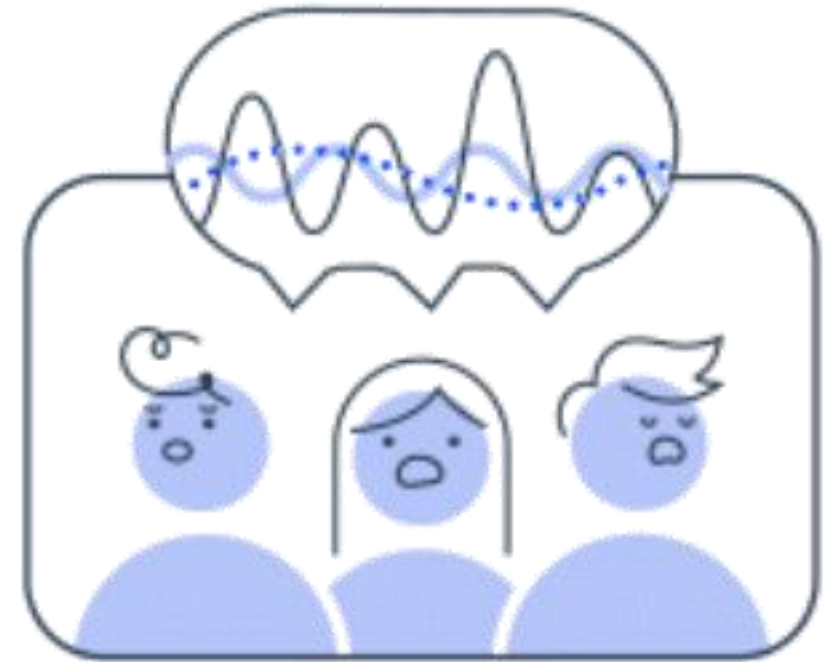




Cutting Through The Noise With innovative Voice Interaction Technology

# What we are about

**Voice Interaction Technology**  
that allows people to  
seamlessly interact with  
machines even in **the noisiest**  
**environments** and **multi-**  
**speaker scenarios**



# The Pain We Solve

Ever tried to speak to your infotainment system or voice assistant while driving your car with the radio's on OR did you ever try to listen to your boss during a video conference call while your kids yelling in the background?



**Reduce Frustration**

Caused by today's VUI's insufficient capability to properly "listen" to our voice commands in typical conditions



**Gain Trust**

Seamless experience results in increased usage



**Increase adoption & demand**

Trust leads to increased demand in your product



# Value Propositions



## Unparalleled Voice Activation

Captures the user's voice, not passersby or ambient noise



## Seamless Speech Transcription

High-quality transcription even in a low SNR (0dB) regime



## Clear Audio Experience

Individual speech isolation of up to 30dB



## Hardware Agnostic

Supports any size/shape of mic array. On-edge or cloud-based processing



# How Kardome Solves This Pain

## A different approach to dealing with noise

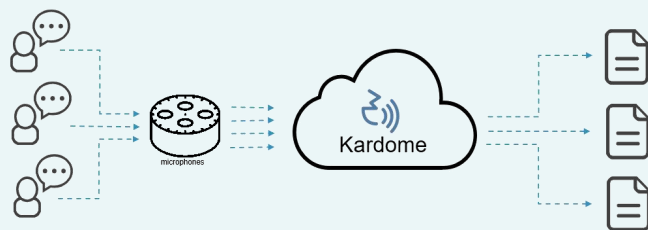
We replace traditional beamformers with **AI source separation algorithms**, allowing us to produce over **90% better voice activation results**



