INTELLIGENT VOICE
Fragmentation of Services for OEM and Developers

- Extensive development required for each OEM

- Existing Cloud Services

- Storage
- Information
- Messaging
- VR
- Email
- SNS
- Map
- Traffic
- Database
- Applications

Telematics Service A
Vehicle Company A

Telematics Service B
Vehicle Company B

Telematics Service C
Vehicle Company C
Smart Access Cloud Gateway

- Consolidate implementation costs for OEM and Developers
- Raise safety level for drivers through unified, flexible policy control

Flexible Cloud Service
Any Vehicle Company
VOICE RECOGNITION
• The most-frequently reported vehicle multimedia problem is: *Built-in voice recognition frequently doesn't recognize/misinterprets commands.*

• Accounts for 45% of the top 10 complaints

<table>
<thead>
<tr>
<th>Top 10 Multimedia Problems</th>
<th>2013 PP100</th>
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<tr>
<td>Built-in voice recognition frequently doesn't recognize/misinterprets commands—built-in hands-free</td>
<td>5.4</td>
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<tr>
<td>Built-in Bluetooth mobile phone/device frequent pairing/connectivity issues—Bluetooth</td>
<td>4.8</td>
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<tr>
<td>Built-in voice recognition frequently doesn't recognize/misinterprets commands—navigation system</td>
<td>2.7</td>
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<tr>
<td>Built-in voice recognition frequently doesn't recognize/misinterprets commands—audio system</td>
<td>2.5</td>
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<tr>
<td>Navigation system—Difficult to understand/use/poor location</td>
<td>2.5</td>
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<tr>
<td>Media device ports—Difficult to understand/use/poor location</td>
<td>2.2</td>
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<tr>
<td>Built-in Bluetooth mobile phone/device frequent pairing/connectivity issues—mobile phone</td>
<td>1.9</td>
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<td>Front audio system difficult to understand/use/poor location—audio settings</td>
<td>1.1</td>
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<tr>
<td>Built-in voice recognition frequently doesn't recognize/misinterprets commands—unspecified</td>
<td>1.0</td>
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<tr>
<td>Front audio system difficult to understand/use/poor location—usability</td>
<td>0.7</td>
</tr>
<tr>
<td>Navigation system—inaccurate—navigation map and information</td>
<td>0.7</td>
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</tbody>
</table>

“I wish voice recognition actually worked”
• **Traditional Voice Search**

Voice Recognition/Search Engine

1. “Please say a command”
2. “Vicinity Search”
3. “Please say a command”
4. “Restaurant”
5. “Please say a command”
6. “Lobster”
7. Search results show.
To address this common complaint, Clarion has partnered with Google to provide the best available VR to the vehicle.


Clarion is the first and only aftermarket supplier partnered with Google for Voice Search.
Clarion Intelligent VOICE™

Advanced Voice Recognition/Search Engine

1. “Please say a command”
2. “Lobster, restaurants”
3. Search results show.

Another example:

1. “Please say a command”
2. “I need coffee”
3. Search results show.
Context Aware Natural Voice Recognition

- **Intelligent VOICE™**, Clarion’s unique cloud-based voice searching service enables:
  - Much higher recognition rate vs. on-board VR
  - Virtually unlimited, always up to date POIs
  - Ambiguous search such as “I’m hungry” or “I need gas”
  - Abbreviated words such as “Macdo” for McDonalds in Japan
  - One shot destination address input

“I feel like Thai food”
“Where is the library?”
“Take me to Starbucks”
“Is there parking nearby?”
VR success rates depend on accurate voice data input, typical garbage in garbage out scenario.

Clarion’s Smart Access uses noise cancelling and noise elimination technology before the voice data reaches the VR Server:

- Removes the noise from tire friction on the road surface
- Removes wind and cabin noise
Intelligent Voice Video

Smart Access
The addition of an Intent Engine adds powerful capabilities.

Noise Elimination
Audio Manipulation

Natural Language
Conversational
Intent Recognition
User profiles
Virtual Assistant

User

Content
Advanced Context Awareness

Traditional VR

I am hungry

15 restaurants in the area

Which one has parking available?

There are 20 parking lots in your area

Incorrect information

VS.

Context Aware VR

I am hungry

15 restaurants in the area

Which one has parking available?

3 out of 15 have parking available

Correct information
Find me a Sushi place around here

Restaurants found, any preferences?

Priced around $50.

Here are a few...
1. Benihana  
2. Wasabi  
3. Gold Sushi  
Which would you like?

Take me to Wasabi

Destination set to Wasabi
18601 Hubbard Drive, Sunnyvale
Levels of Intelligence

- **Receptive**
  - User Command Driven
    - “Navigate to gym”

- **Predictive**
  - User Choice Given
    - “Navigate to the gym?”

- **Prescriptive**
  - User Choice Understood
    - Route plotted for the gym.
User Profiling

• User favorites and presets based on the driver
  – Infotainment listening habits, preferred apps
  – POI search history, previous destinations, favorite locations
  – Time based destination and activities
Intelligent VRM CRM

Retrieve vehicle information

Push Notification and Response

Oil change needed, would you like to schedule an appointment?

Tire pressure low, route to nearest air pump station?
Thank You.
Questions?