



Bluetooth Headsets as a Voice Search Client
Todd Mozer, Sensory



Who is Sensory?

- **Speech technology for consumer products**
 - ~200 products to market
 - >60M sold at retail
- **Fabless IC & SW licensing biz models**
 - #1 market-share in speech recognition chips
 - #1 market share in voice biometric chips
 - Leader in bluetooth headset VUI design
 - Expertise in small footprint embedded speech
- **Strong patent and IP position**
- **Highly experienced in speech application design**
 - Focused on consumer electronics, toys, and bluetooth headsets and HFK's

Improving the User Experience for Over 14 years!

Why are Bluetooth Headsets Important?

- **Headset is first stage of entry into phones & servers**
 - Great for reinforcing keyword commands
 - “Call Goog-411”, “Purchase music”, etc.
- **Large volume/wide usage product**
 - Hitting 100M units annually in 2008
 - Double digit growth forecasts
- **First major VUI based consumer electronic product**
 - No keyboard, no display, no room
 - Mic & speaker embedded into product
 - Headsets getting smaller
- **Optimal environment for capturing voice**
 - Great S/N ratio
 - Beamforming, echo cancellers, noise reduction already deployed

The Voice Search Chain



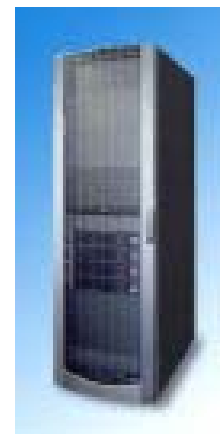
Headset

- Local control
- Simple dialing
- Info access
- voice search client



Handset

- Name dialing
- Music search
- Location search



Server

- Business Search
- Purchasing MP3's

Each platform has key functions it can best provide

Why a VUI for Headsets?

- **Form factor**
 - Lightweight and compact size desired
 - No room for a display
 - No room for a keyboard
- **Driving safety**
 - Hands on the wheel
 - Eyes on the road
- **Convenient feature & information access**
 - Buttons too few and difficult
 - Access to phone based VR
 - Access to server based VR
- **Ease of use**
 - The most natural way to communicate
 - No manual necessary

Bluetooth Headset Value Added Features through Voice I/O

- **Basic access to information**
 - Press button & make requests
 - One button many functions
 - Example: “What can I say?” “Am I connected”, “Check battery level”
- **Handsfree control**
 - Respond to voice-prompts to create action
 - Example: Incoming call from 408 625-3325, would you like to accept?
- **Voice Dialing**
 - Favorites
 - Preset names
 - last number redial
 - Call back last incoming call
 - Continuous digit dialing
 - Examples: “call back” “call home” “call voicemail”
- **Voice setting of controls – great for music**
 - Volume, tone, song, etc.
- **Voice prompting instead of “beeps”**
 - Confirmation of incoming and outgoing phone numbers or names
 - Natural sounding voices available in any language
 - Easier to interpret than beeps and flashes

The Voice Search Chain



Headset

- Local control
- Simple dialing
- Info access
- Voice search client



Handset

- Name dialing
- Music search
- Location search



Server

- Business Search
- Purchasing MP3's

Headset to Handset Example: "Name Dial"

- Headset sends audio link to handset & calls app
- Handset gives voice prompt "What name?"
- User speaks name "Barack Obama"
- Handset confirms and dials "Calling Barack Obama"

BlueAnt V1

with BlueGenie™ Voice Interface



BlueAnt®

**World's first
Voice Controlled
Bluetooth Headset**

**V1 DUAL MIC
VOICE CONTROL**

Bluetooth innovator BlueAnt Wireless yet again comes through with cutting edge technology in a format for the masses. The BlueAnt V1 Voice Controlled Headset allows users to easily control most functions of their Bluetooth headset using the revolutionary BlueGenie™ Voice User Interface. Talk to it and it talks to you. Ask it for assistance and it will help you get the command you want. No longer will Bluetooth headset users struggle to remember combinations of button pushes, hold for 3 seconds, 5 seconds etc. One button gives you control of the entire function set of the V1, in an easy to use voice interface.

Voice Controlled functions available in the BlueAnt V1

> Answer Call	> Enable Pair Mode
> Ignore Call	> Check Battery
> Redial	> Check Connection
> Call Back	> Activate Phones Voice Dial
> Call Favorite 1 - 5	> Help Menu
> Call Home or Office	> Settings Menu

Plus many more...

www.blueantwireless.com

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by BlueAnt Wireless is under license.

Voice dialing can be performed by headset, handset or server

User can say:

- “Call Speed Dial 1”
- “Redial” or “Call back”
- “Call Home” office, voicemail, etc.
- “Name Dial...Barack Obama”
 - Goes to phone recognition
- “Call Goog-411”
 - Goes to server recognition
 - Google calls US business

Example: **Stereo Bluetooth Headset**

- **Headset uses voice to remap up/down buttons**
 - “adjust volume”, “adjust tone”, “adjust balance”, “fast-forward/rewind”, etc.
- **Headset accesses Handset for song search**
 - “music search...My Humps by the Black-Eyed Peas”
- **Headset accesses Server for music or ringtone purchase**
 - “Purchase music...Crash Into Me by DMB”
- **Voice Commands Reinforced on Headset**
 - What can I say?
 - You can say ‘Purchase Music’



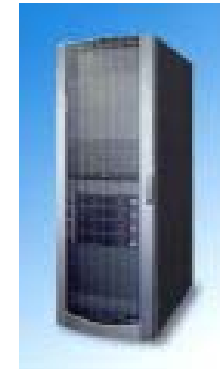
Headset Initiated Search Provides



Headset



Handset



Server

- **Seamless voice user interface**
 - Safer
 - Easier
- **Better S/N gives better accuracy results**
- **Reinforced voice usage models**
 - “you can say...”
- **Best of all paradigms recognizers**

***Give Bluetooth Headsets
the Recognition they
Deserve!!!***

Thanks!

