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Evaluating Speech Self-Service Platforms

by Elizabeth Herrell

TECH CHOICES



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with Merv Adrian and Benjamin Gray

EXECUTIVE SUMMARY

Speech self-service platforms support applications that reduce business communication costs by automating telephone transactions. Benefits include headcount containment, improved response times, flexible access to the Web with voice interface, and increased agility in serving customers and employees. Speech technology has improved significantly during the past decade and supports complex interactions built on sizable grammars with high accuracy levels. Partially packaged applications and reusable components make speech applications more affordable for businesses. Vendors provide the infrastructure and services required, but they vary in the level of services provided and in their support for application development. Some provide speech platforms integrated with their communications product portfolio and partner for application development and services, while others are dedicated solely to the delivery of speech solutions and provide all requisites for a turnkey speech solution. Nuance Communications and Tellme Networks have emerged as top market leaders according to Forrester's evaluation criteria but vendors have different strengths, and potential buyers should carefully evaluate all the profiles of vendors presented in this Forrester Wave™ to determine the best fit.

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NOTES & RESOURCES

Forrester interviewed 11 vendors, including Aspect Communications, AT&T, Avaya, Convergys, Edify, Genesys, Interoice, Nortel Networks, Nuance Communications, Tellme Networks, and VoiceGenie Technologies, and several end users for automated speech applications.

Related Research Documents

"Packaged Speech Applications"
June 9, 2004, Trends

"Microsoft Launches Speech Server"
April 5, 2004, Quick Take

"Speech Applications Go Mainstream"
March 1, 2004, Market Overview

VENDORS PROLIFERATE AS THE SPEECH MARKET HEATS UP

Speech enabling for customer and employee interactions is steadily growing. More than two-thirds of callers commonly use automated speech in their business interactions. Although early deployments for speech were relatively basic and resided on proprietary interactive voice response (IVR) platforms, the introduction of standards has spawned new competition for speech application platforms. The entry of open standard platform providers like AT&T, Convergys, Genesys, Nuance Communications, Tellme Networks, and VoiceGenie Technologies set the pace for nonproprietary application development and support for compelling business applications. Legacy IVR vendors like Aspect Communications, Avaya, Edify, Intervoice, and Nortel Networks followed suit and now support VoiceXML 2.0 applications on standards-based platforms.

Voice Makes A Comeback As An Important Business Tool

The relatively straightforward ROI for speech applications makes them an attractive investment opportunity. Many early adopters attest to the positive payback from speech applications by progressively adding more speech applications to support multiple aspects of their business operations. Business benefits for speech are found in the following areas:

- **Reduction in operation costs.** Speech transactions typically average \$0.20 per call compared with \$7 per call for live assistances.¹ Customer support headcount reduction also provides significant savings.
- **Favorable ROI.** ROI depends on the size and type of applications but most companies realize a payback in six to 24 months.
- **Improved use of automation.** Companies typically realize a 20% or higher reduction in caller abandonment and reductions in opt-outs from the IVR for live assistance, according to an Apex Research study.²
- **Increased customer satisfaction.** Sixty-one percent of customers are highly satisfied with their most recent speech encounter, according to Harris Interactive.³ The same study indicates that 90% prefer speech when compared with touchtone commands.

Touchtone Interactive Voice Response Falls Short

The inherent limitations of using the telephone keypad restrict the type of information that is collected — it only supports basic numeric commands. Speech applications provide a much greater range of options, eliminate menu trees, and allow callers to quickly go to their destination or information source. Many companies that upgrade IVRs with speech applications report that 10% to 20% of customer transactions are completed using speech. Intriguingly, many customers claim that they prefer to interact with the always-positive automated agents than with live agents.

Open Standards Support Multiple Apps And Enable Portability

Unlike proprietary, hardware-based legacy IVR systems, speech platforms are software-based and built on open standards. The flexible architecture of software-based platforms supports multiple applications. Typical components of a standards-based speech platform include:

- **Speech engines.** These include automatic speech recognition (ASR) and text-to-speech software (TTS).
- **Browser.** This is a navigational tool that directs speech prompts.
- **Applications.** These provide content for speech engines like directory assistance or change of address.
- **Application building tools.** These are grammars or words used to create speech applications that can be reused across many applications.
- **Reporting and monitoring.** These are tools that provide information on the performance of the speech platform.
- **Call control and processing.** This includes server hardware, audio cards, and telephone transport.