# Traditional Beamforming Vs. Kardome

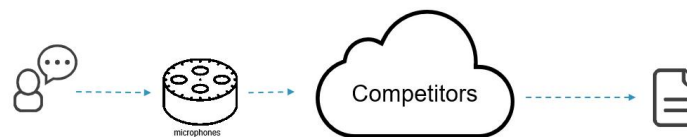


**Multi-User Speech to Text**



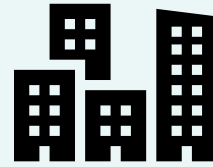
**Competitors/beamforming**

**Single-User Speech to Text**

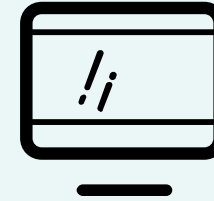


# Target Industries

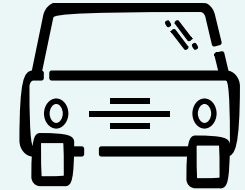
We change the way people interact with machines in a vast variety of industries and verticals



SMART HOMES



SMART TV's &  
GAMING



MOBILITY



HOMELAND  
SECURITY



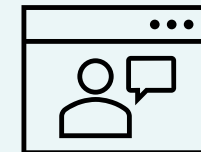
SMART SPEAKER  
/ VPA



CONSUMER  
ELECTRONICS / IOT



DATA ANALYTICS



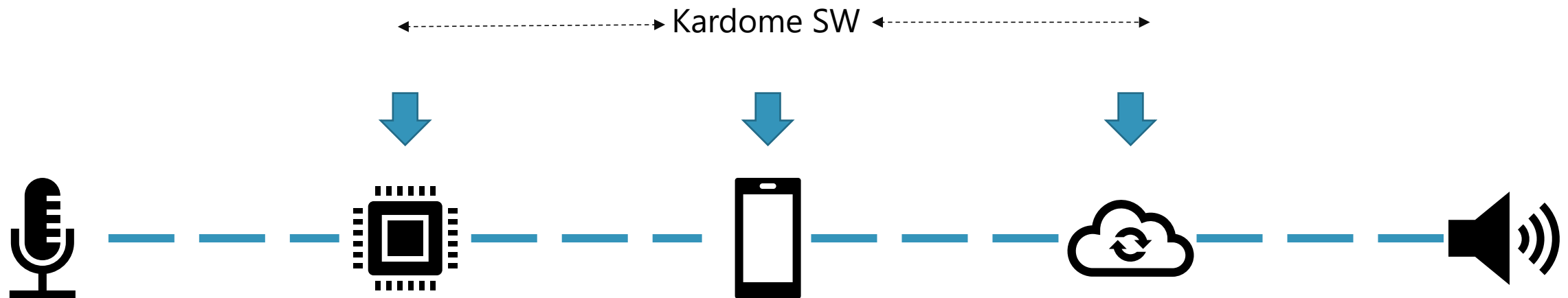
VIDEO  
CONFERENCING



INTERACTIVE  
KIOSK

# Voice Stack

## Either embedded or on cloud





# Mallet™ Kiosk solution

## Performance & Benefits

- ✓ Improved Communication Regardless Of Acoustic Conditions
- ✓ Clear Multi-Speaker Voice Recognition
- ✓ Easy Installation For New And Existing Kiosks

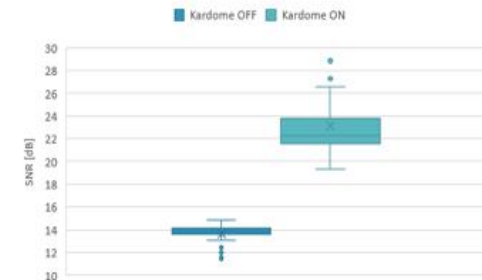
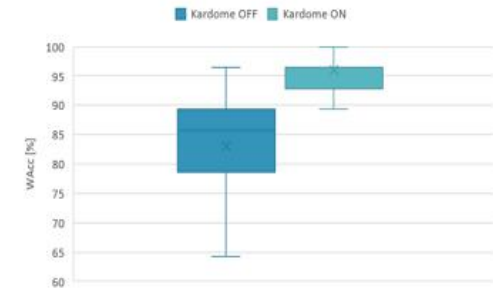


