

Kartik Sawhney



Kartik Sawhney is an India-born software engineer at Microsoft working on the Cortana team. He is an alumnus of Computer Science programs at the Stanford University. He is the first person in India to pursue STEAM education. He specializes in AI and human-computer interaction. He established I-Stem, a New Delhi based self-advocacy group to enhance STEM education resources to students with disabilities. He is also a founder of the NextBillion.org, an award-winning online platform which provides personal mentorship to people with invisible and visible disabilities.

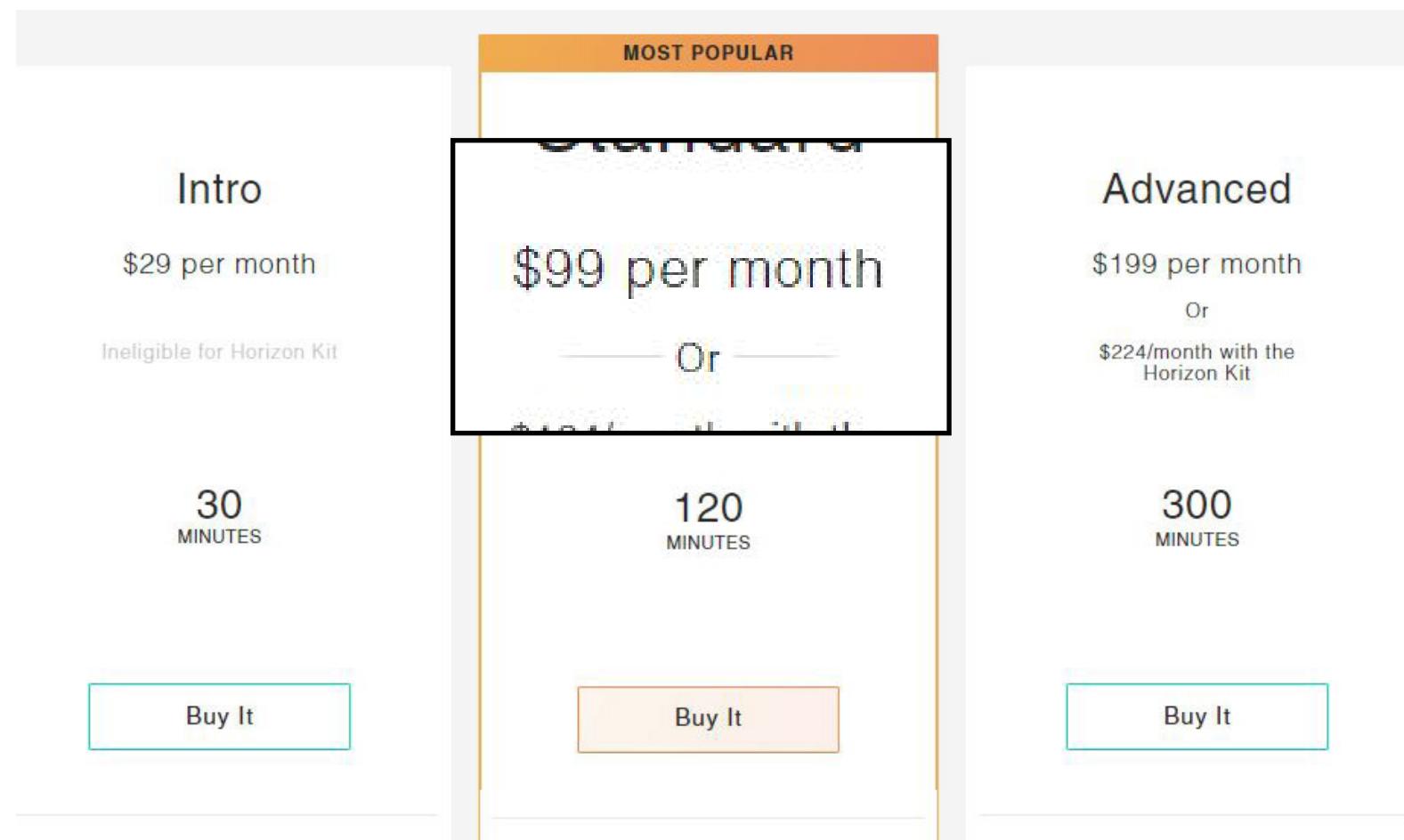


So we're on a mission to provide instant access to information for anyone, no matter where they are in life's journey.

