COMPANY-SPECIFIC VIRTUAL ASSISTANTS: NECESSITIES AND POSSIBILITIES

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Personal Assistants that try to do everything
Defining feature: “Natural language” interaction

- Minimal prompting
- “What can I help you with?”
Single-utterance vs. Dialog

- Treating a request as all you know

  Versus

- Creating a dialog, a conversation
  - “What time of day do you want to fly?”
Company-specific virtual assistants

- Natural language interaction with more limited context
Further narrowing of context

Your business

Detect sub-context

Customer service

Technical support

Purchase
Types of specialized virtual assistants

- Customer-facing
  - Interaction with your company supporting its products and services

- Employee-enabling
  - Employees interacting with each other and with enterprise applications

- Specialized services (Web sites or “apps”)
  - Specific activities and services
Customer-facing: Customer service

“Please tell me why you are calling”
Two major trends converge

**Mobile**

Always-available connection to computer services

**Voice**

Advances in speech recognition and natural language interpretation

The maturing of speech and natural language technology is changing user expectations of the ease of interacting with increasing numbers of devices, applications, services, and features - "digital overload." Mobile devices make this intuitive connection computers always available. The Mobile Voice Conference is dedicated to helping companies understand how they can improve internal efficiencies and/or engage customers using this technology.
Customer-facing: Advertising

“Future of Advertising: ‘Chatvertising,’ or Talk to the Bot”
Customer-facing virtual assistant

- Representing and branding your company
- User interface: Voice, text, and/or a visual representation
- Selective or Encompassing
A single company virtual assistant

- An eventual necessity?

- **General personal assistants become portals**
  - The new web search
  - The new face of computing and the Internet
  - As necessary as a comprehensive company web site
Employee-facing

- Reduce training
- Make employee more efficient
- Improve use of enterprise applications
Specialized assistants

- Analogous to a mobile app or a web site providing services.
How do you do it?

- Data-driven (statistical) approaches
- Linguistic (semantic) approaches
- Hybrid approaches
Data-Driven (Statistical)

- Examples with a labeled outcome (e.g., credit card inquiry)
  - “I need to know my account balance” → “Account balance request”
  - “How much money do I owe?” → “Account balance request”
Linguistic (semantic)

“I need a room tomorrow at the Orlando Marriott, and I want to bring my poodle”

Family IDs, referencing lexicon, create on the fly grammar

<table>
<thead>
<tr>
<th>Family ID</th>
<th>Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>21178</td>
<td>poodle</td>
</tr>
<tr>
<td>parent</td>
<td>Domestic dog</td>
</tr>
<tr>
<td>Parent of DD</td>
<td>Domestic animal</td>
</tr>
</tbody>
</table>

What we know:
City = Orlando
Hotel = Marriott
Pets = Allowed

Example: LinguaSys
Hybrid

- Problem with data: **New entries**
  - e.g., new product name

- Solution: Use linguistic categories
  - e.g., replace product names in data with PRODUCT.NAME
  - Make PRODUCT.NAME a list that can be updated without redoing statistical analysis
Hybrid

- Problem: **Not enough labeled data**
- Expand data by using semantic equivalents
  - Take an utterance that has “New Orleans” in it and replace it by other cities
  - Take an utterance that has “go to” and replace with “travel to” and “visit”
- “I want to go to New Orleans” → “I want to travel to San Diego”
How long does it take?

- **3-4 weeks**: Identify Cloud and Enterprise Apps in EVA Container; Walk-through interactions in EVA; Identify any configurations or customizations.
- **5-6 weeks**: Setup connectivity from EVA Cloud Infrastructure to Enterprise Hosted Applications.
- **8-10 weeks**: Deliver branded EVA (with configuration/customizations) for testing.
- **10-12 weeks**: LIVE deployment.

Openstream’s Enterprise Virtual Assistant (EVA)
Expand user base slowly

- Learn from alpha and beta tests
The core problem natural language addresses

Digital Overload!
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