Speech recognition

82% → 96%

Noise reduction

10 dB



# Mallet™ Kiosk Solution

## Kardome's Designed VUI solution for Interactive Kiosks

### Features

R328-S3 Dual-core ARM Cortex A7 Processor  
8-microphone array  
High performance Digital MEMS microphones  
Low Distortion of 3% at 112.5dB SPL  
Signal-to-Noise Ratio of 64.5dB(A)  
Flat Frequency Response 20 Hz – 20 kHz  
8 indication LEDs and 1 multi-purpose push-button  
Reset, push-button

### Connectivity

USB - Micro USB  
USB Audio Class 2.0 driver for Windows  
3.5Φ Stereo Line out  
UART

### Mechanical dimensions

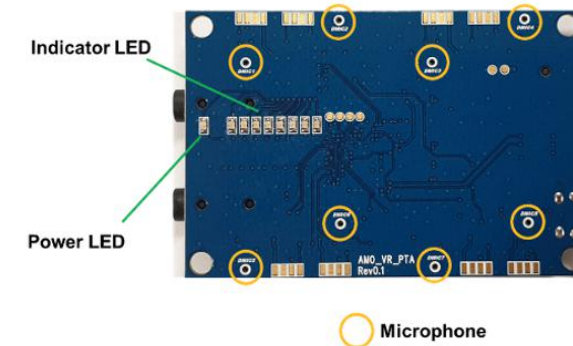
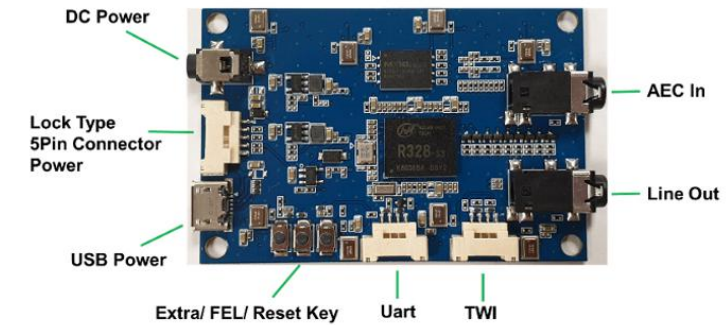
Length and Width - 60 \* 40 mm  
Weight – 9.7 g

### Electrical specifications

Powered by USB port, DC Jack, Lock type 5 Pin Con.  
Current consumption - 150 ± 50 mA @ 5V  
Operating voltage - 5 ± 0.5 V

### Environment specifications

Operating temperature - 0° to 70°C  
Relative humidity - 0% to 80%, non-condensing



# Clear Audio Experience

A range of advanced and powerful capabilities

## Speech Enhancement

Interfering noise is eliminated by more than **15 dB**, leaving only the voice of the user heard

## Wake-up word

Ignoring irrelevant speech and reacts only to an agreed keywords or phrases (which can be your product name or brand)

## Vocal feedback

Equipped with a 3.5Φ Stereo Line output jack, through which your product may play voice instruction and feedback

## Voice commands

Recognizing a set of voice commands for rapid execution

## Echo-canceller

Voice feedback from your product can be ignored using built-in echo canceller

## Voice Activity Detector (VAD)

Ultra-low power consumption is achieved using standby state which is controlled by VAD