Standards-based speech platforms support Voice XML 2.0, the W3C-approved standard for speech applications, which eliminates earlier proprietary languages. Standards enable portability for speech applications, among other standards-based platforms.

Technology Improvements Drive Adoption

Improvements in speech software performance make speech well suited for business communications. However, almost all applications still require tuning to match the expected utterances of its user population. Improvements in speech software include the following attributes:

- **Dynamic grammars.** Market leaders Nuance and ScanSoft offer speech engines that dynamically update grammars and do not require any special end user training. Enlarged pronunciation dictionaries support millions of words in many languages.
- **Natural language understanding (NLU).** NLU, like AT&T's VoiceTone, integrates conversational speech that enables callers to speak normally and simply ask for what they need without specialized prompting.

- **Background noise elimination.** Advances in background noise elimination have significantly improved the accuracy for speech engines. For example, Nuance patented technology that identifies the “endpoints” of each utterance, so only the utterance is processed for recognition and not the surrounding noises.
- **Speaker verification.** Speaker verification identifies speakers based on their unique voiceprints, enhancing speech transaction security.

Microsoft Enters The Market

Microsoft’s entry into the market shifts market dynamics by bringing down costs and promoting fast deployment. Microsoft Speech Server (MSS), built on SALT specifications, supports programming languages familiar to programmers using Microsoft’s Visual Studio .NET.⁴ Microsoft aims to bring speech solutions to businesses of all sizes and to significantly expand their use, from embedded devices to large-scale business solutions. Microsoft was not considered for this report, because its new market presence does not yet meet the criteria required for this evaluation. As Microsoft continues expansion of its market share, Forrester expects it to become a major catalyst for speech application adoption.

EVALUATION CRITERIA FOR SPEECH PLATFORM VENDORS

Forrester limited this report to speech self-service market leaders, which eliminated many capable platform vendors. We considered both hosted services providers and premise-based solution providers. We considered the following characteristics:

- **Scalability.** Has the vendor implemented speech solutions with greater than 96 ports?
- **Proven track record.** Does it have an established client base?
- **Experience.** Does the vendor have more than three years supporting speech applications?
- **Standards compliance.** Does the product adhere to open industry standards?
- **Financial momentum.** Has the vendor shown sustained market growth in speech?

The Forrester Wave™ evaluates vendors across three categories: current offering, strategy, and market presence. Current offering establishes the quality of a vendor’s platform services and the results produced by its services. Strategy takes into account the vendor’s direction going forward and its vision for speech services. Market presence indicates a vendor’s performance in acquiring and maintaining customers as well as its financial stability (see Figure 1).

Figure 1 Evaluation Criteria Categories

Criteria	Description
Current offering	Evaluates vendors on the overall quality of services currently delivered for speech platforms and applications. Importantly, it also measures direct feedback from customers currently deploying speech applications in a production environment.
Strategy	Looks at vendor's direction going forward, its priorities during the next few years, how it plans to address future customer needs, and its ability to articulate a clear road map for the product and services.
Market presence	Considers strength of vendors based on the number of customers currently using its services, its ability to support large accounts, its experience with speech applications, and the vendor's financial position.

Source: Forrester Research, Inc.

Speech Provider Delivery Models

Vendors have two distinct models for supporting speech applications, and each model has merits for customers based on individual requirements. Forrester defines the two models as:

- **Infrastructure provider.** These vendors view speech services as an integrated component of their communication solution suite and provide the infrastructure for speech applications. They focus on blending speech solutions into their contact center technology and other voice applications. As such, many work with business partners to provide the development of the speech application, voice user interface, acoustic modeling, and other services related to speech solutions.
- **Full services provider.** These vendors support speech as their primary business and provide full turnkey services that support all aspects of speech solutions. Vendors in this category enhance vendor speech engines with in-house development and testing tools and offer all services required to deliver complete speech solutions with internal staff.

