North American IVR Systems Market

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Summary of Major Findings

Introduction

In 2006 the IVR market experienced moderate single digit growth, generally in line with expectations based on the overall growth drivers for the IVR systems market within North America. The traditional self-service industry has reached high levels of saturation in most of its traditional end user verticals, with minimal prospects for the growth of touch-tone interactive voice response systems. This is especially true in the large enterprise segment, which has been the heaviest user of interactive voice response (IVR) systems. A current refresh cycle for first generation products within large enterprises, as well as low saturation within the small-medium enterprise segments, has provided a positive boost to the market. Speech enabling customer service front-ends has been proven to significantly enhance the customer experience and generate higher levels of satisfaction with the service offered. Interacting with a speech based application simplifies self service menus, thereby generating a more positive customer experience. As a result, speech technologies are increasingly becoming an integral part of the customer service function. Voice portal products are a rapidly growing sector within this market due to the rapid adoption of voice-over-IP (VoIP) technology and the associated ease in application deployment and integration.

Speech enabled IVR applications with attractive productivity and ROI gains, first generation refresh cycles and low saturation rates within the small-to-medium enterprise segment are some of the factors driving growth within the North American IVR Systems market. Since the commercial introduction of IVR systems a decade ago, market penetration has been increasing and currently stands at around 90 percent within large enterprises. Vendors, therefore, have been looking for newer products and services to sell into the large enterprise. The value proposition of speech technologies has been proven by the increasing number of successful deployments enabling customers to realize cost savings, grow revenues or improve customer satisfaction. Self-service solutions continue to represent the largest growth opportunity for speech technologies.

In the past, lengthy development times and hefty price tags have held back a more widespread adoption of speech. Easy to use application development environments and toolsets with reusable components have brought about a dramatic reduction in the development life cycle generally resulting in ROI of 4-6 months as opposed to 8-12 months in the past. Packaged applications with off-the-shelf deployments and much lower price points offer attractive alternatives for the small-medium sector and this is a space with increasing competition. Both of these factors will ultimately result in greater adoption of speech enabled self service solutions.

Vendors need to focus on developing effective migration paths for customers with existing touch-tone systems as they move towards adopting next generation speech-enabled IVR products. Though speech recognition in its various forms (speaker verification, text-to-speech, automatic speech recognition, etc.) is generally well understood, end-users still require education on the capabilities of the technology and the implications on their customer service business.

The industry has increasingly adopted the use of open standards. Industry participants have begun to realize that prospects for growth improve dramatically if they make their products inter-operable with solution components and technologies offered by other vendors. Customers increasingly select products based on open standards, so they have greater flexibility in modifying or expanding the solution. VoiceXML represents a fundamental paradigm shift in voice application development. VXML speech recognition enables any programmer to develop reusable grammar that can be leveraged by multiple applications. Additionally, standards such as MRCP and CCXML have helped increased the viability of VXML based application development.

In 2006 the IVR systems market including products and services was valued at $657 million and is projected to increase at a CAGR of 10.8% over the forecast period. The market grew by a very positive 5.8 percent compared to 2005. Key vendors covered in this space include Aspect, Avaya, Cisco, Envox, IBM, Intervoice, Interactive Intelligence, Genesys and Nortel.

Scope and Methodology

This research service presents a picture of the IVR Systems market within North America for 2006. This research service also outlines the key trends, drivers, challenges and restraints observed in the IVR Systems market during 2006, along with the Frost & Sullivan strategic recommendations for growth initiatives.

The following research methodology was adopted in the conduct of this research service:

- Frost & Sullivan primary interviews

Frost & Sullivan conducted extensive interviews with the key market players in the North American IVR Systems market to understand key dynamics and other information required for a comprehensive market analysis.

- Secondary research

Secondary research consisted of extensive reviews of press releases issued by market participants, industry publications, SEC filings, as well as Frost & Sullivan's in-house databases.

Product Definitions

An Interactive Voice Response (IVR) system is a telephony-based technology, primarily used to automate customer-centric business processes and relieve the pressure on live agents handling customer calls. IVR systems automate inbound call processing by retrieving information according to the caller's requirements from enterprise databases that are connected to the IVR systems. The IVR system works on either voice or touch tone prompts or both.