Aira: current solutions

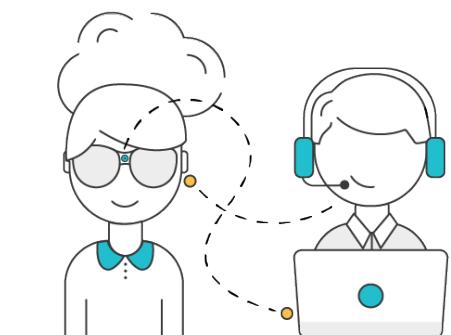


Costly
‘Most popular’ solutions at \$99 per month.



Mechanism

users



trained
agents

Strength	Weakness
Professional	Costly
Instantaneous	Latency
	Extra Hardware

Challenges

Design **low cost, safe, and efficient** assistive solutions for people with Impaired visibilities by enhancing the **connection** between demander and helper.

In-person assistance

In comparison to remote-virtual assistance, in person assistance provides easier **face-to-face interaction, proximity, and immediacy**. It also avoids situations where **embarrassment** is led.

noisy public transit...

quiet public space...

emergency where one can't speak...

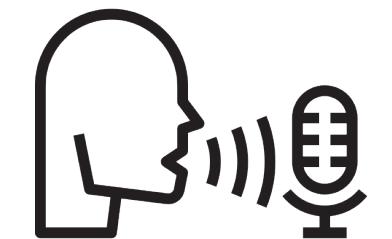


Visual – Assistance

We – Community



Human Senses



Voice



Haptic

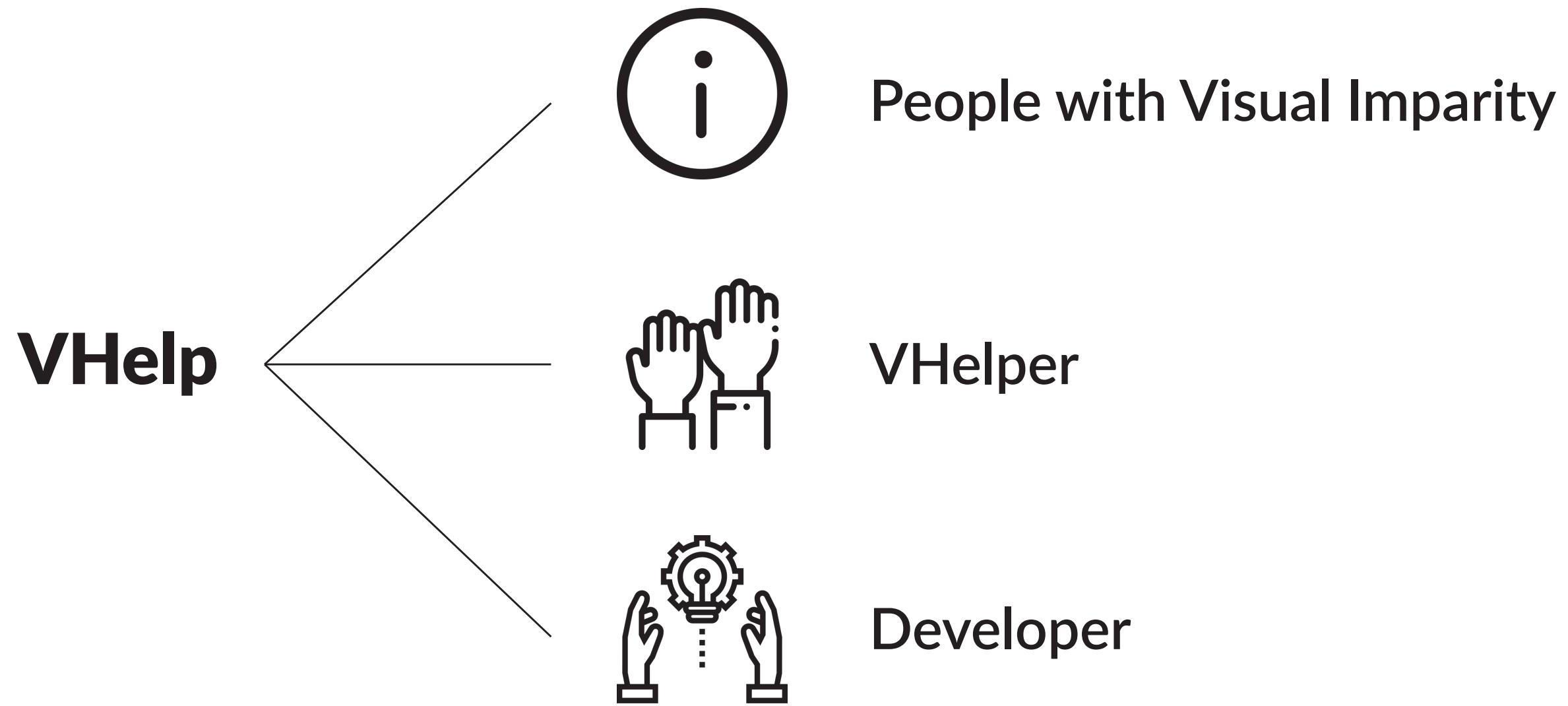
Mobile App (VUI)

