Mobile Voice Search Expands Telematics Opportunities

Amit Desai, VP Products
Dial Directions
Dial Directions Snapshot

• Team of speech recognition experts (co-founded Voxify)

• Dial Directions in the news

• Industry recognition
  – (Overall Winner) “Under the Radar” Mobility Conference 2007
  – (Winner, Consumer) SiRF Location 2.0 Conference
  – (Runner-Up) TeleAtlas LBS Innovators

• Business development (announced)
Potential for New Speech Services

Advances in Speech performance
  – Accuracy (domain-specific & general voice search)
  – Speed

+ Connected devices
  – Mobile phones
  – Personal navigation devices or “PNDs” (e.g. Dash)

+ Better device UI (touch, visual)
  – Touch
  – Visual

= Innovative Consumer Services in Telematics & more
Multiple Speech Solution Models

- Phone call
- PND
- Mobile client apps

“Michelle at home”

???
Case Study:

1-DIRECTIONS
(1-347-328-4667)
1-DIRECTIONS, a nationwide service for driving directions. (Voice in, SMS out)

1. Dial

2. Speak

3. Receive SMS

100% voice-automated
SMS Output

- MapQuest directions
- SMS “lowest common denominator”
- Optimized for 160 characters
- Clear & concise

sms_output.png

<4.4 mi to 127 Hollis>
Go W on 62nd St (0.01)
L @ HILLEGASS (0.1)
R @ ASHBY (2.3)
Becomes 36th (1.2)
R @ SAN PABLO (0.7)
L @ 40th St (0.0)
END # 127 Hollis
Higher accuracy: Speech is a GEO problem, not just Text

For breakthrough accuracy, we regard locations as Geo content with lots of context rather than strings of letters.

- **Data**
  - Disparate data types & sources
  - Distilling relevant elements into algorithms
- **Region Sizing**
  - Border expansion, overlap, optimization, multi-pass
- **Biasing / weighting**
  - Address density, business ratings, city size, web query volumes
- **Proximity**
  - Starting location, personalization
- **Multiple Domains**
  - Addresses, businesses, neighborhoods, events
  - Multi-pass
Case Study:

1-DIRECTIONS + DASH Navigation (PND)
Phone call as “remote control” for connected PND

1. Map your phone number to your Dash ID

2. Call 1-DIRECTIONS and say Destination

3. Destination received by Dash

“Delfina Restaurant”

Delfina Restaurant
“Remote Control” as Consumer Solution

- Ordinary phone call
- Zero learning curve
- Remote
- Hands-free in car
- “Shared” usage

- Hardware independent
- Time to market
- Server-side updates
Mobile (client) application

Case Study:

iPhone +

“Say Who”
Mobile Client Application Architecture

Mobile Client Library
- Record utterance
- Compress by 5-10x
- Compile metadata
  - Type of reco (city, POI, etc.)
  - Context data (city, lat-long, etc.)

WiFi / Edge / 3G network
- Request reco server
- Ranked list of servers

Service Lookup (DNS)

- Send recording & metadata to server
- Metadata determines reco strategy
  - Language model (city, lat-long, etc.)
  - Multipass
- Server stores data for personalization and product optimization

Request reco server
SAY WHO on the iPhone App Store

Most Popular Voice Dialer Application

1 million+ downloads
Top 5 Most Popular Free Applications
Free & paid versions
#1 Voice Dialer on iPhone

- Voice Dial Contact or #
- Audio Playback
- International Dialing
- User Options
Talk to Google Maps:
Business & Address Search

(In your current city)

Say a business listing

Press while speaking

(In your current city)

Say an address or intersection

Press while speaking
Portal: “Talk to…” Yelp, YellowPages, Traffic.com
www.DialDirections.com
1-DIRECTIONS is a nationwide service for driving directions: voice in, SMS out

Dial
Speak
Receive SMS

100% automated

“If you want to hear just how good speech recognition has become, dial Dir-ect-ions (347-328-4667) and ask for turn-by-turn directions.... an impressive service and the voice recognition is the best I have ever used.”
Andrew Seybold

“First off, Dial Directions is hands down the best voice recognition system I have ever used.”

Associated Content

“The demo I heard on the phone and in my subsequent several tests were impressive. The voice recognition and call flow was easy to use and accurate.”

OVERALL WINNER of Under the Radar / Mobility Conference 2007
PND’s & Telematics: Call your PND

1. Map your phone number to your PND

2. Call 1-DIRECTIONS and say destination

3. Destination received by PND

Business Benefits to PND Providers:
- Superior usability (hands-free, remote)
- Wider consumer base & usage
- Differentiation
- Fast time to market
- Dynamic updates
Vision: Voice-entry is the ultimate interface

“Michelle Brokaw on cell”

“Hardware Store”

“Little Star Pizza”

“548 Brannan”

(415) 685–8200

Connect

$$$

Search

★★★

Reviews

Directions
Carrier Services: Providing 411 with Directions

- 6B calls to 411 per year ($7B)
- Mobile 411 growing rapidly
- Mobile 411 consumer surveys rank Driving Directions as the #1 requested feature

What is your most frequent intention in calling 411 from your mobile phone? (Select top two choices)

- To reach a business for a product or service: 40.1%
- To reach a business for hours of operation: 40.1%
- To reach a business for address or driving directions: 48.9%
- To reach a restaurant for reservations or delivery/takeout: 34.0%
- To get a residential listing: 30.6%
- Other: 6.3%

Source: Opus Research (12/07), n=556

City & state please?
What listing?
I’ve found that listing. Say “phone number”, “text me” or “driving directions”
What city & state are you starting from?
Say your address or intersection?
Directions are on their way by text message. Goodbye!
“Say Where” – Voice Location Entry application

What business or category?

Press while speaking

Say Where to Google Local

Business search

Pizzeria Delfina
San Francisco, CA

Go

Microphone

Search
Directions

Dial
DIR-ECT-IONS
347-328-4667

www.dialdirections.com
Mobile Services by Mobile App or Phone Call

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<thead>
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<th>Mode</th>
<th>Vertical</th>
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Cracking the location entry problem

Speech has not been accurate or easy enough

- Our research began on Addresses: difficult problem
  - Most trying basic business listings, easier
  - Addresses complex, low accuracy
  - Others had failed
- “Ah ha” moment: new paradigm
- New approach got unprecedented quality
  - “the voice recognition is the best I have ever used” (Andrew Seybold)
  - “voice-recognition system that worked flawlessly.” (Yahoo Tech)
  - “impressive…easy to use and accurate” (Local Mobile Search)
  - “the best voice recognition system I have ever used” (Associated Content)
  - “never missed a step interpreting” (GPS Review)
- New paradigm applies to all location domains