Qfiniti™ | Assist™

Qfiniti Assist Delivering Real-time Agent Support

A Technical White Paper

Autonomy® etalk

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Table of Contents

Publisher's Note: Information contained in this document is intended for guideline purposes only. Autonomy etalk product documentation supersedes information contained in this document. The situations described in this document are offered as examples; actual configurations and results will vary from system to system.

Qfiniti Assist Delivering Real-time Agent Support

Responding to customer calls quickly and efficiently means providing agents with immediate access to a wide range of information. Yet often times, the information needed to answer the question is not easily accessible. It's hidden inside training material, websites, knowledge base systems, product documentation, technical notes and other files in a myriad of formats throughout the enterprise. When agents are handling a difficult question or a challenging customer call, time and accuracy is of the essence.

Qfiniti Assist

Qfiniti Assist is a powerful automated query tool enabling real time knowledge and information for agents while the customer is on the phone. Using speech recognition technology and the patented Intelligent Data Operating Layer (IDOL) engine to understand the customer conversation with the agent, Assist guides the agent to appropriate responses to provide during the call. By arming agents with Qfiniti Assist, businesses can immediately reduce handle times, increase customer satisfaction, and deliver improved call center efficiency.

This easy-to-use desktop tool allows for text or audio queries and returns current and appropriate documents, helping to instill caller confidence in the agent by eliminating any hesitancy in retrieving critical information. Natural language search capabilities delivered through an intuitive, floating toolbar further simplify agents' access to appropriate answers. This approach to solving immediate service requests not only enables faster call resolution, but opens up a broader skill level to leverage during high call volumes.

IDOL Integration

IDOL Server is the heart of the Qfiniti Assist product, which acts as a platform for understanding the meaning and significance of information (Figure 1). IDOL is entirely data agnostic and scalable, allowing large organizations to manage vast quantities of information regardless of format or storage location.

In evaluating all types of queries, IDOL Server employs complex algorithms based on a combination of Information Theory and Bayesian methods to automatically weight and rank the document returns by statistical relevance. In doing so, it makes use of information theoretic values calculated dynamically for all concepts on indexing, allowing the relevance of content to be evaluated.

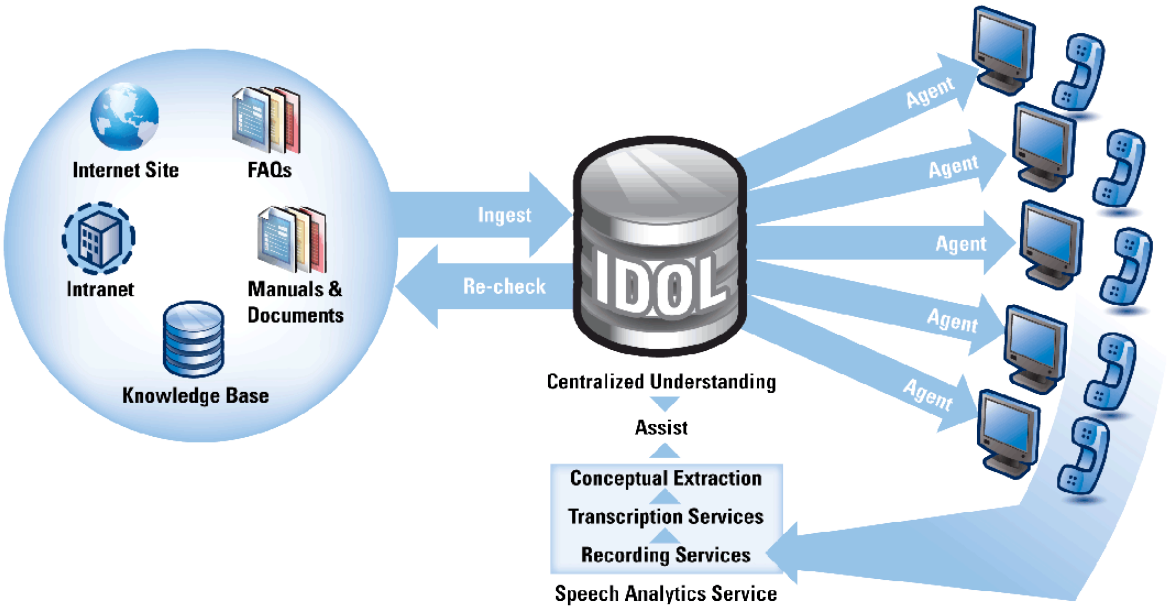

Figure 1: Using IDOL for conceptual understanding

Conceptual Search

Qfiniti Assist uncovers results based upon conceptual matches, which is made possible by leveraging the IDOL engine. The IDOL engine identifies patterns that naturally occur in the documents, based on the usage and frequency of words or terms that correspond to specific ideas or concepts. The technology automatically creates relationships between terms used within a conversation based on their proximity and rate of recurrence. Based on the preponderance of one pattern over another, Qfiniti Assist understands that there is an X% probability that a document in question is about a specific subject. In this way, Assist is able to extract the document's digital essence and encode the unique "signature" of the concepts.

