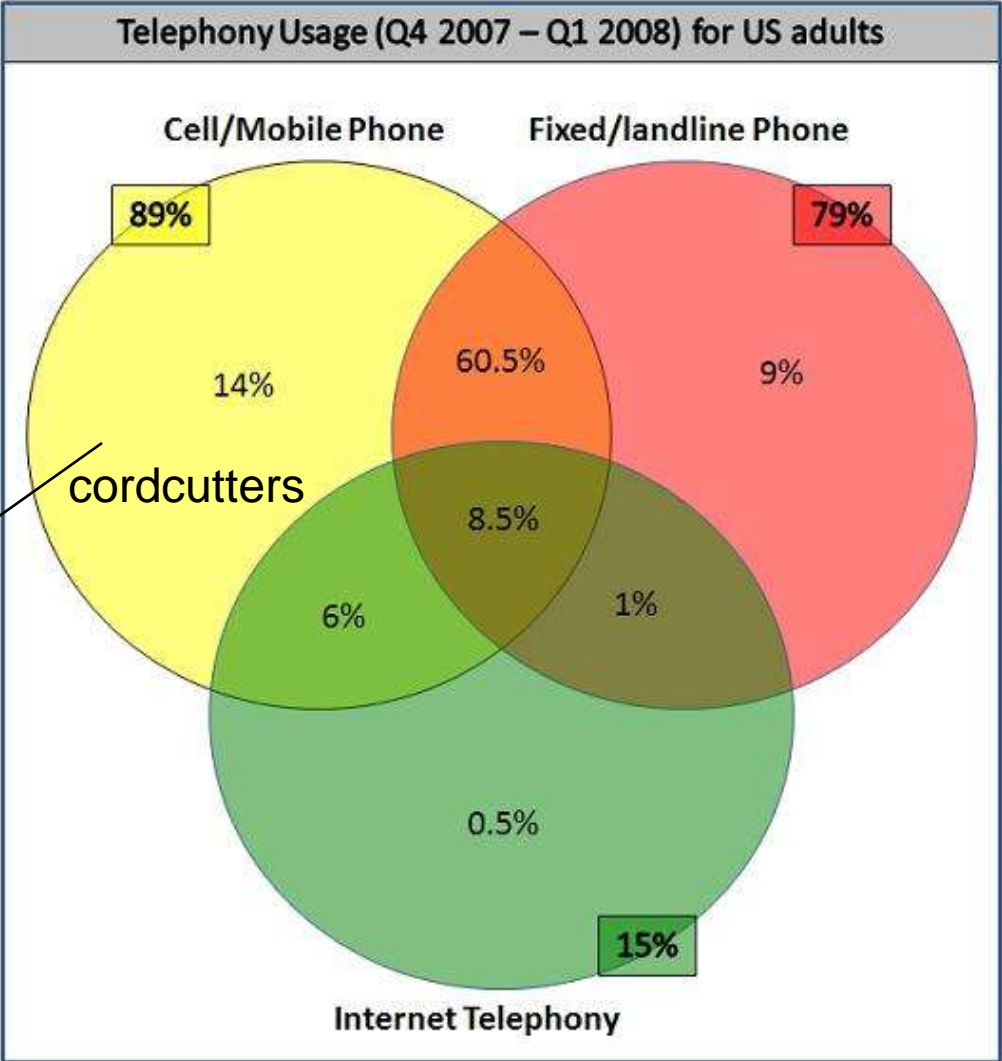




**Multi-Modal/Multi-Channel
Enterprise Voice Search:
The Future of Customer Care**

**Roberto Pieraccini
CTO, SpeechCycle**

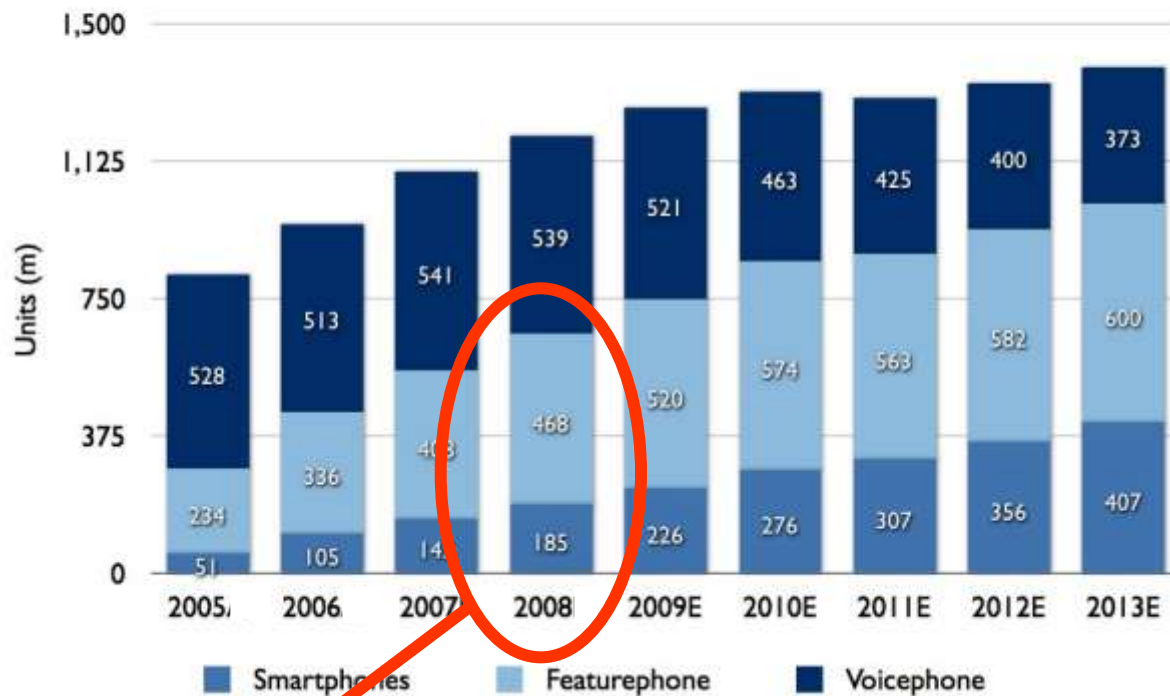


Q3 2008: 17%

cordcutters

(source: Harris Interactive)

Mobile Phone Market



Source: Nomura

Data, voice, and GUI capable phones (55% of all mobile phones)

Evolution of self-service customer care



Voice Only
Self-service



GUI Only
Web-based
Self-service

Increasing adoption of mobile telephony

Increasing adoption of data, voice, GUI capable devices

Ubiquitous wireless internet

Higher performance network speech recognition



Wireless
Voice + GUI
(Multi-Modal)
Self-service

Multi-Modal

Speech

Speed and convenience for natural language input