IVR systems contain hardware and server software that can perform signal processing for speech and analyze touch tone inputs. The voice server that is used to recognize and analyze speech patterns, and provide the necessary output (voice or touch tone), can be part of the IVR system or function as a stand-alone system. A call server processes the inbound calls and directs them to the appropriate locations. Both servers can reside on a single system since they are software-based. The IVR systems function with a back-end application that connects to the enterprise's databases through a host server.

Traditional IVR systems have been around for a decade now, and most of them employ a touch-tone or dual-tone multi-frequency (DTMF) user interface. Speech-enabled IVR systems, the next generation of products, allow callers to use their own voice rather than DTMF inputs to complete transactions. Recent systems accept a combination of voice input (through the telephone) and touch-tone input (via the phone keypad) and react with appropriate responses or actions. The system prompts the caller to input identification in the form of account, or social security numbers. Through subsequent voice or touch tone menu selections, the system can authenticate the caller and grant access to the desired information.

The most common uses of IVR systems include checking bank accounts and credit card balances, obtaining travel information such as updated flight arrival and departure information and directory assistance. IVR systems find the greatest use in verticals with high transaction volumes and an emphasis on customer satisfaction. Finance and Banking, Insurance, Healthcare, Travel, and Government markets are good examples of such verticals.

Nortel, Avaya, Intervoice, IBM, Aspect, Genesys and Interactive Intelligence are some of the major vendors in the IVR market.

Market Trends

Speech Based Self Service Solutions

Customer experience management is a key enterprise objective, one enabled by having the right technologies in place to address customer communication needs. Speech enabling customer service front ends has been proven to significantly enhance the customer experience and generate higher satisfaction with the service offered. Interacting with a speech based application simplifies self service menus thereby generating an overall more positive customer experience. While speech technologies are increasingly becoming an integral part of the customer service function, they do come with a hefty price tag and can be cumbersome to develop, implement and maintain. On the other hand, speech enables companies to reduce system costs. Complicated touch-tone menus were leading to frustrated customers, customers that had become savvy enough to start "zero-ing" out of the system in an effort to reach a live agent. Using speech allows for a flatter menu hierarchy and lower average times spent within the IVR system, reducing the desire of customers to 'escape' the system.

With the advent of natural language processing and enhanced vocabulary recognition, speech further shortens automated menus. Where directed dialogue restricts the customer to specific functions, natural language dialogue allows for unstructured questions or responses. Thus, a customer calling into a natural language-enabled IVR system is given the flexibility to address the system with a conversational sentence similar to one that would be used with a live person.

IP-based IVRs Will Have Significant Impact on the Market

IP is expected to have significant impact in the IVR market. In a recent survey that Frost & Sullivan conducted of a random set of contact centers in North America, more than 60 percent of the contact center seats were currently IP-enabled. The survey also found that contact centers were planning to invest much more in IP; in 2 years, 75 percent of the seats were going to be IP. The top reason to move to IP was found to be the potential to deploy enhanced features and capabilities, with easier network management a close second.

With the growing interest in IP telephony and the forecasted growth of IP contact centers, IP IVRs will make a compelling business case for the convergence of all contact center operations with IP. In 2003, Frost & Sullivan estimated that just three to four percent of ports shipped in the U.S. were IP-based. The portion of IP ports has grown quite rapidly and in 2005 some companies reported close to 10 percent of their ports shipped as being IP. Shipment data from 2006 showed even greater IP growth, with 18 percent of the total ports shipped in North America being IP. Most incumbent vendors and next generation vendors have included IP-enabled systems and SIP support in their portfolio.

The growing acceptance of IP in contact centers has also caused contact routing vendors to take a holistic approach to the technology designed to handle customer interaction processes. The major inbound contact routing vendors have either begun to integrate their standalone IVRs into their contact center suite offerings or, if they choose not to offer standalone IVRs, to incorporate IVR functionality into their core contact center suite for their customers. Leading contact center providers such as Siemens, Mitel Networks and NEC have all helped their customers create a rationalized contact routing strategy that includes IVR functionality, as well as providing customers with transactional capabilities. Such IVR deployments directly impact first call resolution rates and help in cost reduction efforts.