&

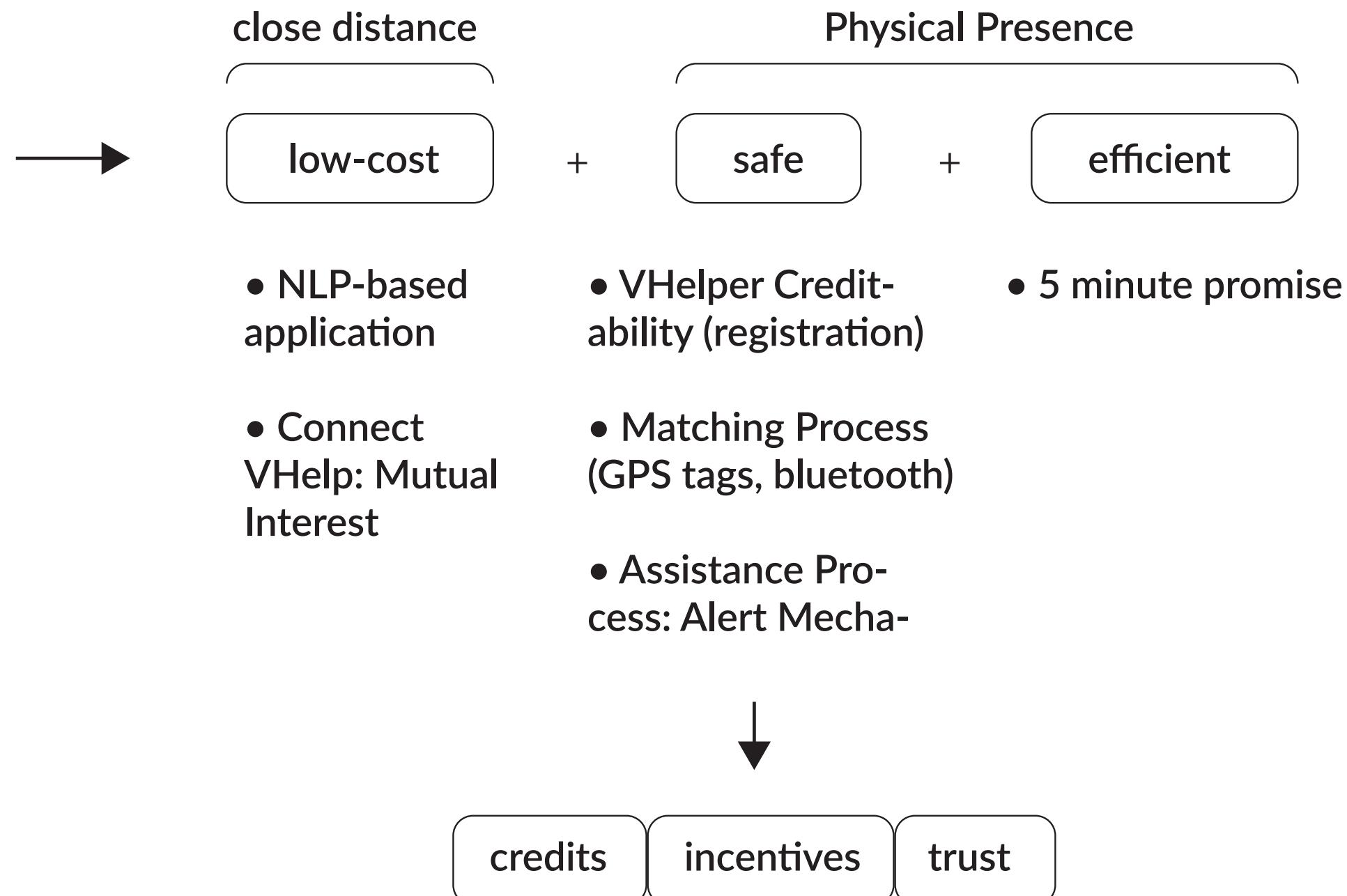
Smart Phone Attachment



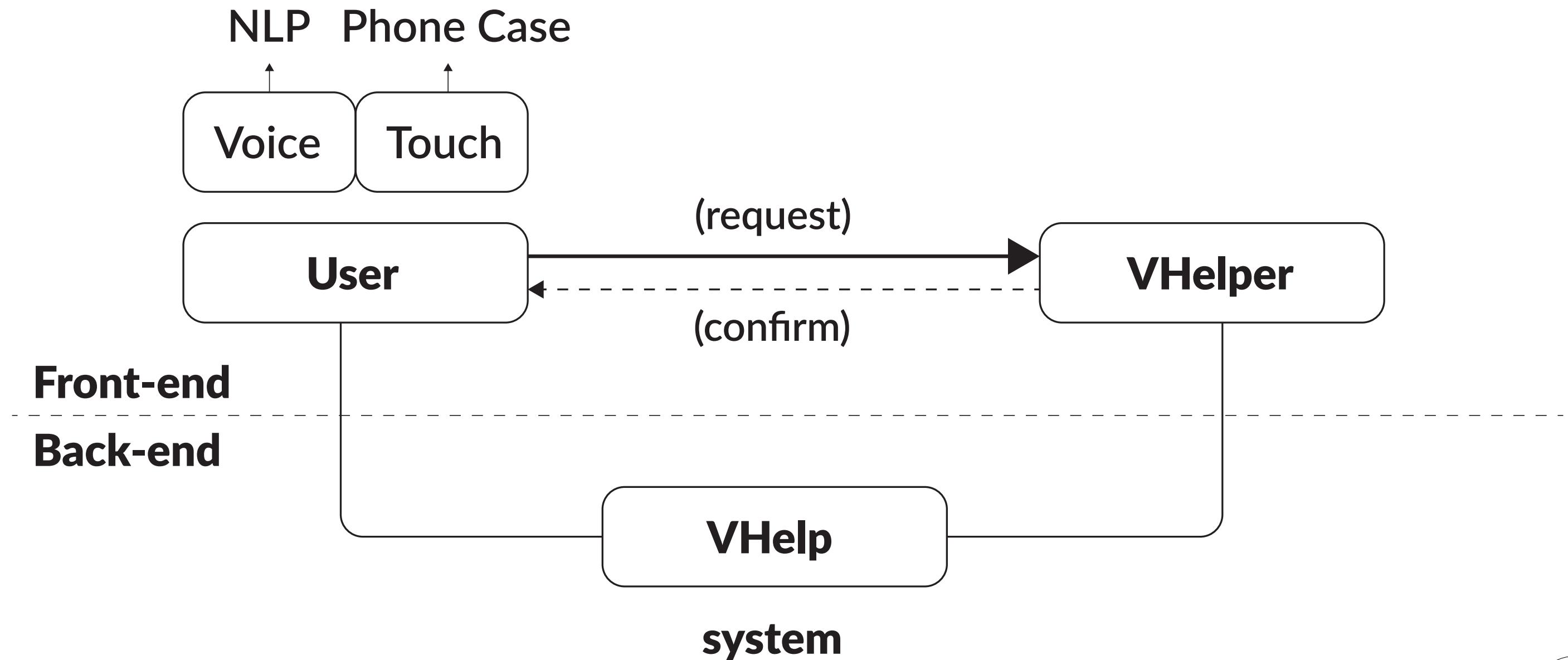
VHelp Community



Characteristics



System Architecture



UX

User side



System

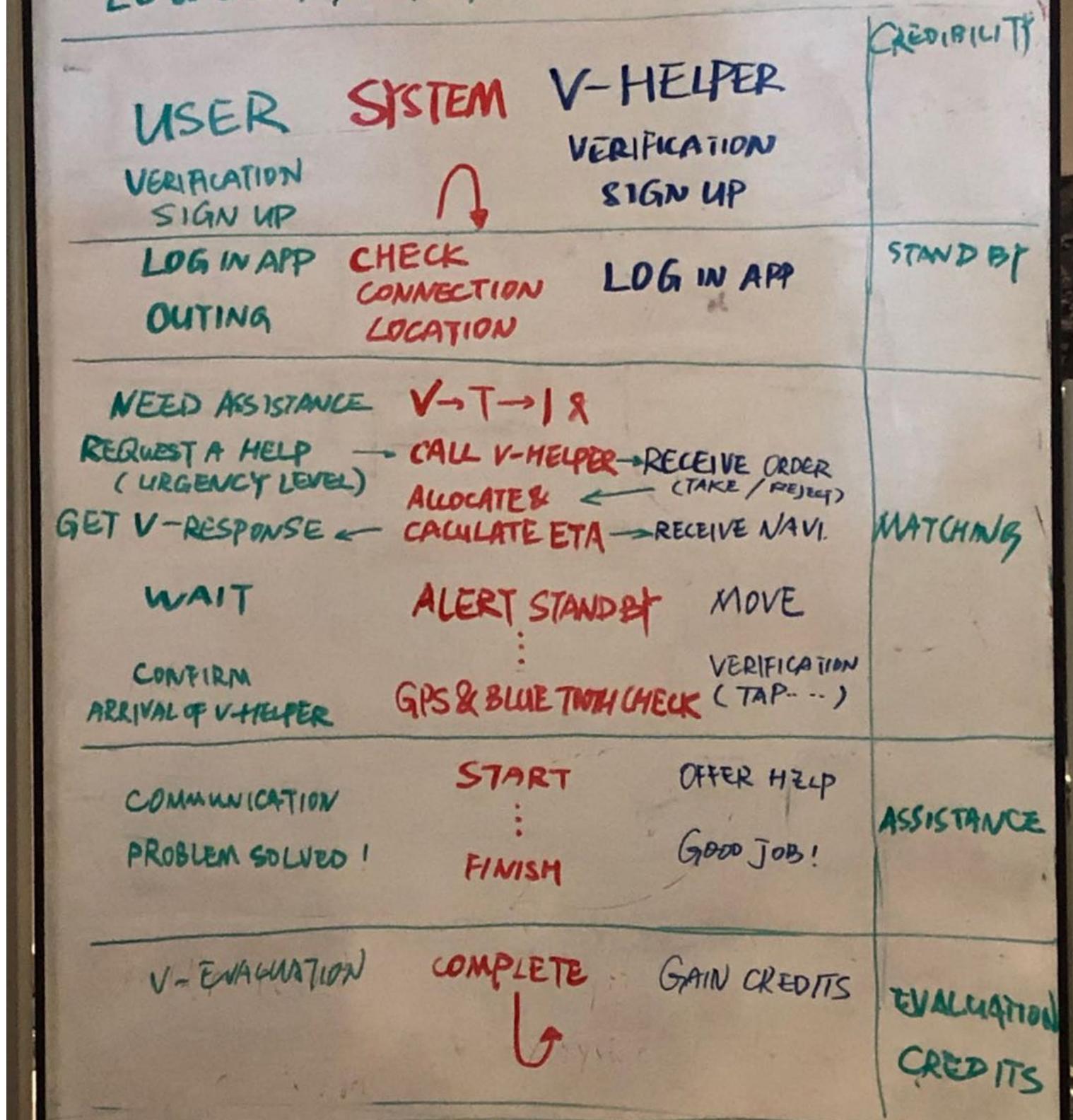


VHelper

V-HELP

VISUAL-ASSISTANCE
WE-COMMUNITY