Hands-free operation

Eyes-free operation

GUI

Time persistence

Navigation hints and feedback

Correction and backtracking

Asynchronous interaction

Speech and GUI interaction modalities complement each other to eliminate individual deficiencies

Multi-modality gives users a choice to interact in different situations

IMPROVED USER EXPERIENCE

IMPROVED AUTOMATION

Best-first vs. acoustic ranking

Best-first speech recognition is often, but not always correct

The correct result is almost 100% within the N-best list

Speech only interfaces are strictly sequential

Difficult to take advantage of alternative results



Boston

Did you say Austin?

No, I said Boston

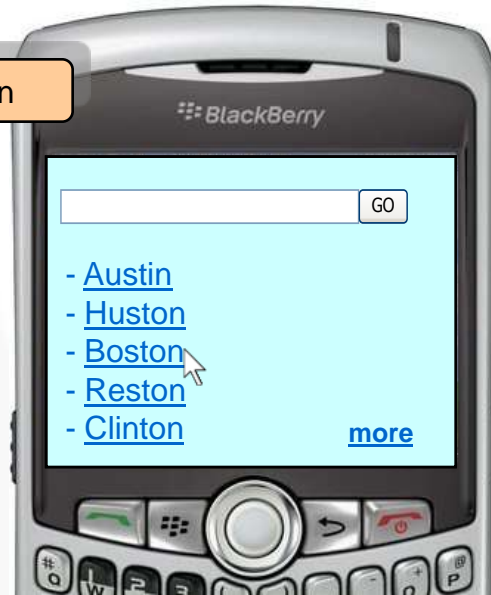
Was that Huston?