Multi-channel and Multi-modal Access

Multi-channel access is the ability to access data and applications from numerous channels, such as phone, PDA, mobile phones, laptops, etc. Multi-modal access on the other hand is the ability to combine multiple modes or channels in the same interaction or session. There is an increase in worker mobility and in the number of wireless devices, particularly smaller devices such as PDAs and data-enabled mobile phones. Providing customers the convenience of access via their preferred channel of contact has been a critical consideration for vendors in this marketplace. Methods of input for these devices include speech, keyboard and touch-screen. Generally speaking, as devices get smaller, the inconvenience associated with keying in commands is relieved by voice-enablement, making speech a preferred and convenient mode of input for some of these devices. This trend has created some growth opportunities for speech technology and application vendors. Differentiation of service with the help of multi-modal platforms that will unify and enhance the caller experience across multiple contact channels is a key consideration for this market. Growth of multi-modal applications, however, will be hampered somewhat by the slower build-out of advanced telephony networks. Because vendors in this space tend to be multinational, they have already begun to see adoption of multi-modal applications in other geographies and they will have regions such as Europe and Asia for proving grounds before this technology gains widespread acceptance in North America.

Standards Based Development

The industry has increasingly adopted the use of open standards. Industry participants are realizing that they have greater prospects for growth if they make their products interoperable with solution components and technologies offered by other vendors. Customers are increasingly select products based on open standards, so they have greater flexibility in modifying or expanding the solution. The Internet and the data services industries have proven the importance of open standards in promoting creativity and rapid market penetration.

VoiceXML (VXML) represents a fundamental paradigm shift in voice application development. VXML speech recognition enables any programmer to develop reusable grammar that can be leveraged by multiple applications. The ability to reuse code written by others makes this language extremely powerful. The widespread acceptance of VXML has had significant business impact. Without the existence of VoiceXML, the development time spent on each project would be higher, the programming environment would not be as rich and the overall design and implementation process would be more labor-intensive and costly. With VXML, customers now have the flexibility to integrate components from different vendors. Applications that are built on VXML are considerably portable allowing companies to retain their own databases on site while just using the hosting providers' networks. SALT and X+V specifications have also gained prominence as specifications of choice for multimodal application development. Additionally standards such as MRCP and CCXML have helped increased the viability of VXML-based application development.

Personalization

Meeting unique customer needs via differentiated customer service is an important influencer of customer loyalty. The era of mass marketing is increasingly being supplemented by personalized, individually targeted messages. Several best-in-class vendors have successful utilized their expertise in developing and deploying self service solutions to interject a great amount of personalization within their solutions. Interjecting self service menus with individually targeted messages holds great promise in maximizing customer interactions and also offers a means of generating revenue via cross sell and upsell techniques.

Packaged Applications and Re-usable Components

Packaged applications have carved a place for themselves in the speech self-service marketplace due to their ability to significantly reduce time to market and realize deployment efficiencies. Packaged solutions are generally less expensive than customized applications built from scratch based on individual customers' specifications. Packaged solutions are also well suited for the mid market consumer that often lacks the expertise to develop speech self service solutions. In general, packaged applications quite adequately serve the needs of customers looking to deploy simple self service solutions. Packaged applications and associated re-usable components continue to serve as the building blocks for more complex deployments, thus catering to the personalization and customization trends within the marketplace. The number of packaged applications will only increase as early adopter mid-market customers become referencable case studies.

Vertical-Specific Applications Drive Growth of IVR Market

Vendors are quickly learning that the opportunity for revenue in the IVR market is moving away from the platform sale to application sales. Where most applications were developed with the contribution of specialists and core speech technology vendors, IVR system vendors are taking a much more hands-on approach in the development of applications. For example, although the market gets increasingly inundated with vertical-specific and packaged application vendors, some IVR platform companies are using their competitive strengths to take part in the applications market. Speech-enablement opens the door to a wider variety of applications that can be serviced by the enterprise's IVR system. This allows companies to provide more value to their customers while generating a new source of revenue for IVR vendors.

Market Engineering Measurements

Chart 1.1 provides the Market Engineering Measurements for the North American IVR systems market for 2006.

