Speech in the Car

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Agenda

- User satisfaction data
- Improving speech interfaces in the car
- Embedded vs cloud based solutions
- CarPlay vs Android Auto
- What’s expected over the years to come
J.D. Power 2015: Top Reported Problems

10 - Cup holders (2.0 PP100)
9 - Media Device Ports (2.2 PP100)
8 - Automatic Transmissions (2.4 PP100)
7 - Center Console Storage (2.4 PP100)
6 - Exterior paint (2.5 PP100)
5 - Navigation systems (2.7 PP100)
4 - Excessive wind noise (2.8 PP100)
3 - Interior Materials (3.2 PP100)
2 - Bluetooth Pairing and Connectivity (5.5 PP100)
The No. 1 Top Reported Problem

1: Voice-Recognition Systems (8.7 PP100, worse than 2014 which was 8.3 PP100)

Not recognizing or misinterpreting commands.

Why??
Why is the Speech UX in the car so bad?
The Speech Button

The eyes-free hands-free concept
Speech Button Examples

Lexus

Tesla

VW

Ford
Why?

- The speech technology??
- UI design??
- Lack of usability testing??
Humans have conversations in cars
- Difficult to blame the acoustic environment

“Please say a command”
- How do most drivers respond?

Natural prompts imply the vocabulary
- Where would you like to go?
- Who would you call
- What would you like to listen to?
Audio Prompts in the Car

- “Please say a command” or a simple chime
  - Confuses new users in the car environment
  - People don’t know what to say

- Natural prompts imply the vocabulary
  - Where would you like to go?
  - Who would you call
  - What would you like to listen to?

- Yes/no confirmation prompts
  - Acceptable for confirming a request
  - Avoid “Did you say....?”
The Shift in Infotainment

CarPlay and Android Auto are vehicle agnostic which is a major shift in Infotainment HMI

And with this shift comes a major improvement to speech in the car
Apple CarPlay

- Uses off-board Speech and NLU
- Press and hold speech button or white button
- CarPlay shows on phone and dash screen
- Uses phone for connectivity and car for GPS
- Supports approved 3rd part apps
- Includes Siri assistant
Apple CarPlay
Apple CarPlay

10:55
LTE

Search Results

1 of 10

Starbucks
2803 E Burnside St,
Portland, OR 97214,
United States

10:57 3 0.5
ETA min mi

Routes...
Android Auto

- Uses off-board Speech and NLU
- Tap microphone icon
- Remembers usage from other devices
- Uses phone for connectivity and car for GPS
- Supports approved 3rd part apps
- A very different look than CarPlay
Google Maps

3.0 mi
Mullholland Hwy

1 hr 24 min
96 mi • 1:36 PM

12:32

1

Pacific Coast Hwy

Deer Creek Canyon Park

Android Auto
Short video to compare CP with AA
TEXTING
Conclusions

- Speech in the car needs more usability focus
- CarPlay and Android Auto will win
- The embedded solutions have disadvantages
Thank You
Accuracy and Latency are Both Critical
Usability and Grammar Size

Grammar Flexibility

Usability

Directed Dialog

Trough of Bewilderment

Humans

???