

# Mobile Voice Computing for 'Easy Rider'



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Mobile Speech  
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# Who is 'Easy Rider'?

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# Overview of Presentation

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## ■ **The Need**

- Who rides a motorcycle?
- What types of electronic equipment do they want to use?
- Why do motorcyclists need a different interface?

## ■ **Some Solutions**

- Commercial products
- Research projects

## ■ **How might this effect you?**

- How to make your application ‘motorcycle friendly’



# Who rides a motorcycle?

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# Who rides a motorcycle?

(MIC, 2008)

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- 25 million Americans rode a motorcycle in 2008, up 7% from 2003
- Baby boomers outnumber Gen Y riders 2:1 but the latter group grew 62% since 2003
- 25% of riders are women, up 28% from 2003
- Primary reason for riding is recreation but basic transportation is 2nd and short distance touring is 3rd
- Touring riders spend an average of \$620 a year on their bike and equipment



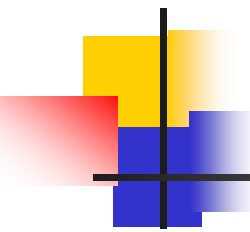
# Who rides a motorcycle?

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What types of electronic  
equipment do they want to use?

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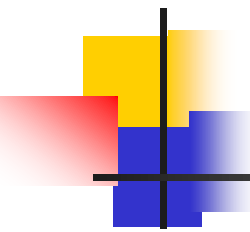


# What types of electronic equipment do they want to use?

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- Cell phone
- GPS
- Intercom – rider-to-passenger, bike-to-bike
- Recorded music
- Radio
- Text messaging





# What types of electronic equipment do they want to use?

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- According to a 2008 MAIX survey (Mowatt, 2009), drivers using speech to control in-car systems also wanted:
  - Traffic information (42.7%)
  - Weather information (39.7%)
  - Finding a business (37.3%)
  - Searching the web for generic information (33.7%)
  - Searching the web for location-based services (32.1%)

# Why do motorcyclists need a different user interface?



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# Why do motorcyclists need a different user interface?

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- Hands-free – Consequences of one-handed driving in critical situations are severe
- Eyes-free – Change in line of sight necessary to look at a display is significant
- Limited dexterity – Key pads and touch screens are difficult to use with gloves on
- Acoustics – Environmental noise, helmet acoustics



# Some Solutions

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# Commercial Products:

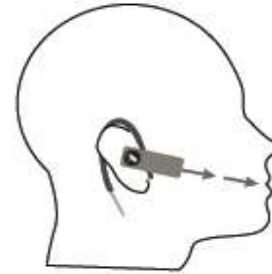
## Voice output – Limited voice input

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- Helmet mounted intercom units interface with Bluetooth equipment, including phones with voice command capability
- Garmin's Zumo660 motorcycle oriented GPS with voice output and interface for phone with voice command capability
- AT&T Navigator works on AT&T smartphones equipped with GPS. Users can speak the name of more than 10 million businesses

# Commercial Products: Voice control headsets

- BlueAnt's Q1 headset
- Dual microphones for noise cancellation
- Works with up to 8 different Bluetooth devices, e.g., phone, GPS, music
- Uses Sensory's BlueGenie technology
  - Speaker independent recognition
  - Text-to-speech
  - Hands-free continuous listening
- Unfortunately no helmet mounted version yet



# Commercial Products:

## Integrated into the vehicle

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- Users of Ford's built-in SYNC can access communications and entertainment systems using voice commands:
  - Hands-free calling
  - Turn-by-turn navigation
  - Music search
  - 911 assistance
  - Real-time traffic
  - Audible text messages
  - News, sports, and weather



# Research

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- Toyota funded study to examine effect of matching car's voice emotion to that of the driver (Nass, 2005)
- Examination of fatigue caused by voice-alone interfaces (Nishimoto, 2005)
- A persistent interface that provides driver with an intelligent assistant (Reisinger, 2005)



# Research: EC 'MoveOn' Project

([www.m0ve0n.net](http://www.m0ve0n.net))

- EC funded project working on a zero distraction interface for motorcyclists
- Focus is police motorcyclist needs but the results will be applicable to all
- Tasks include:
  - Creation of a speech corpora in 3 languages
  - Creation of a noise database
  - Design of a communications and head nods-enabled helmet





# Ways to make your application 'motorcycle friendly'

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- Use a recognizer trained to handle noisy environments
- Never require touch-tones or assume they are the preferred alternative when recognition is poor
- Be sensitive to the user's environment and activity when writing prompts and grammars
- Match the VUI to the user's behavior
- Use what you know about the caller
- Test your application in a wide variety of environments
- Make sure your voice commands work through a Bluetooth type interface



# Summary

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- There are a lot of motorcyclists out there and they may want to use your application while on the road
- Products that are voice-enabled are easier to use and often preferred
- Making your application ‘motorcycle friendly’ often means making it better for all users



# Thank you

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