is :
 - ☐ User-friendly
 - ☐ Of high contrast
 - ☐ Suitable for multiple file types
 - ☐ Able to convert text to speech



Target Specifications

Metric #	Metric	Unit	Marginal Values	Ideal Values
1	Response Time (processing speed)	s	5	3
2	Monthly Cost	\$	5	0
3	File type supported	N/A	JPEG, PNG, PDF	All image and document file types
4	Speed of speech output	WPM	<300	<250
5	Number of voices to choose as the speaker	N/A	3	5
6	Number of languages compatibility	N/A	5	20
7	App OS Compatibility	N/A	iOS and Android	iOS and Android
8	Playback Capability	N/A	Play, Pause, Replay	Play, Pause, Replay

- Initial target specifications set based on client needs

Benchmarking

Application 1: Live Text

- Recognize useful information
- Options to either copy-paste the text, look it up
- Need iPhone XS or later

Application 2: Talkie OCR

- Long scanning time
- Has a monthly subscription Cost of \$4.49

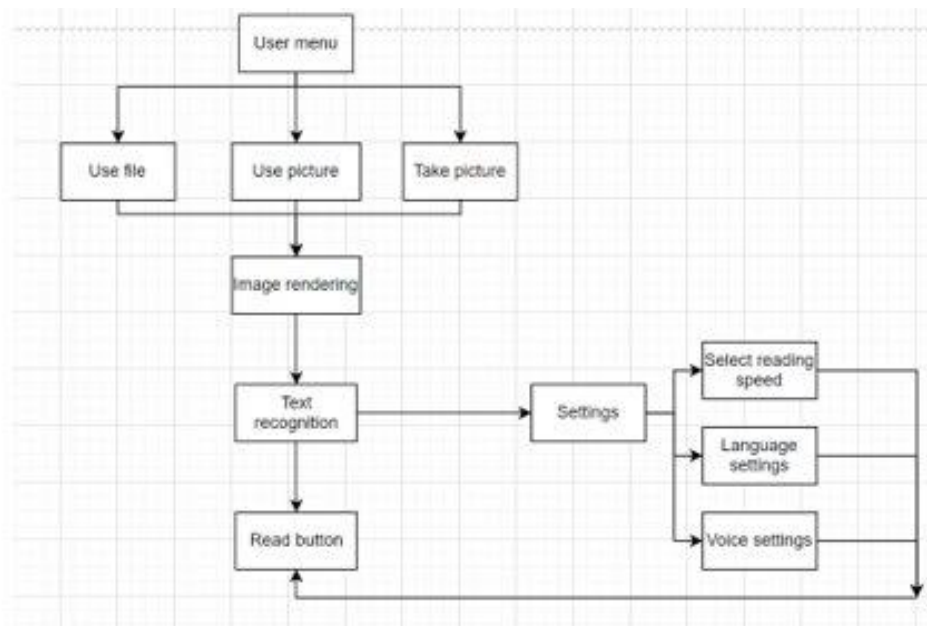
Application 3: Image to Speech

- Has no dark mode feature or high contrast
- Not user friendly: app is very slow

Application 4: Natural Reader

- Not user friendly
- Requires a subscription to access the camera

Final Global Concept



Number	Need	Importance (1-5 Scale)
1	The application will be able to read out loud the text on an image with a reasonable response time.	3
2	The application will be easy to use and of minimal cost.	3
3	The application will allow the user to select common file types from their device.	3
4	The reading speed of the application will be convenient for the reader.	4
5	The application will allow the user to access their camera to take pictures.	3
6	The application will propose different voices to choose from.	2
7	The application will consider more languages to accommodate more users.	1

Business Model

Tripple Bottom Line Business Model Canvas		Designed for: GNG 2101 [C]	Designed by: 4TextToSpeech	Date: March 20 th , 2022	Version: 1
Key Partners <ul style="list-style-type: none"> Investors Renowned ophtalmologists Quality assurance mobile application testers 	Key Activities <ul style="list-style-type: none"> High level application development Communication with customers on a regular basis Constant work in improving the application 	Value Propositions <ul style="list-style-type: none"> Easy to use application with minimal number of clicks Choice between different file types for text to speech Ability to access device's camera to take a picture and read out loud the extracted text Adjust the reading speed from the settings Choose from a selection of voices Multiple languages support 	Customer Relationships <ul style="list-style-type: none"> Ask for customer feedback periodically to improve the application Reward loyalty program for engagement 	Customer Segments <ul style="list-style-type: none"> Individuals with visual impairment Individuals with a preference to listening over rading 	
	Key Resources <ul style="list-style-type: none"> Human (employees to ensure the good fonctionning of the firm) Designers and Developers Financial (Own funds, borrowed funds) 		Channels <ul style="list-style-type: none"> Play Store App Store 		
Cost Structure <ul style="list-style-type: none"> Marketing the application through channels like Facebook, Instagram and Pinterest Equipment (high performance laptops) General and Administrative (salaries for administrative, management staff and HR) 		Revenue Streams <ul style="list-style-type: none"> Subscription: 10\$ per month / 120\$ per year Contribution program to encourage the development of the application Very limited advertising 			

HOW ?

WHAT ?

WHO ?

HOW MUCH ?

