# Leveraging AI and Smart Context to Dramatically Improve HCI and Assistive Communication Technology

Creating a novel assistive communication application that learns based on user context

## The Problem

The need for assistive communication is increasing, but the existing applications and speech-generating devices have several drawbacks:

- Outdated Design: Laborious device navigation
- Steep Learning Curve: Therapists, families, and users struggle to navigate these devices/applications
- Slow: Hunting and pecking through screen options slows down conversation
- Lacks Emotion: Robotic voices
- Not Adaptable to Multiple Cultures/Languages
- Insurance Reimbursement Reliance: Long and tedious insurance reimbursement process, resulting in competitors not penetrating 97% of the global market
- Expensive: Prices as high as $15,000 per device
- Stagnant: The same all the time, all changes require manual input. Not user or family friendly

## Solution

Dramatically improve human computer interaction (HCI) for users of assistive communication by creating a novel, user-friendly application that is accessible in price, intuitive to user needs, and relies on smart context to adapt to the user's environment so they can participate in everyday conversations more naturally.

## Benefits

- Decrease abandonment rates
- Increase accessibility of assistive communication technology in low-resource communities
- Reduce learning curve
- Create software that adapts to the user, not software that forces the user to adapt to a device

*Basic communication is a human right.*

*Multidimensional communication is our human quest.*

## Market Scenario

More than 2 million adults and children in the United States benefit from assistive communication, including those with:

- Congenital disabilities (e.g., intellectual disability)
- Acquired disabilities (e.g., 795,000 Post-stroke victims, Parkinson's Disease, and Laryngectomy)
- Neurological differences (e.g., 1 in 44 children have Autism Spectrum Disorder)

## Defining AAC

Augmentative and Alternative Communication (AAC) incorporates all the ways that someone communicates without using their voice. People of all ages can use AAC if they have difficulties with speech or language skills. Augmentative means to add to someone's speech. Alternative means to be used instead of speech. High-tech AAC includes Speech Generating Devices (SGDs) and mobile applications.

**Inventors and Departments**

Joan Esse Wilson, Ph.D., CCC-SLP
*Communication Disorders, NMSU*
Tianna Zambrano, M.A., SLP-CF
575.519.4448
hzcommunication@outlook.com

**Arrowhead Center, NMSU**

Office of IP and Tech Transfer
575.646.6120 or ip@nmsu.edu
arrowheadcenter.nmsu.edu

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## Innovation

Smart context is our application's novel ability to contextualize, learn, and make predictions based on the user's current situation:

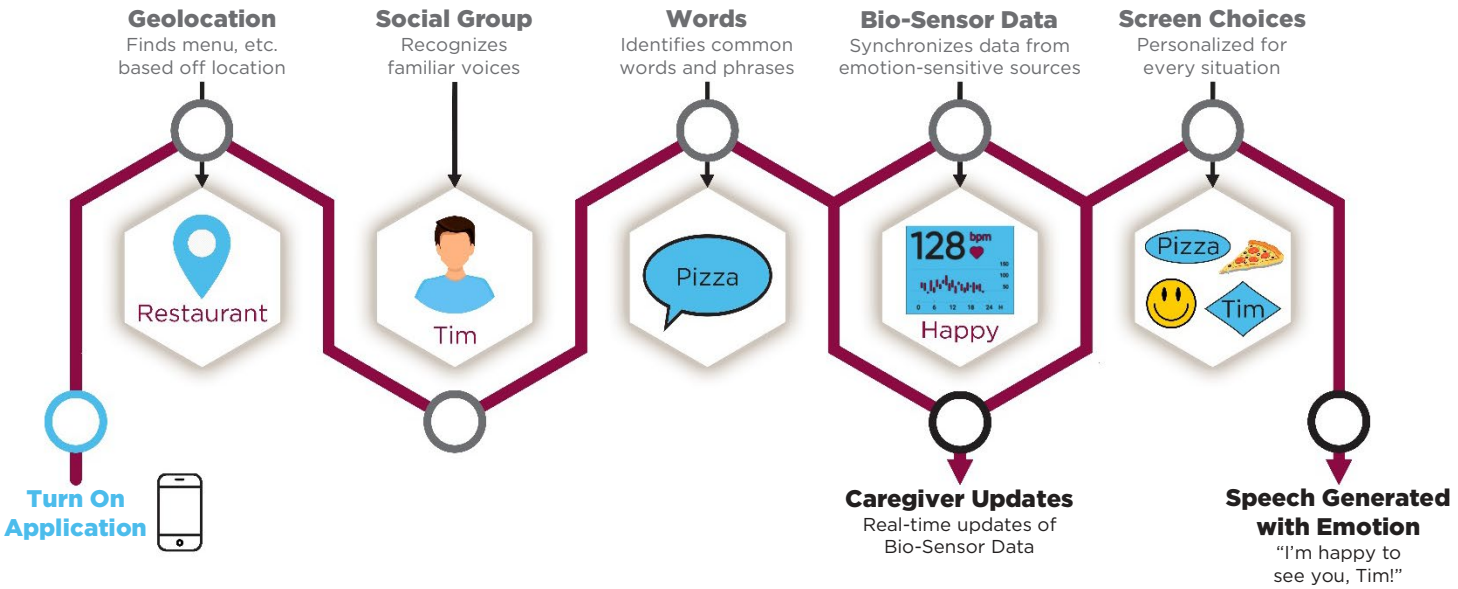
- Location
- Social group
- Words and Phrases
- Emotions
- Needs
- And more!

Our novel synchronization of information from emotion-sensitive sources (facial expressions, vocal acoustics, heart rate, and electrodermal activity) adds emotion to speech generated by application and provides user options for emotion word choices.

## Milestones

- Validated Product Need with National Survey of 76 Speech-Language Pathologists
- Crowd Favorite Award – Aggie Shark Tank
- Hunt Foundation Award – Aggie Shark Tank
- Utility Patent Application 17/983,178
- Created Haptech Zown Communication
- Identified Development Resources
- Established Network of Schools for Prototype Testing

HAPtech
zown communication





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