This provides powerful insight into the related concepts without requiring the end user to create complex search criteria or define word relationships in advance.

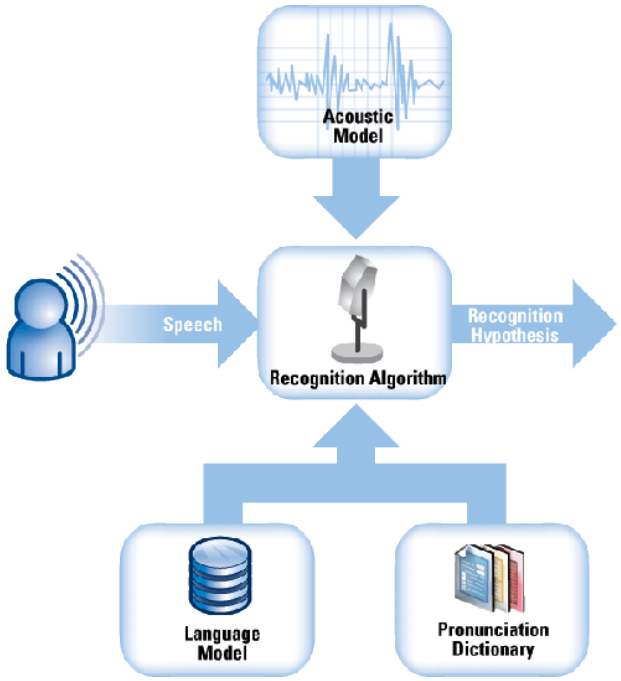

Figure 2: *Block diagram of a speech recognition system.*

Automatic Voice Analysis

Qfiniti Assist can function in two modes: audio or text based. Audio based queries utilize speech recognition to convert speech into a text for Assist to analyze and provide the most relevant responses. The agent can initiate a query based on the most immediate conversation with the click of a button. When an agent initiates a query, the last few seconds of the call are transcribed using speech recognition technology. The transcription is then automatically fed to Assist to quickly return relevant documents to assist the agent while the customer is on the phone.

Speech recognition is an extremely difficult task because of the variability of both speech and language; everyone sounds different, and there are numerous ways to convey the same message in any language. Qfiniti Assist's speech recognition engine accounts for this variability by using statistical models of both speech and language.

Figure 2 shows the components that comprise a speech recognition system. It can be seen that once the speech signal has been recorded it is passed to the recognition algorithm. This uses acoustic models, a language model and a pronunciation dictionary to produce hypotheses of what was said.

The role of the acoustic model is to provide a probability that a given portion of speech is a given sound. The models will provide the best recognition accuracy if they are adapted to specific audio samples recorded at the customer's site.

Language modeling is about word sequence probabilities: the model defines the probability of one word following another. The language model is used to disambiguate acoustically similar speech, e.g. "the bog barked" sounds very similar to "the dog barked", but the probability of barked following dog is clearly much greater than that of barked following bog. Typically the language model needs to be tuned for an organization with industry specific words and phrases to build an understanding of the audio.

The pronunciation dictionary defines the words that can be recognized and modeled by the language model. Only words that occur in the dictionary can be recognized, therefore a customer specific dictionary and language model is produced so that product names, etc. can be recognized. This can be done from the transcriptions of the audio data used for acoustic model adaptation.

Qfiniti Assist uses a language model utility to update these languages with content stored in web pages, documents, manuals and plain text. For example, all of the text from a corporate website could be used to add product names and other jargon that is not a part of the standard model.

Text-Based Searching

Qfiniti Assist offers full natural language retrieval functionality. When an agent types in a query or searches for information, Qfiniti Assist automatically identifies concepts and offers approved resources in which to find answers. This might include responses to similar requests that have been dealt with successfully in the past and may come in many forms such as documents, manuals, website links, presentations, training materials and more. While most FAQ systems rely on key word technology or costly manual categorization, Qfiniti Assist is completely automatic.

Related Terms

Autonomy etalk's Related Terms technology automatically guides keyword-oriented users to the exact information they are looking for. Simple keyword queries of one to three words usually fail because they do not provide enough context for accurate retrieval. In such cases, search engines may overwhelm the user, providing hundreds, thousands or, in larger enterprise systems, millions of irrelevant results. With Related Terms technology, the user can simply click on the terms that most apply to the subject they are researching and Assist then automatically re-queries, adding this new-found context. Additionally, if required, Assist suggests further sub-contexts within which the new query may be found.

Related Documents

Related Documents extends the Related Terms capability based on the content of the selected document in the Results Window. With Related Documents technology, the user can click on the document that most applies to the subject they are researching and Assist then automatically re-queries. As with Related Terms, Assist adds this new-found context and, if required, suggests further sub-document within which the new query may be found. This helps to better prepare the agents to answer similar questions on the same subject.

Document Preview

Whenever Qfiniti Assist gathers information for a user, it also returns a summary of this material which contains the most relevant concepts. Assist is able to generate summaries that relate to the document selected by the user in the Results window, providing them with the most applicable dynamic abstract for any given operation. In this way, Assist's Document Preview allows users to understand the content of information rapidly and helps them to choose the most relevant sources that match their inquiry.