No...Boston!

Maybe Boston?

Yesssss!!!

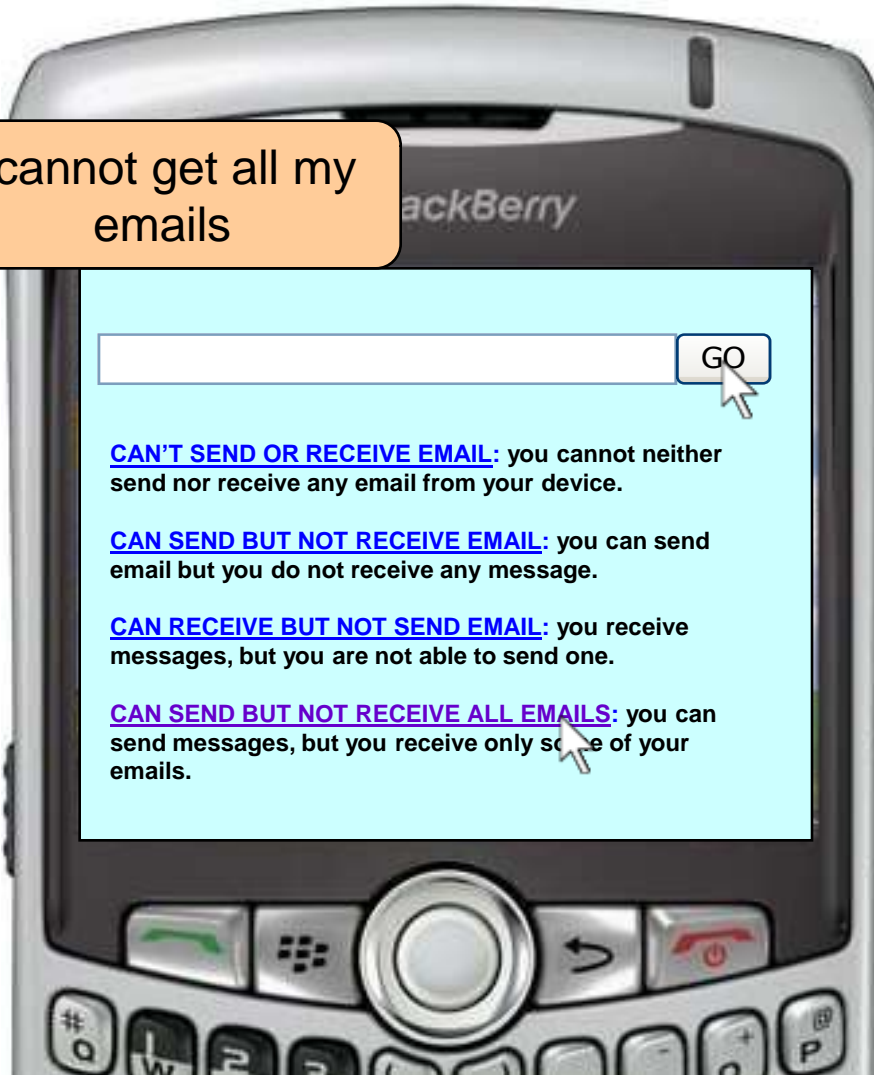
Boston



Speech recognition ranks results based on acoustic similarity

User selects the correct response

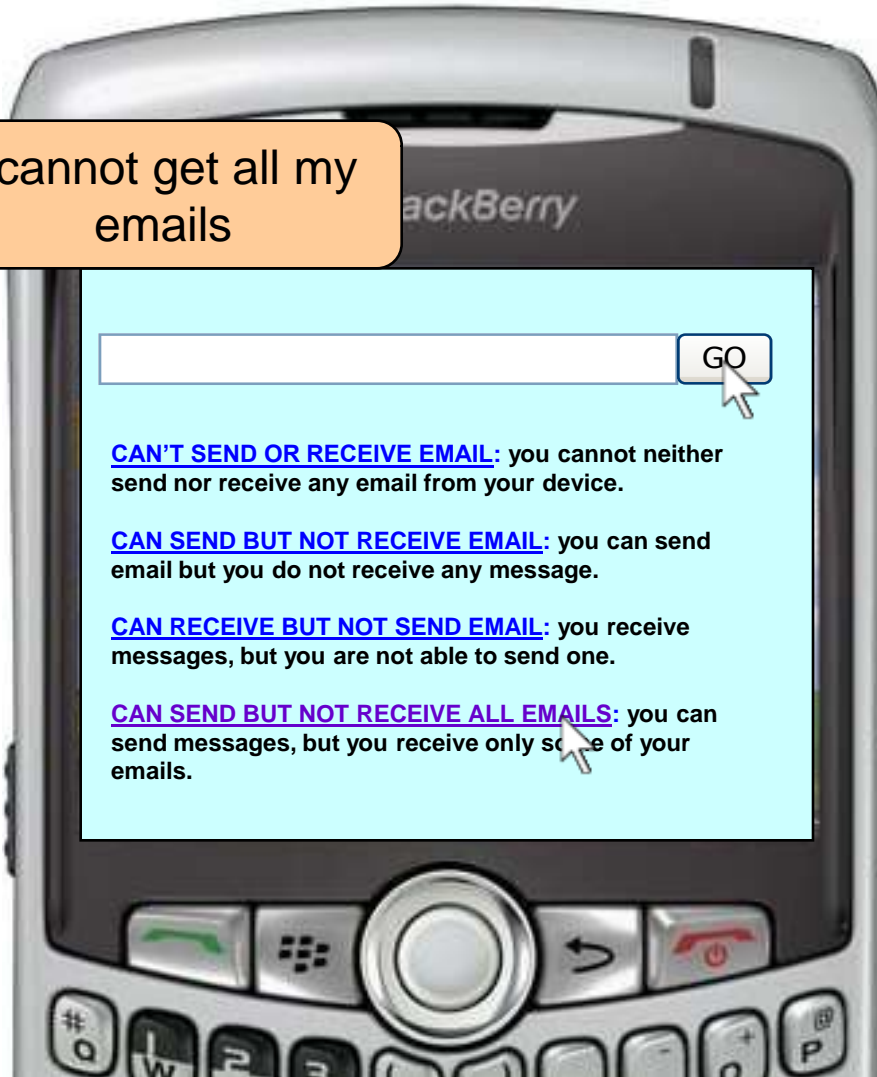
I cannot get all my emails



Acoustic ranking provides the “sound like” alternatives

Semantic ranking gives you alternatives with like meanings

I cannot get all my emails



CAN'T SEND OR RECEIVE EMAIL: you cannot neither send nor receive any email from your device.

CAN SEND BUT NOT RECEIVE EMAIL: you can send email but you do not receive any message.

CAN RECEIVE BUT NOT SEND EMAIL: you receive messages, but you are not able to send one.

CAN SEND BUT NOT RECEIVE ALL EMAILS: you can send messages, but you receive only some of your emails.

