Bluetooth Headsets as a Voice Search Client
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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
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**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

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

- 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!