LOW COST, SAFE, EFFICIENT

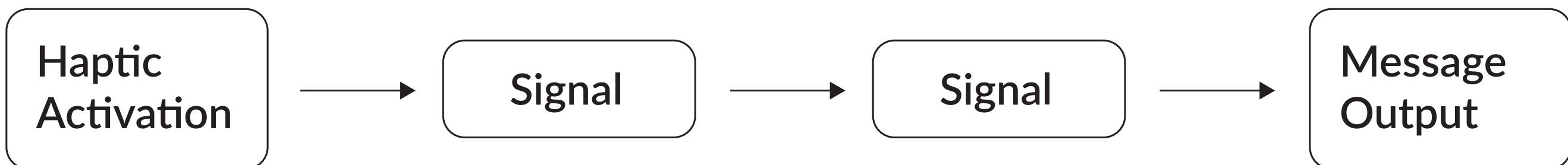


Algorithm Overview

Voice



Non-voice



Tech Stack

- We used Google position services API to grab real-time precise position data of the users and volunteers
- We used Google speech-to-text API to tackle Audio input problem
- Used Andriod positioning service to grab the position of users
- Used firebase to receive updates of user positions, for the Google Cloud backend to perform matching later on
- Provide navigation service to volunteers, facilitate them finding the users
- Use real-time sentiment analysis to monitor potential