NL semantic ranking is an extension of voice search

Classic voice search ranks documents according to your query

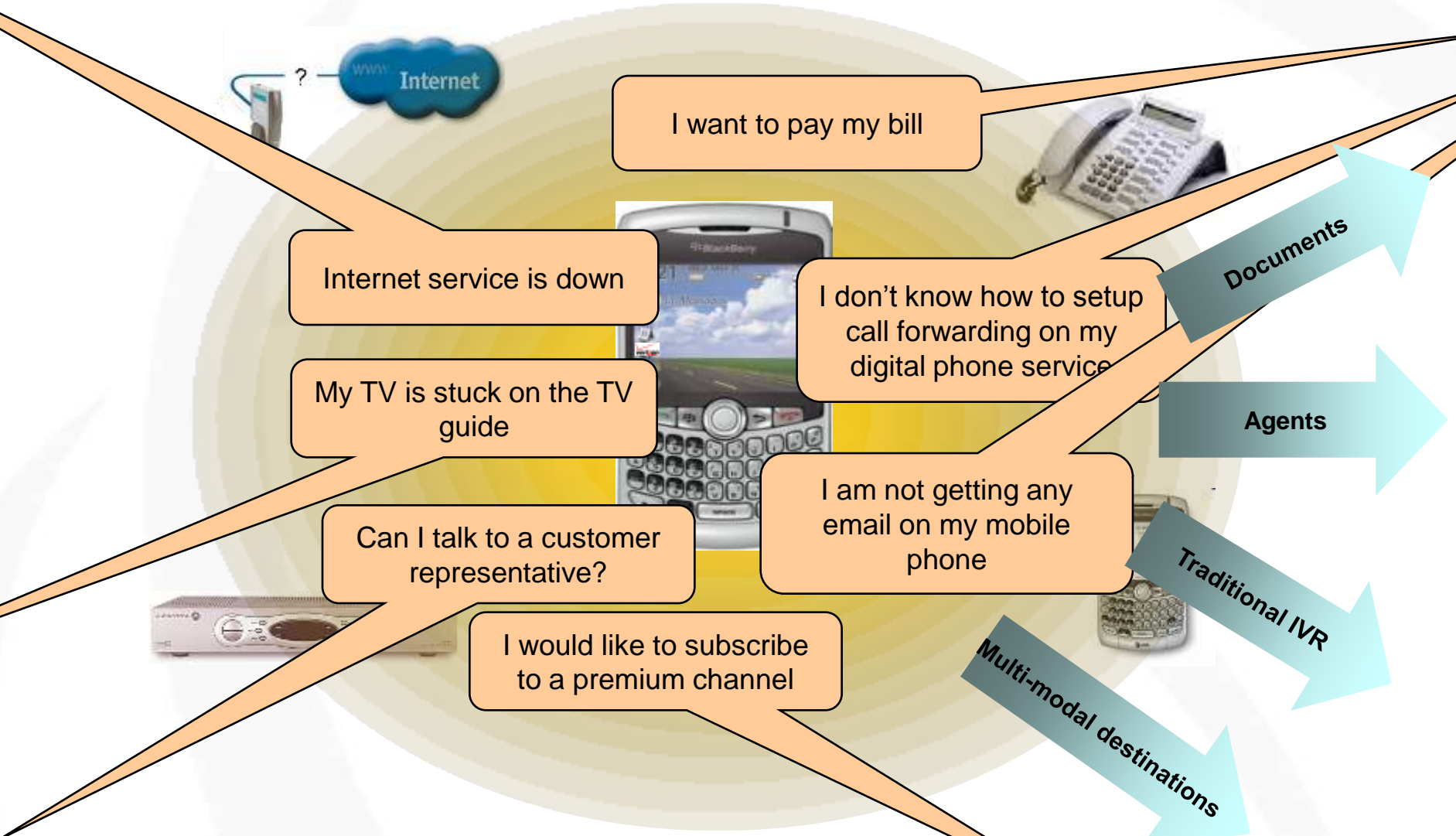
NL semantic ranking ranks meanings according to your query

NL semantic ranking can be integrated with traditional voice search to provide actionable results

In both cases user completes the search by selecting the desired outcome

- NL Semantic Ranking is the modern, multi-modal version of the call router
- The front-end to all customer care destinations