Extensive Content

Virtually any content can be accessed through Qfiniti Assist. Because Qfiniti Assist removes the burden from the agent to recall all the locations and types of applicable information, this solution can help extend the number of contact center personnel that can address an issue beyond just those trained in that area. Rather than forcing customers to wait longer than usual to speak to a company representative, calls can be routed to other personnel who can take advantage of Qfiniti Assist to answer requests.

Supported content includes:

- Microsoft Exchange, Lotus Notes, POP3
- Open File Systems – Netware, Unix, Windows (PDF, DOC, XLS, PPT files)
- HTTP-Based Systems (Internet/Intranet)
- Oracle-Based Systems (Vignette)
- Documentum
- PCDocs (DOCSFusion)
- eGain
- eRoom
- FileNet
- Microsoft SQL-Based Systems (SharePoint)
- SharePoint content
- Stellent content
- CRM and Knowledge Base Systems (Siebel, SAP, LiveLink)

Self Learning

Thanks to the unique combination of Bayesian Inference and Shannon's Information Theory, the system is able to continuously develop and learn automatically. Rather than needing to be taught new words, phrases or concepts and shown how to categorize them, Qfiniti Assist can intelligently deduce the significance of these new units of meaning automatically, adding them to the conceptual understanding, or creating new relationships where necessary. This technology can also learn about it's users by dynamically monitoring the content viewed, thus enabling new and relevant content to be delivered to the user as and when it is needed.

Qfiniti Assist's understanding of concepts is decided from the entire amount of data analyzed by IDOL, Therefore as new vocabulary and terms are introduced, or their meaning of language changes, they will be automatically updated in the system.

Operational Modes

Qfiniti Assist can run in maximized Console mode (Figure 3), or in minimized Desktop mode (Figure 4), reducing the amount of screen size used. In Desktop mode, Assist shows the Document Previews for each of the resulting documents that are returned via the user query.

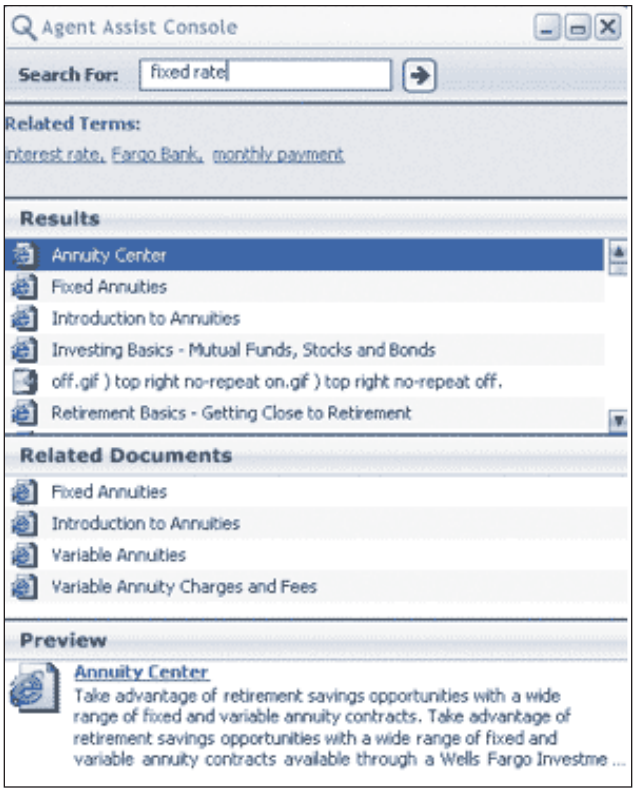

Figure 3: Qfiniti Assist in maximized Console mode

Figure 4: Qfiniti Assist in minimized Desktop mode

Thanks to the unique combination of Bayesian Inference and Shannon's Information Theory, the system is able to continuously develop and learn automatically.

Conclusion

Qfiniti Assist uniquely utilizes voice recognition technology to analyze the conversation between the agent and the customer as it progresses. By creating relationships between terms and identifying textual patterns, Assist develops a conceptual understanding of the conversation and automatically returns relevant information so agents can deliver prompt, accurate answers. Qfiniti Assist aids strategic contact centers in anticipating and meeting the needs of their customers. What's more, Assist is simple for agents to use and embrace. When the right tools are employed, contact centers are productive and customers are satisfied.

Part of the Qfiniti Enterprise Solution

Qfiniti Enterprise delivers a unified, centrally managed platform for multi-channel interaction analysis, real-time agent support, and contact center performance management. By automatically delivering relevant and accessible customer intelligence to the organization, this solution enables businesses to understand the meaning of customer interactions and deliver outstanding customer service across the globe.

Qfiniti Observe
- Call and desktop recording for quality/compliance

Qfiniti Explore
- Automated customer communication analysis

Qfiniti Assist
- Automatic information assistance

Qfiniti Survey
- Integrated customer satisfaction survey

Qfiniti Advise
- Scoring and measurement for evaluation

Qfiniti Expert
- On-line agent coaching and training

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