System Conversation

'Kartik' is asking for help to 'find the way to Union Square'

It will take about 15 minutes. Lend a hand?

yes

not this time.

user

system

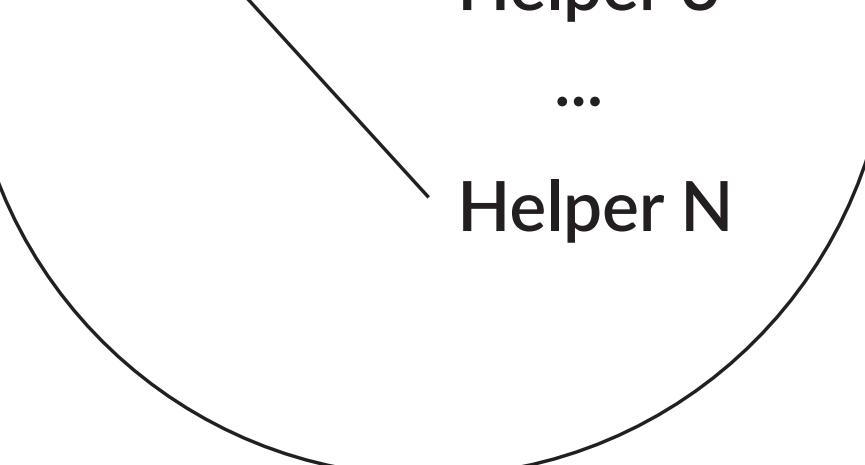
Helper 1

Helper 2

Helper 3

...

Helper N



Task Categorisation

- street crossing
- indoor navigation
- outdoor navigation
- load carrying
- emergency
- object identification

Conversation Design

System

User

Hi VHelp, I need a help!

(call up)



Hi, how might we help?

(task description ...)

Got it – how long will it take?

about ... minutes

Great! we are connecting a VHelper
to help you. Please give us a second.

Conversation Design

(matching)



'VHelper' is on the way to help. He/
She is arriving in ... minutes.

'VHelper' is close to you, please let
us know if you find him/her.

yes

no

Thank you.

We are finding another Vhelper to
help you now.

Haptic Functions on Smartphone Case

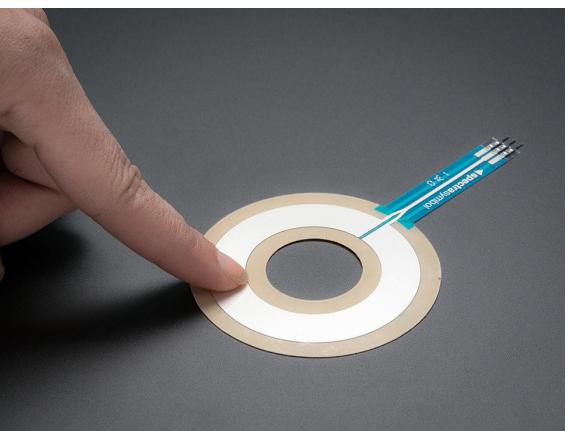
Kartik: “Smartphones are major assistive tools for people with visual impairment...”