Economics

Type	Fixed costs (\$)	Variable costs (\$)	Semi-variable costs (\$)	Direct costs (\$)	Indirect costs (\$)
Production materials				0	
Salaries			6,000		
Rent	20,000				
Electricity	3,000				
Overhead	3,000				

Total: 32,500\$

Income statement: Jan 18, 2023 – Jan 18, 2024

Users: 300

Price: 10\$/month

Type	Amount (\$)	Sub-type
Sales	36,000	Revenue
Marketing	500	Operating expense
Electricity	3,000	Operating expense
Salaries	6,000	Operating expense
Overhead	3,000	Operating expense
Rent	20,000	Operating expense
Production materials	0	Material

- Costs of units sold each year: 0\$
- Gross profit: 36,000\$ - 0\$ = 36,000\$
- Operating expenses: 32,500\$
- Operating income: 36,000\$ - 32,500\$ = 3,500\$

Summary of Client Meetings

- - Text recognition for text with different languages
- - Settings menu branching off any feature
- - App able to change to dark mode
- - Voice with comprehensible pitch
- - Replay Functionality
- - Speech Transition between sentences is not always smooth
- - App sometimes suddenly pauses after punctuations such as periods and comma for longer than expected.

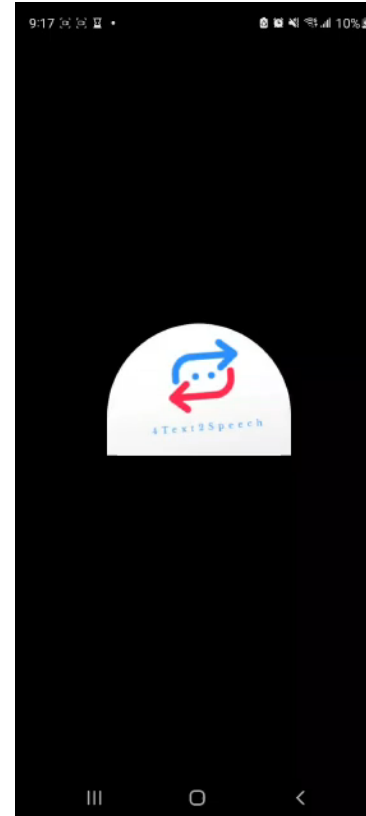
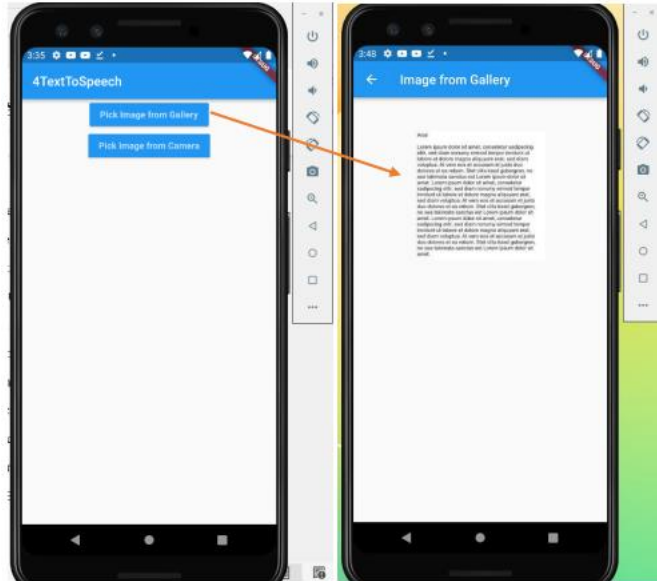
Summary of Client Meetings

- The client was satisfied with the working image rendering feature
- The issues raised by the client in the 2nd client meeting were all addressed.
 - - The use of solid colors for app presentation
 - - The branching off settings in bigger font or in icons

Prototype 1



Prototype 2/3 and Product demonstration

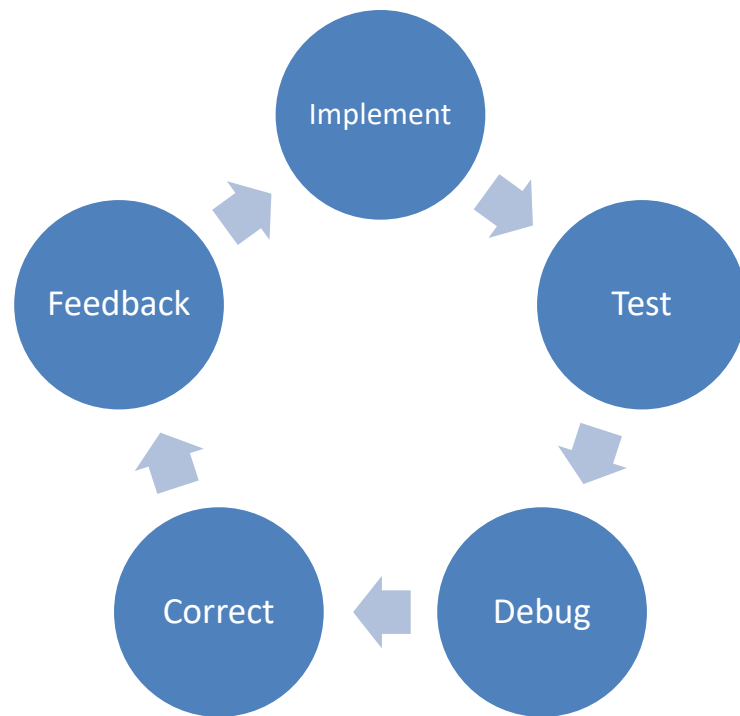


Download app here: [DD_app](#)

Trials and tribulations

- High learning curve
- Audio testing was impossible
- Slow development (flutter is resource intensive)
- More challenging testing in iOS than Android

Lessons learned and future work



Speed
adjustment



Replay
functionality



Support multiple
languages

Any Questions ?