Chart 1.1

IVR Systems Markets: Market Engineering Measurements (North America), 2006

Market Engineering Drives Market Strategy and Planning

Measurement Name	Measurement	Trend
Market age	Growth Stage	Stable
Revenues (2006)	$657 million	Increasing
Potential revenues (2012)	$1.35 billion	Increasing
Base year market growth rate (2006)	5.8%	Stable
Forecast period market growth rate (CAGR)	10.9%	Decreasing
Units (2006)	245,000	Increasing
Saturation (current/potential users)	Medium-High	Stable
Average price	$2,680	Increasing
Price range	$550 to $3,000 per port	Increasing
Price sensitivity	Medium	Stable
Number of products	More than 30	Stable
Average product development time	8-12 months	Decreasing
Competitors (active market competitors in base year)	30	Decreasing
Degree of competition	Medium	Increasing
Degree of technical change	High	Increasing
Customer satisfaction	Low-Medium	Increasing
Customer loyalty	Medium	Stable
Market concentration (percent of base year market controlled by top three competitors)	53.4%	Stable

Note: All figures are rounded. Source: Frost & Sullivan

Market Challenges

Figure 1-1 lists the challenges facing the North American IVR systems market for the period 2007-2013.

Figure 1-1

IVR Systems Market: Impact of Top Ten Market Challenges (North America), 2007-2013

Challenge	1-2 Years	3-4 Years	5-7 Years
Vendors need to develop strong and quantifiable ROI models for speech based self service solutions	High	High	Medium
Vendors must educate enterprises in the deployment of effective speech solutions to overcome historic negative perceptions and avoid future failures.	High	High	Medium
Rapid technological changes and evolution of standards force traditional IVR vendors to invest heavily in product research and development, along with up-to-date standards compliance	High	High	Medium
High cost of possessing in-house speech expertise and technology leads to dependence on core speech technology vendors	High	High	Medium
Incumbent vendors need to enable customers to deploy advanced speech solutions without requiring fork-lift upgrades to existing IVR systems	High	High	Medium
Saturation in traditional end-user verticals requires vendors to rethink strategies and explore new growth areas	High	Medium	Medium
Paradigm shift from IVR being part of the telephony environment to being a web services application forces vendors to rethink product strategies	Medium	Medium	Medium
Channel partner education and training, especially when serving the small to mid-market	Medium	Medium	Medium
Vendors need to track adoption of multimodal applications and prepare to incorporate the appropriate standards	Medium	Low	Low
Building effective distribution channels is a key challenge for vendors and providers	Low	Low	Low

Source: Frost & Sullivan

Market Drivers

Figure 1-2 lists the market drivers ranked in order of impact for the North American IVR systems market for the period 2007-2013.

Figure 1-2

IVR Systems Market: Market Drivers Ranked in Order of Impact (North America), 2002-2013

Rank	Driver	1-2 Years	3-4 Years	5-7 Years
1	Automation of simple customer interactions still remains the primary driver for the IVR Systems market	High	High	High
2	Ongoing replacement cycle for first generation products is a major growth driver	High	High	High
3	Availability of application development tools and reusable components bring down cost and time to market for speech applications	High	High	Medium
4	End-user accounts of dramatic reductions in operational costs and positive impact on the customer experience help drive adoption for speech based self service solutions	High	High	Medium
5	Standards such as VXML allow portability, vendor independence and flexibility, thus reducing enterprise reluctance to deploy speech	High	High	Medium
6	Packaged applications and vertical specific modules marketed at lower price points help bring IVR applications within the reach of the small-mid market	High	High	Medium
7	Availability of multiple deployment options ranging from premises-based solutions, simple hosting to complete managed service options, allows vendors to target a diverse customer base	High	High	Medium
8	Increased adoption of IP telephony will spur demand for IP based IVR solutions	High	High	Medium
9	Increased vocabulary and improved natural language capabilities in speech provides greater satisfaction with speech based self service automation	Medium	Medium	Low
10	Growth of mobile phone usage combined with voice sustaining its position as a primary contact interface will drive growth of the IVR industry	Medium	Medium	Low

Source: Frost & Sullivan

Market Restraints

Figure 1-3 lists the market restraints ranked in order of impact for the North American IVR systems market for the period 2007-2013.