Convenience	✓
Size	✓
Cost	✓
Agility	✓
Comfort	✓
Integrability	✓

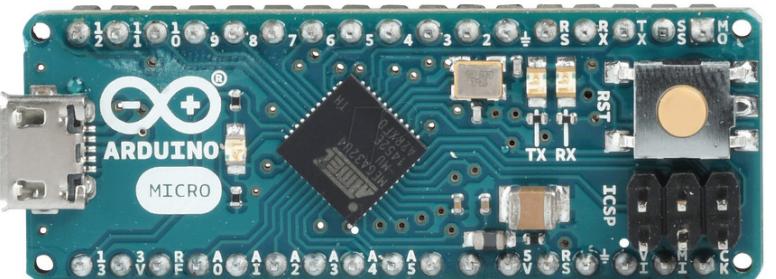
Prototype



Bluetooth
module



position sensor



micro-controller

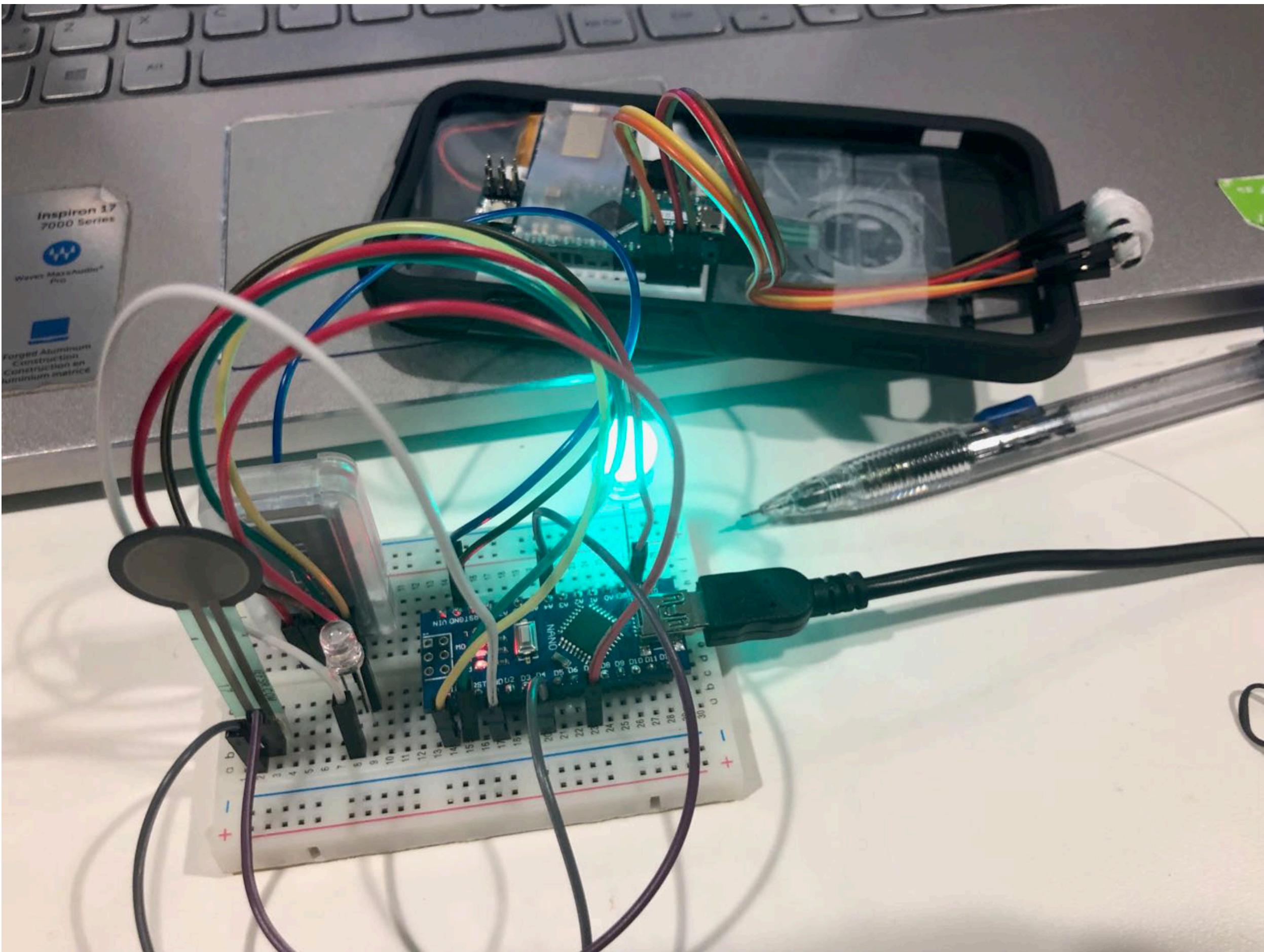
phone case (front)



phone case (back)









Business Model

VHelp is operating as a **social enterprise**

Users pay \$6.99 monthly service subscription fee, and
VHelpers get credits by minutes they spend in helping users

The product will provide **open source data** for research and development for other assistive or disability related applications.