Not all vendors fit perfectly in one category or the other ; some fall somewhere in between. In our evaluation, full services providers scored slightly better than infrastructure providers due to extensive services for designing, implementing, and servicing speech. However, companies considering speech platform vendors may find that infrastructure vendors that support their current voice applications have an edge in the ability to integrate speech into their existing product suite.

Evaluation Criteria And Weightings

Evaluation criteria have several subcomponents that further define each vendor’s offering (see Figure 2). Most vendors met core requirements. We gave more weight to vendors that go beyond meeting expectations and offer above-average services.

Figure 2 Detailed Evaluation Criteria

	Criteria	Description
Current offering	Platform support	Indicates the overall quality of platform services, including speech recognition implementation, VoiceXML 2.0 compliance, survivability and recovery, management and reporting, CTI support, outbound notification, system scalability, and multivendor speech engine support
	Application services	Evaluates breadth of experience, prepackaged application process, IVR analytics, tuning tools, and real-time application control
	Results produced	Reviews quality of reference systems, brand reinforcing experience, and satisfaction of reference clients
	Pricing models	Considers vendor’s support of flexibility and value pricing
Strategy	Platform services	Evaluates provider’s vision for platform services, current product road map, and standards leadership
	Application services	Assesses vision for application services and current road map
	Thought leadership	Considers extent of new value propositions for speech self-service
Market presence	Client base	Number of customers with more than 96 ports in production
	Voice XML customers	Number of customers with more than 24 ports using VoiceXML
	Years of experience	Number of years deploying speech applications
	Financial momentum	Growth of firm’s license revenues for speech ports and services
	Overall financial stability	Strength of provider’s financial position

Source: Forrester Research, Inc.

VENDOR COMPARISONS

Forrester invited 12 companies to participate in this review. Eleven vendors responded to the evaluation criteria and provided the required references. IBM declined to participate because its speech platform sales are through its partnerships. Many other contenders not considered in this report are growing market share and currently provide a reliable solution. Consider them if they meet your business and technical requirements; you can apply these criteria to help your evaluation.

Nuance And Tellme Share The Spotlight As Top Performers

Nuance's Voice Platform is solidly optimized for speech and fully utilizes its own speech engine's capabilities. The tight integration of the speech platform enables the platform to deliver higher performance in terms of automation rates compared with more loosely coupled platform integration. Nuance's experience in developing and deploying speech technology results in a robust platform that allows it to deliver advanced capabilities as soon as they become available while maintaining high system performance. Tellme's speech self-service platform provides a highly scalable platform that supports sophisticated applications for large enterprises. Tellme offers hosted solutions and fields a large professional services organization. Tellme's extensive internal support network supports every element of the speech solution.