Figure 1-3

IVR Systems Market: Market Restraints Ranked in Order of Impact (North America), 2007-2013

Rank	Restraint	1-2 Years	3-4 Years	5-7 Years
1	Ineffective speech based IVR solutions frustrate end-users and lead to a negative perception regarding the use of speech in self service	High	High	Medium
2	High cost of speech-based self service solutions restrains adoption rates	High	High	Medium
3	Requirement for fork-lift upgrades deters end-users from migrating to speech	High	High	Medium
4	IVR vendors are still undergoing the speech application development and implementation learning curve	High	High	Medium
5	Fragmented market with a number of traditional vendors and next generation vendors confuses customers and delays adoption	High	Medium	Medium
6	Declining prices for touchtone IVR systems and slow adoption of speech-enabled higher price point solutions negatively impacts vendor revenues	Medium	Medium	Low
7	Budget constraints continue to hold back investments in advanced technologies such as speech	Medium	Medium	Low
8	Higher price tag associated with speech keeps it out of the reach of small-mid sector	Medium	Medium	Low
9	Increased adoption of the hosted model negatively impacts premises based IVR systems market	Medium	Medium	Low
10	Redefinition of business/revenue model is a key challenge	Medium	Medium	Low

Source: Frost & Sullivan

Revenue Forecasts

Figure 1-4 and Chart 1.2 show revenue forecasts for the North American IVR systems market.

Figure 1-4

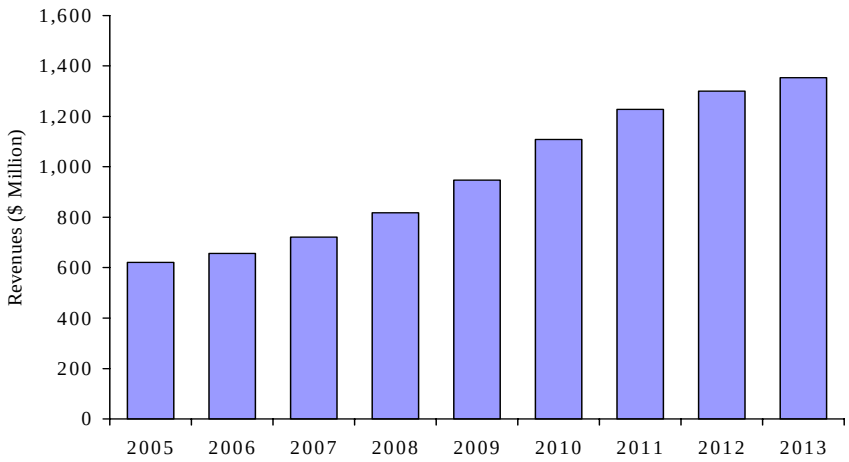
IVR Systems Market: Revenue Forecasts (North America), 2005-2013

Year	Revenues ($ Million)	Revenue Growth Rate (%)
2005	621.00	---
2006	657.00	5.8
2007	721.60	9.8
2008	817.74	13.3
2009	947.38	15.9
2010	1,107.59	16.9
2011	1,226.98	10.8
2012	1,300.05	6.0
2013	1,352.52	4.0
Compound Annual Growth Rate (2006-2013): 10.9%		

Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

Chart 1.2

IVR Systems Market: Revenue Forecasts (North America), 2005-2013



Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

IVR system revenues include revenues from sale of IVR equipment, software and services including installation, maintenance and standard upgrades. Revenues in this study represent manufacturer-level revenues. This study uses an IVR port as the metric of measurement. Revenues were derived by multiplying the average price per port by the total number of unit shipments at the port level. Revenues from direct sales are factored at 100 percent, while revenues for indirect sales are reduced by the margin accrued by the reseller. Revenues include sales of both touch tone ports and speech-enabled ports. Revenues from speech-enabled ports were calculated by determining the actual number of ports that have ASR, TTS and SV with their corresponding manufacturer prices.

Forecast Assumptions and Factors:

- Estimates released by the U.S. Bureau of Economic Analysis show that the real gross domestic product (GDP) of the U.S. grew by an annual rate of 3.5 percent in the fourth quarter of 2006. In the third quarter of 2006, the GDP grew at a rate of 2.0 percent.
- The Canadian Chamber of Commerce expects average annual real GDP growth of 2.8 percent for 2006. Overall, the Canadian economy is expected to expand at a moderate pace going forward in 2007.
- Higher growth rates are expected when the current traditional IVR systems deployed during the Y2K period near the end of their replacement cycle. This trend is expected to take effect from late 2005 to late 2009. The high volume of replacement sales is expected to decline in late 2010 to 2012 and return the market growth to a normal pace.
- Increasing number of businesses are opting to invest in emerging open-standard IVR platforms such as VoiceXML and SALT to make better use of web infrastructure, improve functionality. Many businesses are currently deploying open-standards IVR platforms with touch-tone rather than speech and using the benefits of open-standards and web development capabilities.
- Increasing usability and availability of application development tools and reusable components that bring down cost and time to market for speech self-service applications are expected to provide a positive boost to the market.
- The growth of mobile phones is out-pacing land lines around the world. This increased mobility will put a pressure on enterprises that want to improve customer service by providing speech self-service for mobile users on the move.
- Growth of IP telephony will stimulate the growth of IP IVRs as a part of the convergence strategy. IP telephony is expected to attain 50 percent penetration in North America by 2006.
- Contact centers, especially IP contact centers, are expected to grow over the forecast period. By 2008 approximately 62 percent of annual contact center seat sales in North America will be running on IP
- Speech-enabled ports are expected to increase in demand. By mid-2007, it is expected that close to 50 percent of the ports shipped will be speech-enabled.

Pricing Analysis

- Prices are expected to remain stable, with only a modest increase of 1.08 percent over the length of the forecast period.
- In 2006 the average manufacturer revenue per port, inclusive of hardware, software, speech and services, amounted to approximately $ 2,680. This was a drop compared to the previous year. Competitive pricing strategies to win deals, inclusion of upgrades and add-ons which typically sell at lower price points and large sales of traditional ports in 2006 to prepare customers for end-of-life of those systems are some of the reasons for this decline.
- IVR speech applications will result in an increase in pricing over the next couple of years until the technology peaks and becomes commoditized. Once the market has reached a relative stage of maturity and speech requirements are fairly ironed out, packaged applications sold at much lower price points will exert a downward pressure on the price.
- The hardware component of the IVR solution is expected to decrease with industry commoditization. Moreover, the hardware component is also expected to get phased out by the move towards software-only solutions introduced by some vendors. In the long term, the services component is also expected to decrease due to vendor and customer education, increasing expertise with speech self-service solutions and greater usage of pre-built modules.
- Newer technologies such IP IVR and advanced speech applications will continue to exert upward pricing pressure for IVR systems. Speech technologies are very complex and difficult to develop for new entrants. As a result, the small pool of vendors who do have the technology will retain the upper hand in determining pricing premiums.
- Prices of speech technologies are expected to decline. Core speech technology research available with Frost & Sullivan indicates that per-port prices of core technologies will decline by approximately four percent over the forecast period.
- The cost for professional services will rise each year, in the near to mid-term, due to the increasing popularity of the speech and the complexity of installations associated with speech.
- There will be price erosion from the IVR hosting market in the "under 24 ports" segment, which will decrease when IVR vendors start concentrating on this segment.

Revenue Breakdown by Size of Deployment

Figure 1-5 and Chart 1.3 show the estimated percent of revenues by deployment size for the North American IVR systems market for the period of 2005 to 2013.

Figure 1-5

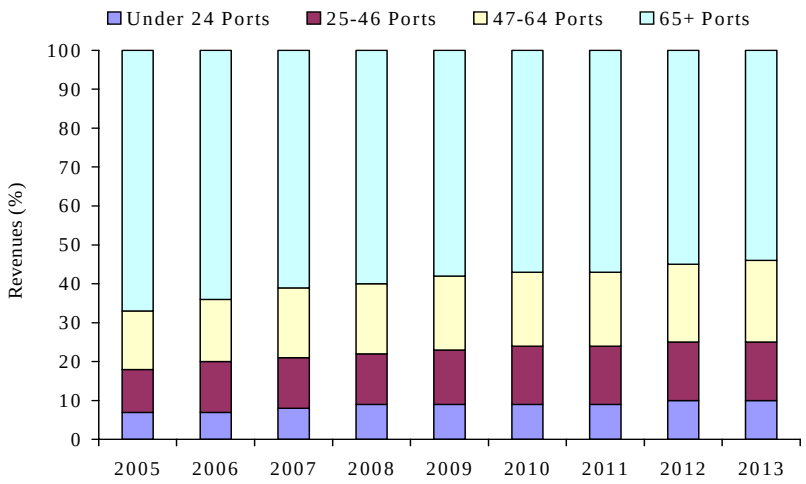
IVR Systems Market: Percent of Revenues by Deployment Size (North America), 2005-2013

