Voice Search as an enhancement to traditional IVR applications

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Background

• Inference Communications
  – Specialists in natural language applications.
  – Performance based approach to measuring the success of applications.

• Tradition IVR = Speech IVR
  – Transaction based
    • Telephone booking and ordering
    • Parcel and order tracking
    • Location based services
  – Linear dialog flow with or without mixed-initiative support.
Measuring performance

• There are a number of measures that companies used to measure the performance of their apps.
  – Transaction Completion Rate (TCR)
  – ‘No excuse’ automation rate. \( \frac{\text{total calls in} - \text{calls out}}{\text{total calls in}} \)

• As an owner or operator of a speech application all that really matters is:
  – Did the caller have their query or transaction automated?
  – Which implies that the caller did not call back a second time and implies that the caller did not give up altogether and take their business elsewhere.

• Often a speech application “works” but the caller still transferred to an operator?
  – Frustrating for the developer
  – Request was ‘out-of-scope’
Enhancing dialog with FAQ’s

• A common strategy to improve the automation rate.

• The concept of a speech FAQ is simple:
  – Sometimes when you ask the caller a question they respond with a question rather than an answer.
  – A classic example would be a train ticket ordering system:
    • System> What station would you like to leave from?
    • Caller> Am I able to bring my bicycle with me?
    • System> Bicycles and surfboards may be carried free on trains. Passengers travelling with bicycles or surfboards are requested to avoid using peak hour trains where possible.
    • System> What station would you like to leave from?
FAQ’s are a mechanism used to increase the effectiveness of a speech application.

Reasonably easy to implement:
- A grammar that operates in parallel with the main dialog and returns the callers to the same point they were at before asking the question.

However for many applications simple FAQ’s do not go far enough....
FAQ Limitations

• Simple FAQ’s are often:
  – Context-less
  – Single slot

• For many applications this is not sufficient.
  – Consider an airline booking system

  • **System>** You wish to travel from Sydney to Los Angeles on the 27\(^{th}\) February 2009. Is this correct?

  • **Caller>** Is it possible to get a stop over in Hawaii?

• This type of interaction is much more difficult.
Incorporating search into design

- Incorporating ‘search’ is a step beyond the FAQ.
  - Must capture and preserve context and state.
  - Search
    - Extract the search information criteria.
    - Perform the lookup
    - Interpret and format the response.
    - Return the information
  - Restore the state of the application and continue.

- System> You wish to travel from Sydney to Los Angeles on the 27th February 2009. Is this correct?
- Caller> Is it possible to get a stop over in Hawaii?
- System> Unfortunately a stop over is not available ...
Search as an enabler

- Enhancing a transactional application with search can be the difference between success and failure of an application.
  - High content web applications.
    - Fantasy Football. “Is XYZ injured?”
  - Applications where the *information needs* of the caller are high.
    - Stock trading. “What was the close yesterday?”
  - Callers context is important
    - Store locations. “I want to go on Saturday but I only want outlets that offer same day service.”
‘Footy Tipping’ at the Australian Football League

- AFL is the dominant sporting code in Australia.
- Tipping is like betting but without money (‘glory’).
  - Pick the winner of each game of each round.
  - Pick the winning margin.
- Many hundreds of thousands of participants every year.
- Almost 100% of all tipping competitions conducted via the web.
  - Perfect example when the participant has high information needs.
  - Largely statistics driven decision making.
‘Footy tipping’ interactions

- Things a caller may want to know:
  - Where are the teams playing? What stadium?
  - Who’s home game is it?
  - Where are the team on the ladder?
  - What are other people tipping?
  - What is the win/loss record of one team against the other?

- 100% repeat callers. Most users will ring every week of every round.
  - A good caller experience was essential.
The result...

- For Inference this was the first time we had employed search as an overlay on a transactional style system.

What did it sound like?

- Note how for each question I respond with a question rather than an answer.
  - Exaggeration for the purposes of the demo.
Findings

• Findings from the proof-of-concept
  – Education about what was possible was required.
    • Added a parallel series of ‘Instructional FAQ’s’
  – More features added over time
    • Despite our best efforts there were still unexpected queries.

• Unintended benefits
  – Some callers would ring more than once per round (use the service like an updatable list).

• Customer very happy.
The term ‘speech search’ spans a broad spectrum of ideas.

Traditional Speech IVR applications can benefit from it.
  - Do you know why your callers are going to operator?
  - A minor improvement can make a big difference.

Some traditional applications would be unviable without it.

They can be tricky to design and build however there are development environments that support it.
Thank-you