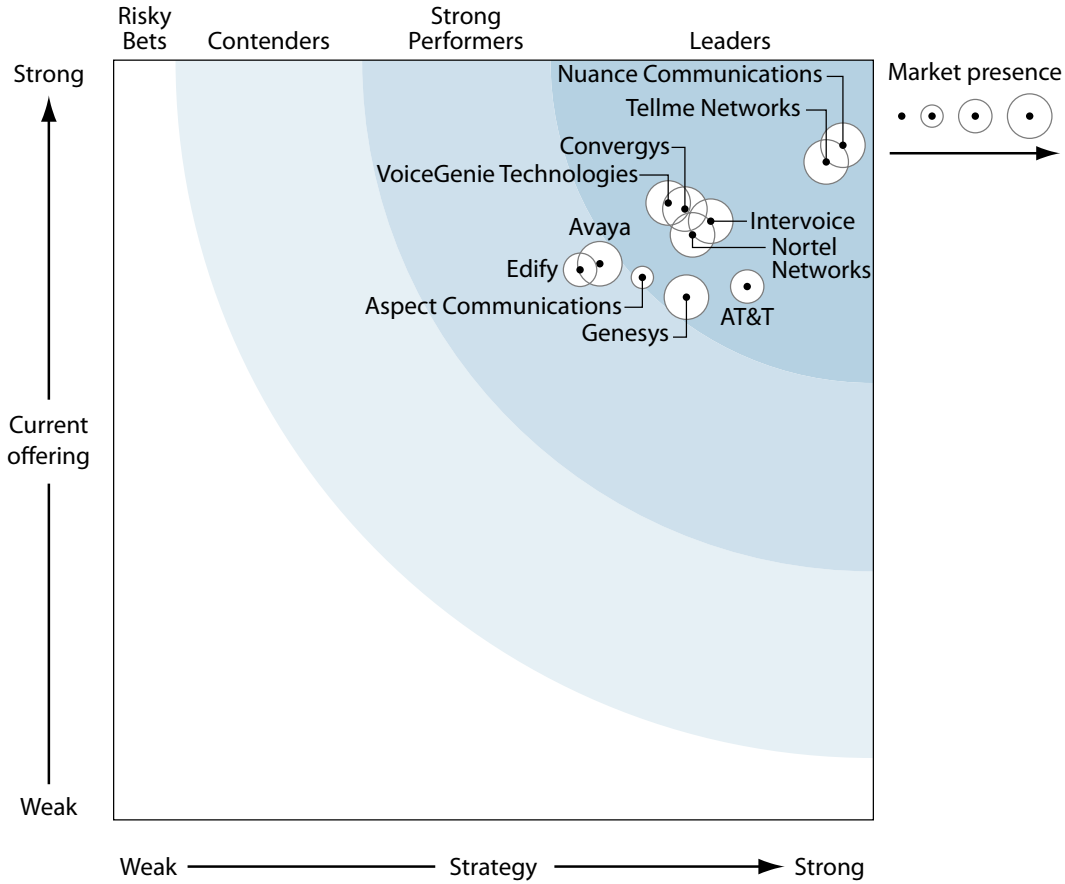
Leading Speech Platform Solution Vendors

Vendors with the ability to offer turnkey solutions and with dedicated focus on deployment for speech applications attained the highest ratings in Forrester's evaluation. Market leaders articulate strategies that take speech solutions to the next level by enriching the caller experience and providing business value in supporting new streams of revenue generation. The following describes each vendor's key attributes in delivering speech solutions (see Figure 3).

- **Tellme Networks.** Tellme's primary business is the delivery of reliable speech solutions. Its ability to attract large enterprises is a testimony to its dedication and experience in developing quality speech solutions. Tellme supports a highly trained professional services organization that understands speech fundamentals and provides expertise in design, implementation, and management of speech applications. Tellme commands a leadership role in the development of Voice XML 2.0 standards and advanced applications. Tellme's vision extends speech beyond an application for customer service. Its road map for speech applications as an enabler of personalized transactions that supports revenue-generation activities ensures Tellme of leadership in developing next-generation IP- and SIP-based applications. Tellme supports more than 140 large enterprises that are routing billions of calls over its network. Tellme is a good choice for companies that want high-quality, scalable solutions on a hosted platform.

Figure 3 Forrester Wave™: Speech Self-Service Platform Providers, Q4 '04

 The spreadsheet detailing this Forrester Wave™ is available online.



Source: Forrester Research, Inc.

- Nuance Communications.** Nuance’s Voice Platform offers its own ASR, TTS, and speech verification software to provide a tightly integrated solution that utilizes the full capabilities of its speech engine. Nuance also partners with the many other platform vendors included in this report which use Nuance’s speech engine for their platform. Nuance offers full turnkey services with an experienced staff of qualified, highly trained technical experts. It excels in platform services with large grammar support and delivering solutions that have high quality ratings due to ongoing investments in improving the features and accuracy of its speech technology. Nuance speeds application deployment with its application enablers, prepackaged applications, and Flexible Application Suites (FASt) that eliminate extensive customization for speech applications. NVP is a quality choice for companies demanding all-around excellence in speech platforms and applications.