Year	Under 24 Ports (%)	25-46 Ports (%)	47-64 Ports (%)	65+ Ports (%)
2005	7.0	11.0	15.0	67.0
2006	7.0	13.0	16.0	64.0
2007	8.0	13.0	18.0	61.0
2008	9.0	13.0	18.0	60.0
2009	9.0	14.0	19.0	58.0
2010	9.0	15.0	19.0	57.0
2011	9.0	15.0	19.0	57.0
2012	10.0	15.0	20.0	55.0
2013	10.0	15.0	21.0	54.0

Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

Chart 1.3

IVR Systems Market: Percent of Revenues by Deployment Size (North America), 2005-2013



Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

The 65+ ports segment still accounted for the bulk of IVR shipments in 2006. The large enterprise segment has the greatest need for IVR systems due its focus on customer satisfaction and customer retention. Specifically, large enterprises in verticals such as banking/ finance, insurance, travel, healthcare, hospitality and telecommunications that have large service call volumes have been, and will continue to be, optimal candidates for IVR system deployments.

Over the forecast period, large systems will continue to account for the majority of IVR and speech-enabled self-service systems shipped. However, there are a number of factors that contribute to possible activity in the small-sized system segments. First, as the large system segment becomes saturated it will account for a declining share of revenues. Secondly, as VXML gains traction the average number of ports per system could decrease. Primarily this is due to VXML-based systems providing the flexibility of starting with a smaller number of ports--legacy systems were restricted to a minimum of 24—even though that many ports were not always required. Having being given the flexibility of deploying a smaller number of ports, customers will also tend to deploy fewer ports as VXML is still relatively new technology.

Small-medium enterprises, though also focused on customer satisfaction and retention, do not have quite the same call volume and hence are unable to justify capital expenditures on IVR systems. Moreover, expensive and lengthy speech implementations are out of the reach of some portion of the small-medium sector. Packaged applications with off the shelf implementations at significantly lower price points will form an attractive alternative for this sector. On the other hand, infrastructure upgrades and adoption of newer technologies such as IP are much simpler for the small-medium size enterprise since it is relatively easier for them to overhaul and uproot legacy installs. Hosted services solutions are also an attractive option for this sector.

Revenue Breakdown by Industry Vertical

Figure 1-6 and Chart 1.4 show the estimated percent of revenues by end-user vertical for the North American IVR systems market for the period of 2005 to 2013.

Figure 1-6

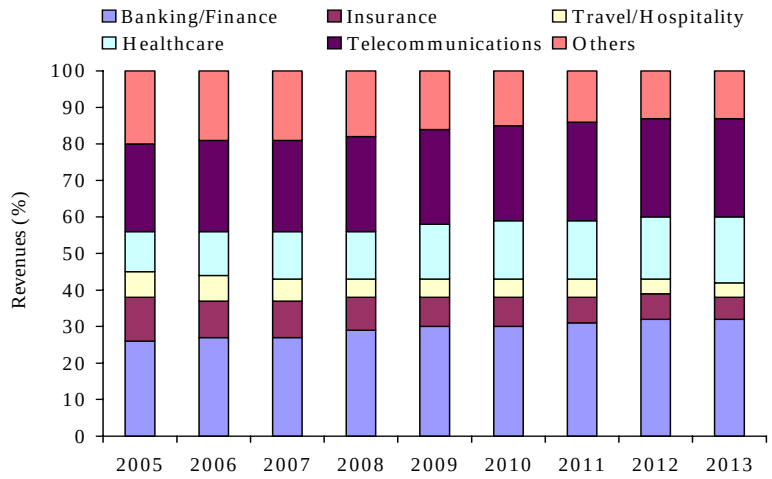
IVR Systems Market: Percent of Revenues by End-user Vertical (North America), 2005-2013

