

# The View From AVIOS

## 2006: The Continued Emergence of Natural Language Speech Applications

By Bruce Pollock

The speech recognition industry continues to grow and as we move into 2006, we will see more sophisticated deployments, across a wide range of vertical markets. New applications will be improvements on earlier versions, both in terms of functionality, caller-friendliness and level of personalization. Additionally, most new deployments will continue to be VoiceXML-based.

### Natural Language Call Routing Emerges

An important development in 2006 will be the continued emergence of Natural Language (NL) applications. NL applications have the ability to understand naturally-phrased requests such as “uh yeah, hey, I would like to see how much I owe you?” and act accordingly.

For callers, key benefits of NL applications include:

- The ability to express themselves naturally
- Quick and efficient routing to the correct destination
- Simpler, enhanced call experience with shorter menus
- Higher customer satisfaction partially due to shorter calls

For enterprises, natural language applications bring strong benefits as well. In addition to helping improve service levels and reduce costs, NL benefits include:

- Fewer zero-outs as well as fewer inter-agent transfers
- Ability for enterprises to leverage existing automation investments
- Consolidation of 800 numbers allowing for a single point of contact for callers (which also benefits callers)

Designing, developing and deploying NL applications is not a trivial exercise. Some of the key steps in designing and deploying an NL application include:

**1. Initial Data Collection** - Best practice is to collect caller utterances as they respond to a carefully designed mock opening prompt in the location where the NL will be run. After callers state the purpose for their call, they can be sent to a live operator or placed into the existing automated application. Data collected from this experiment is used to form the Corpus.

**2. Data Transcription** - Transcriptions need to be 100 percent accurate as this data will be used to develop the statistical language model and possibly the statistical call router. NL transcription can take a considerable amount of time to complete, so human resources and budget must be planned accordingly. A typical large-scale call routing application can require 20,000-30,000 transcriptions.

**3. Define Destination “Buckets” (Determine the main reason people are calling)** - This process should be a collaborative initiative between vendors and clients; it is dangerous to define destination “buckets” without a subject matter expert from the client side. The number of buckets will be proportional to the number of different, specific reasons why people are calling the system.

**4. Tagging** - After the buckets are determined, each transcription from the data collection is sorted into a specific bucket. This process is referred to as “tagging.” Tags are keys that drive the application behavior. Depending on the size of the application, tagging can be a labor-intensive project so companies must be sure to plan accordingly.

**5. Training the System** - A Statistical Language Model (SLM) is first developed based on the transcribed data. The SLM is responsible for determining the sequence of words spoken by the caller. There are two methods to extract meaning from those caller expressions: the first is to develop “concept-spotting” grammars manually, while the second is to use a software tool to statistically associate specific words with specific meanings. The upside of using a software tool is that it is efficient and effective; however, there may be additional software licensing costs to consider.

**6. Deploying and Tuning** - There are two approaches to tune an NL application, either by hand (modify existing concept-spotting grammars) or using software tools (re-train the statistical call router based on additional information). In fact, some advanced systems utilize both methods for classifying calls depending on how often additional “buckets” are added to the system.

### Get Expert Advice and Assistance as You Proceed With Your NL Project

As enterprises contemplate incorporating NL into their environments, they should seek advice and assistance from vendors, subject matter expert consultants or outsourcers with experience in deploying these systems. The money and effort involved can be substantial, and unsuccessful projects are very costly.

As the speech industry collaborates to design and deploy NL speech applications, it is imperative that we focus on “getting it right the first time” to form a positive impression with callers. In doing so, we can help enterprises and their customers achieve their respective goals efficiently and effectively.



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