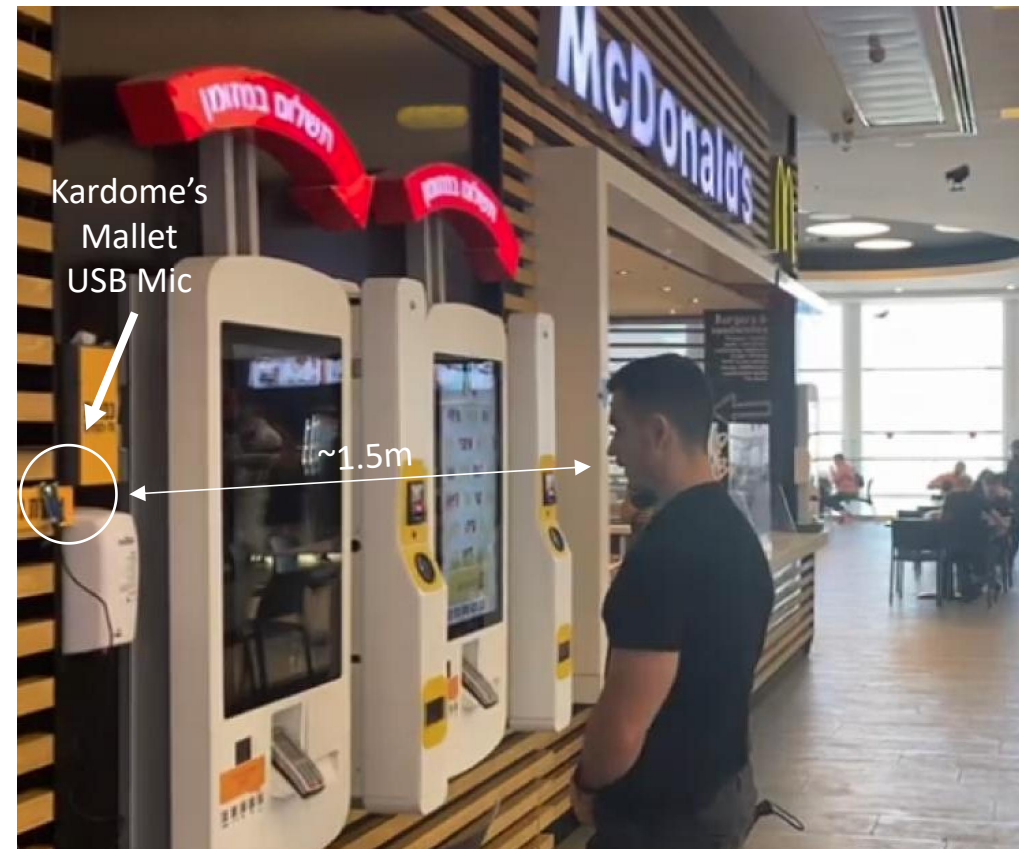
# Demonstrating Kardome's Mallet™ Kiosk solution in a shopping mall

## Experimental Conditions

1. Demonstration took place in a shopping mall
2. Kardome's USB Mic ("Mallet") was positioned ~1.5m from the speaker who was given a fixed transcript
3. We tested Kardome's ability to capture speech in reverberant and noisy conditions
4. To challenge our algorithms, we positioned a playing speaker next to our the Mallet
5. Mallet's connected to Google's ASR engine

## Given transcript:

*I will have "Big Mac", no cheese, Large French fries and a diet coke. I will pay with my credit card*