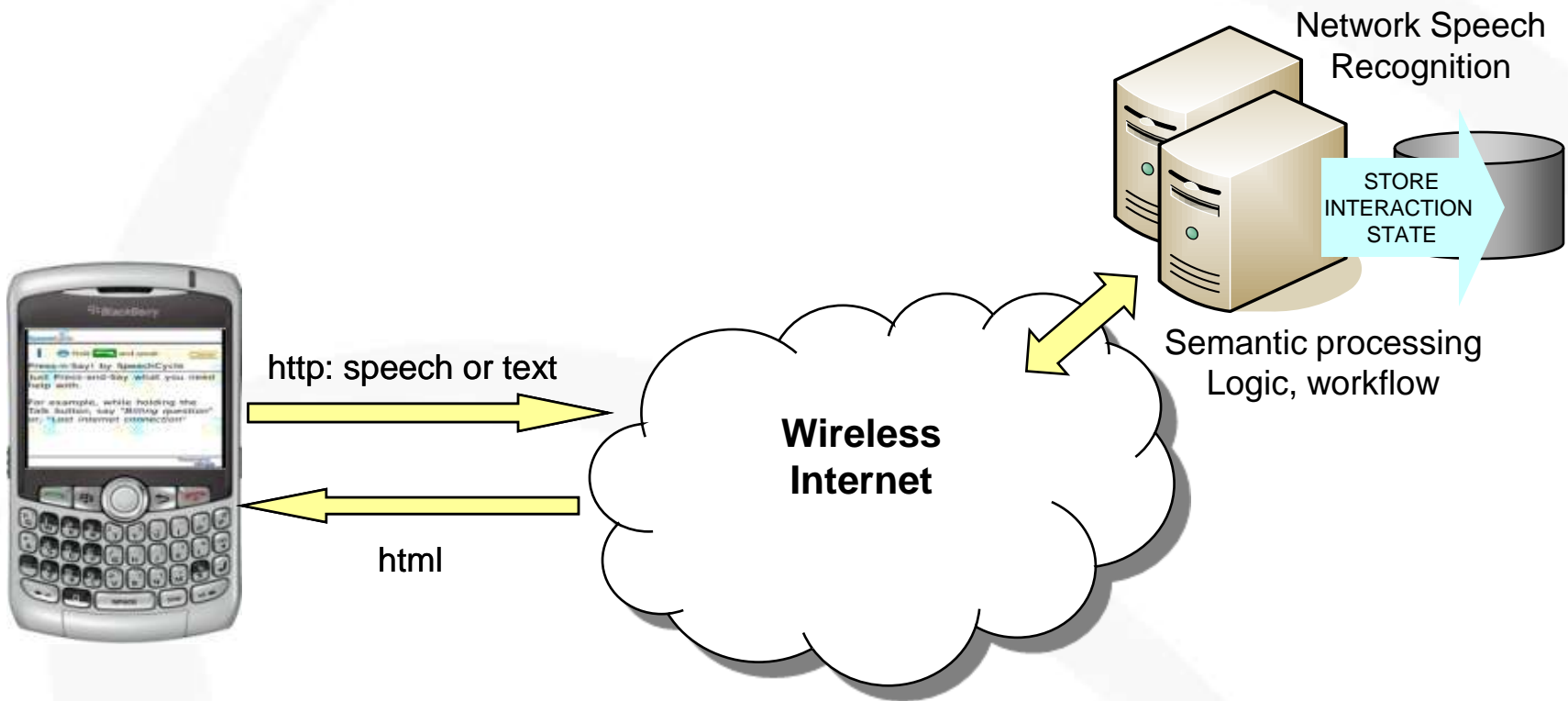
Multi-Modal Enterprise Voice Search