- **Convergys.** Convergys' strength is in its ability to execute large, scalable deployments in its redundant hosted facilities. Convergys SpeechPort platform offers turnkey services for the entire life cycle of the application and is fully supported by internal staff. Its ability to offer large grammars for its customers is especially important for deploying complex applications. Because Convergys' core business is in outsourcing multiple-channel contact centers, Convergys' speech applications integrate fully into its contact-center solutions. Going forward, Convergys plans to leverage its ExpressWare components and applications to accelerate deployment and build applications that make greater use of NLU. SpeechPort is a good choice for enterprises that require fully integrated solutions as part of their outsourced contact center solution.
- **Genesys.** Genesys Voice Platform (GVP) is a software-based solution that runs completely on open standards and supports both carrier and enterprise editions. Genesys' strong market presence in contact centers provides an established customer base for integrated speech solutions. Genesys fully supports open standards VoiceXML 2.0 and emerging standards like IP and Call Control eXtensible Markup Language (CCXML). Genesys' business model is to focus its efforts on providing the infrastructure for speech solutions and working together with partners in delivering speech applications. Genesys offers a well-rounded solution for companies of all sizes and provides speech self-service as a standalone solution or fully integrated into its contact center product line.
- **Intervoice.** Intervoice has a long history in IVR and is fully dedicated to IVR solutions and services. As a solutions provider, Intervoice supports multiple speech recognition products on its platform and has established accounts with all major communications vendors providing contact-center solutions. As a services company, Intervoice has the capability to deliver end-to-end support for speech applications for premise and hosted solutions. Its vision takes speech applications beyond call centers into Web services that integrate into a company's Web infrastructure and IP network, which will initiate many new business opportunities for Intervoice and expand its presence in the enterprise. An independent company dedicated to speech solutions and services, Intervoice is also a major business partner with Microsoft for its MSS platform. Intervoice is a good choice for companies that want extensive experience in deploying IVR and speech for applications of all sizes on multiple vendor platforms.
- **VoiceGenie Technologies.** Most consider VoiceGenie a pioneer in deploying software-based speech platforms. As such, it has a strong reference list of scalable deployments for carriers and large enterprises. VoiceGenie develops tools internally to refine vendor-provided speech applications and supports its deployments with fully integrated management capabilities on a Web-based user interface. VoiceGenie's global clients provide it with an established track record to deliver its applications in many countries. To its credit, VoiceGenie not only maintains leadership in standards committees but is one of three companies to fully complete VoiceXML 2.0 certification.

- **Nortel Networks.** Nortel Networks is a vendor that has successfully moved from a proprietary IVR background and now supports speech applications on its open-standard speech Media Processing Server (MPS). Nortel offers its large customer base an upgrade path for its legacy IVR with MPS. Nortel Networks fully integrates its speech applications into its contact center applications. Going forward, Nortel intends an even greater integration of its MPS with its contact-center solutions and its planned SIP-based call center products, as well as further development for prepackaged applications and modules. Nortel's platform scales from small applications to carrier-class applications. Despite current financial problems, Nortel Networks maintained strong growth in deploying speech applications during the past year.
- **AT&T.** AT&T's clear strength is in its extensive experience in developing voice technology. Its ASR and TTS engines are part of its VoiceTone solutions offered as a hosted solution. Because AT&T uses its own technology, it provides a tightly integrated solution that takes advantage of its advanced technology in areas like NLU and large complex grammars. Although it led the way in developing voice technology, AT&T has not put enough marketing effort into its platform to command a large market share or to deliver repeatable solutions. Going forward, AT&T plans to expand its customer services and create a service-creation capability for application support that allows customers to take control of their applications while relying on AT&T for full network and infrastructure support.
- **Avaya.** Avaya's approach to speech is to fully integrate speech applications with its contact-center solution suite and provide end-to-end solutions for its installed base of customers. Similar to other communication equipment providers, Avaya focuses on the infrastructure component for speech and leverages business partners and independent software vendors with specific, vertical-market applications expertise, along with application development from its Global Services organization. Avaya's current speech platform is converged and can function as a standalone IVR running scripting applications to support migration from previous versions of Conversant, or as a voice portal running VoiceXML speech applications. Avaya's speech platform is well suited for companies with existing investments in Avaya's contact center solutions that want to maintain consistency in deploying an integrated solution across multiple communication channels.
- **Aspect Communications.** Aspect has a long history with IVR platforms and was an early adopter of speech recognition software. Its Uniphi Voice Portal is a component of its Uniphi Suite and is fully integrated with other applications like ACD and CTI. Aspect's Uniphi Voice Portal is also available as a standalone application. Aspect's Voice Portal's speech capabilities are fully supported by Aspect's experienced professional services team. Aspect's solution provides its customers with a single set of business tools built on a standards-based platform that provides centralized management capabilities. Aspect's integrated solution will appeal to customers that want a fully blended solution for managing customer interactions.