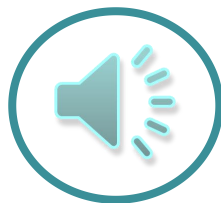


# Experiment's Results

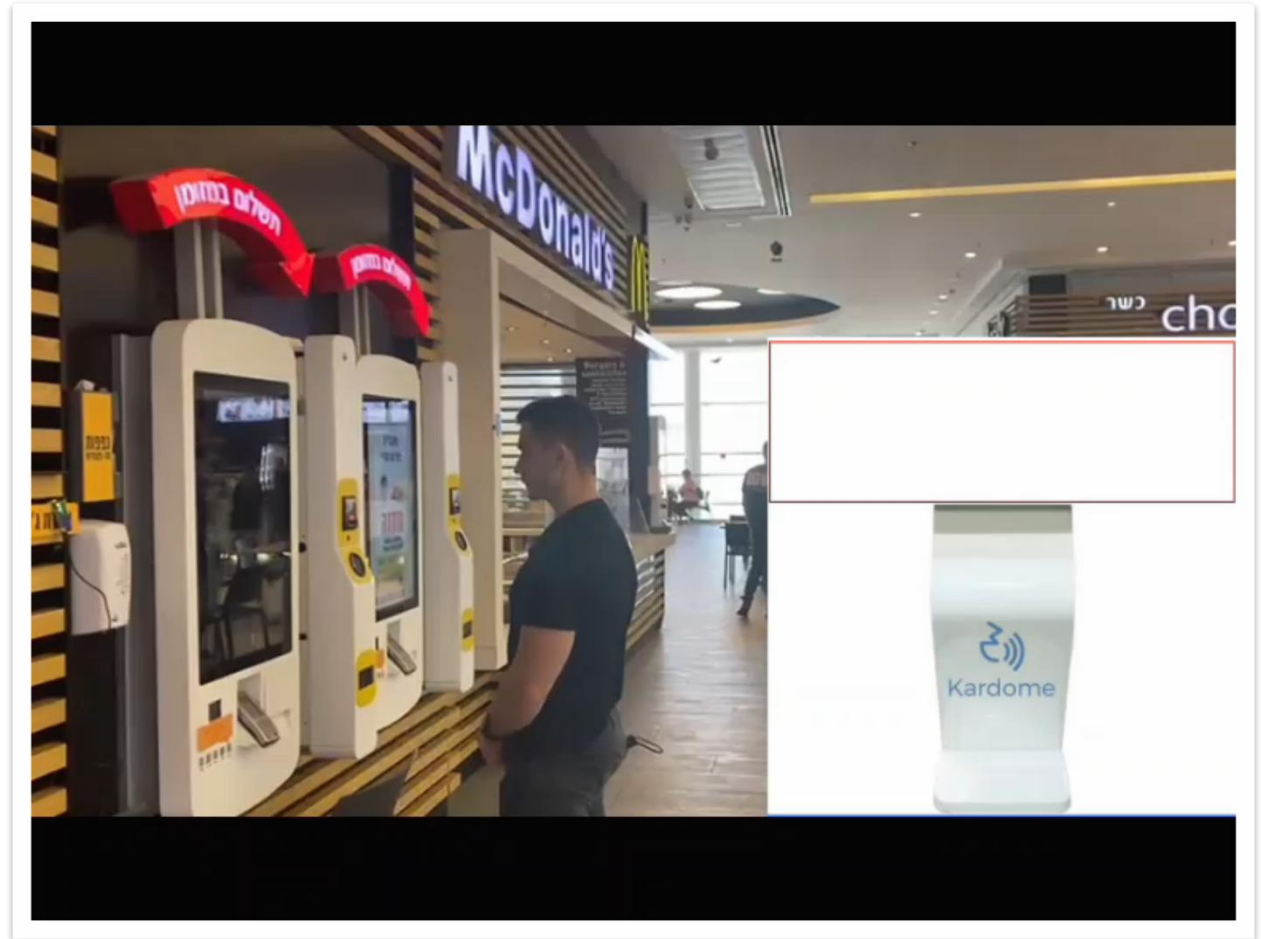
**WER (Word Error Rate)**  
**With Kardome on = 0%**



Original



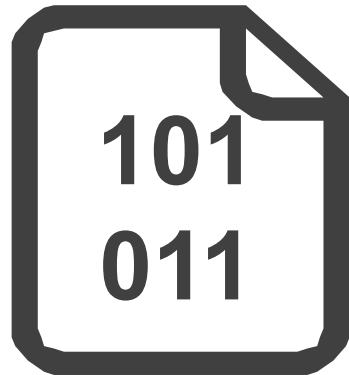
Kardome Output



[Play video]

# BUSINESS MODEL

SW Licensing



Embedded software for devices

SaaS



Cloud services accompanying cloud speech recognition services



# ABOUT US

**A clear voice  
interaction technology  
for acoustically  
challenging  
conditions**



Generating  
revenues



Superior technology  
based on years of  
research



Embedded / Cloud  
SW solution



Granted IP  
portfolio



Experienced Team  
(30% Ph.D.)



VC Backed

## Partners & Investors

**NEXTGEAR**  
VENTURES



 alexa fund

**ATOORO**  
FUND





# TRACTION



RENAULT

*DENSO*

amazon



Mahindra

CEVT

A Geely Auto Company



HARMAN

MOBIS



AMO  
A M O S E N S E



HANCOM  
HANCOM Inc.

selvas  
AI

e l T O V

ANDREA

LG U+





# THANK YOU

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