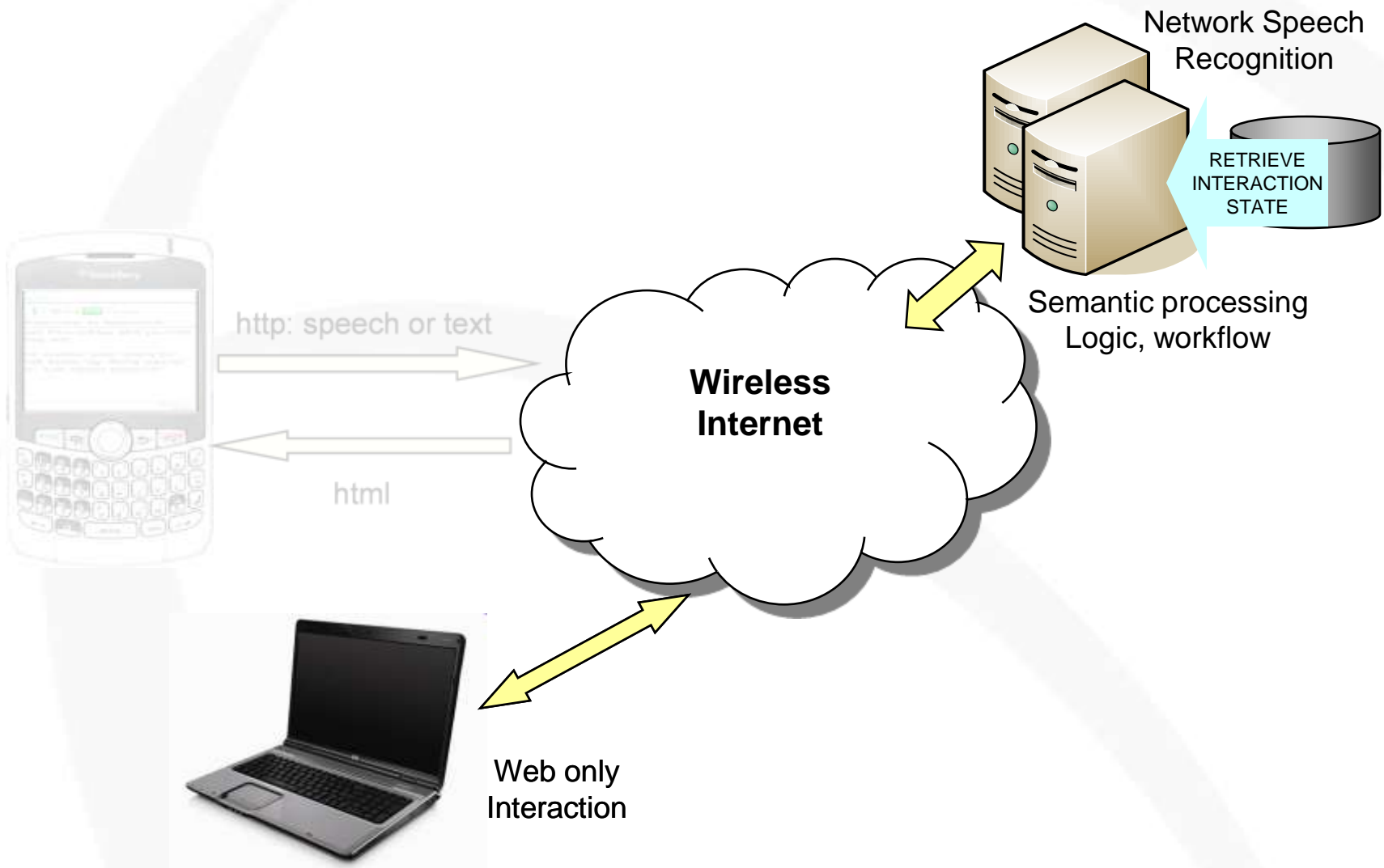
- From Speech to Multi-Modal dialog: click or speak