- **Edify.** Edify is another company that has transitioned from proprietary IVR platforms to open-standards speech solutions. A major emphasis for Edify is its services capability to support its customers. Edify is increasing its internal professional services staff to provide more of the services directly rather than through its business partners. Its parent company, S1, positions Edify into the banking services area, which is its strongest vertical market. Edify has expanded its product portfolio and offers four products, including its speech platform, applications, services, and tools. With scalability ranging from four ports to several thousand ports, Edify is an attractive vendor for companies that have broad requirements for speech solutions and that want an experienced vendor in this technology to support their applications.

RECOMMENDATIONS

TAKE A LONG-TERM VIEW WHEN EVALUATING SPEECH SOLUTIONS

- **Avoid isolated decisions.** Speech automation fundamentally changes how business communicates with its employees and customers and needs to be part of a longer-term strategy. Engage a provider that will grow and scale with future business requirements.
- **Engage standards-compliant vendors.** Standardization offers consistency, portability, and affordability. During evaluation process, determine if the vendor is fully compliant.
- **Prioritize expertise in application complexity.** Solutions range from simple to complex. Work with vendors that have expertise with similar applications that support similarly sized deployments.
- **Identify the vendor's vertical expertise.** Each industry has identified repeatable grammars and processes. Vendors with expertise in the same industry may offer reusable components that shorten design and development time.
- **Use caution with packaged solutions.** Almost all speech applications require some custom development and ongoing tuning to meet business requirements. Off-the-shelf products cannot deliver the same level of accuracy at this time.
- **Compare before you buy.** Ask for reference accounts in a live production environment to determine the quality of the speech solution. Do not rely on prerecorded demos.
- **Work with experts.** Most companies lack in-house skills for designing, deploying, and maintaining speech applications. Although in time these skills may be brought in-house, allow established experts in speech applications to guide the initial process.

SUPPLEMENTAL MATERIAL**Companies Interviewed For This Document**

Aspect Communications	Intervoice
AT&T	Nortel Networks
Avaya	Nuance Communications
Convergys	Tellme Networks
Edify	Vocalocity
Genesys	VoiceGenie Technologies

ENDNOTES

- ¹ Automated speech interactions cost \$0.10 to \$0.25 per minute. See the October 27, 2003, IdeaByte “Flexible Pricing Models Support Hosted Speech Solutions.”
- ² Source: Apex Research, as quoted in “Benchmarking for Services,” July 14, 2004, Nuance Communications. See <http://www.nuance.com/forms/benchmarking.html>.
- ³ In March 2003, Harris Interactive completed a speech satisfaction study of 326 interviews that reflected the US population. For more information, see <http://www.nuance.com/forms/speechstudy.html>.
- ⁴ As the newest member of the Microsoft Windows Server System family of products, Microsoft expects that reduced complexity and lower-cost applications will significantly expand the adoption of speech technology for business applications. Many new partners have signed up to create packaged applications for MSS, which will reduce deployment time for speech applications. But Microsoft faces strong competition from the numerous providers currently deploying VoiceXML speech solutions. See the April 5, 2004, Quick Take “Microsoft Launches Speech Server.”

FORRESTER

Helping Business Thrive On Technology Change

Headquarters

Forrester Research, Inc.
400 Technology Square
Cambridge, MA 02139 USA
Tel: +1 617/613-6000
Fax: +1 617/613-5000
Email: forrester@forrester.com
Nasdaq symbol: FORR
www.forrester.com

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