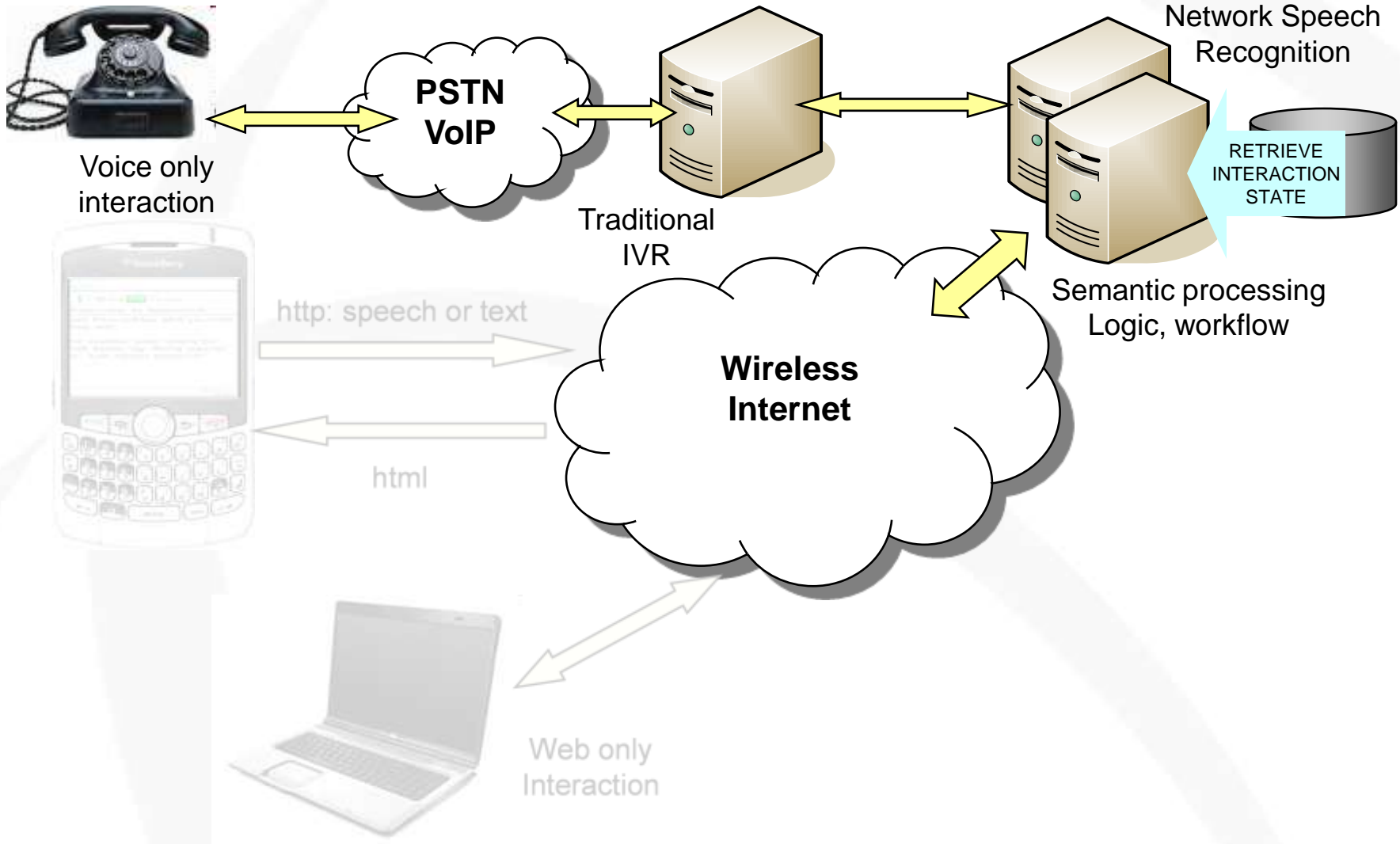
Multi-Channel Customer Care



Multi-Channel Customer Care



Multi-Channel Customer Care



- Increasing adoption of mobile communication and smartphones creates an inevitable push towards a different customer care paradigm.
- Speech and GUI interaction naturally complement each other for an improved customer experience towards higher levels of self-service automation
- Multi-Modal Enterprise Voice Search is the evolution of the old call router concept
- Multi-modal destinations provide enhanced experience over traditional directed dialog
- Multi-Channel capabilities enable suspending and restoring a session on different channels