Year	Banking/ Finance (%)	Insurance (%)	Travel/ Hospitality (%)	Healthcare (%)	Telecom-munications (%)	Others (%)
2005	26.0	12.0	7.0	11.0	24.0	20.0
2006	27.0	10.0	7.0	12.0	25.0	19.0
2007	27.0	10.0	6.0	13.0	25.0	19.0
2008	29.0	9.0	5.0	13.0	26.0	18.0
2009	30.0	8.0	5.0	15.0	26.0	16.0
2010	30.0	8.0	5.0	16.0	26.0	15.0
2011	31.0	7.0	5.0	16.0	27.0	14.0
2012	32.0	7.0	4.0	17.0	27.0	13.0
2013	32.0	6.0	4.0	18.0	27.0	13.0

Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

Chart 1.4

IVR Systems Market: Percent of Revenues by End-user Vertical (North America), 2005-2013



Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

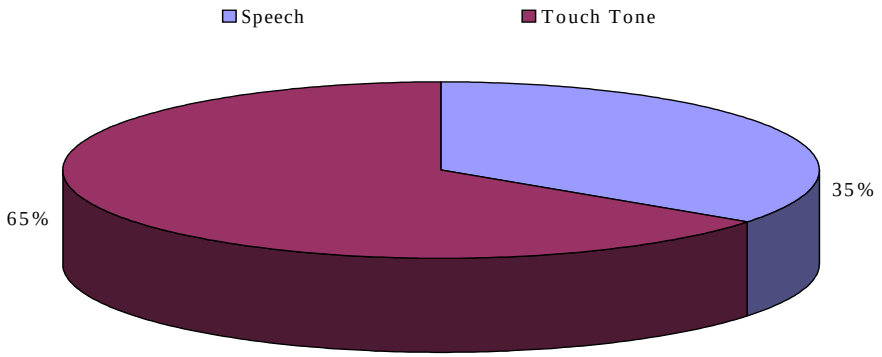
- Banking/finance accounted for 27 percent of IVR revenues in 2006. This vertical has several focus areas that benefit immensely from self service solutions, including account inquiries, mortgage balance, interest rates, stock quotes etc. This vertical also represents the greatest potential for benefit from speech applications. Vendors who have introduced packaged applications have largely concentrated on a banking/finance vertical offering.
- The telecommunications industry had been the hardest hit by the economic downturn a few years ago, but the segment has recovered quite admirably. This vertical saw excellent growth in 2006 and accounted for 25 per cent of the shipments.
- Insurance was one of the earliest adopters of IVR systems due to the labor intensive nature of insurance business processes. This sector will see only minimal growth over the next couple of years, primarily due to market saturation.
- Travel and hospitality companies such as airlines, rental car companies, trucking, freight and other transportation firms have made excellent use of IVR systems in the past. This industry represents numerous excellent opportunities for speech self-service solutions. Many of the early multimodal applications have been created for this space; one example: giving a customer the ability to request a screen-based travel itinerary from a wireless device such as a PDA using a voice interface.
- Healthcare represents great potential in the future for IVR applications. Examples of application areas include automated prescription refills, claims and billing, appointments, physician referral and general information. HIPAA compliance can be enhanced and regulated with voice automation and speaker verification.
- Retail, education and government make up the bulk of the 'others' segment. Several e-governance initiatives will ensure growth for the government sector, primarily at the state and local levels.
- Service-oriented industries claim the highest IVR penetration rates. Frequently repeated simple transactions such as account balance information or hotel information are ideal for automation.The financial/banking services and telecom/IT industries account for a large portion of existing speech deployments in North America. Accordingly, the percentage of revenues coming from these two verticals constitute more than 50 percent of the total IVR system market revenues.
- However, substantial growth potential is offered by the healthcare industry. This was validated in a recent survey of a random set of contact centers in North America conducted by Frost & Sullivan. Of the respondents in the banking/financial vertical, 57 percent of the respondents were expecting to grow their annual budgets for service, software and hardware associated with self-service solutions. Of the respondents in the Healthcare vertical, 53 percent were expecting to grow their annual budgets for service, software and hardware associated with self-service solutions.
- Untapped opportunities also exist in government organizations. For example, tax refund or social benefit information are good targets for automation. In the same survey mentioned above, of the respondents in the Government/Education sector, 49 percent of the respondents were expecting to grow their annual budgets for service, software and hardware associated with self-service solutions.

Speech Adoption Analysis

Chart 1.5 provides the percentage of revenue by technology for the North American IVR systems market in 2006.

Chart 1.5

IVR Systems Market: Percent of Revenues by Technology (North America), 2006



Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

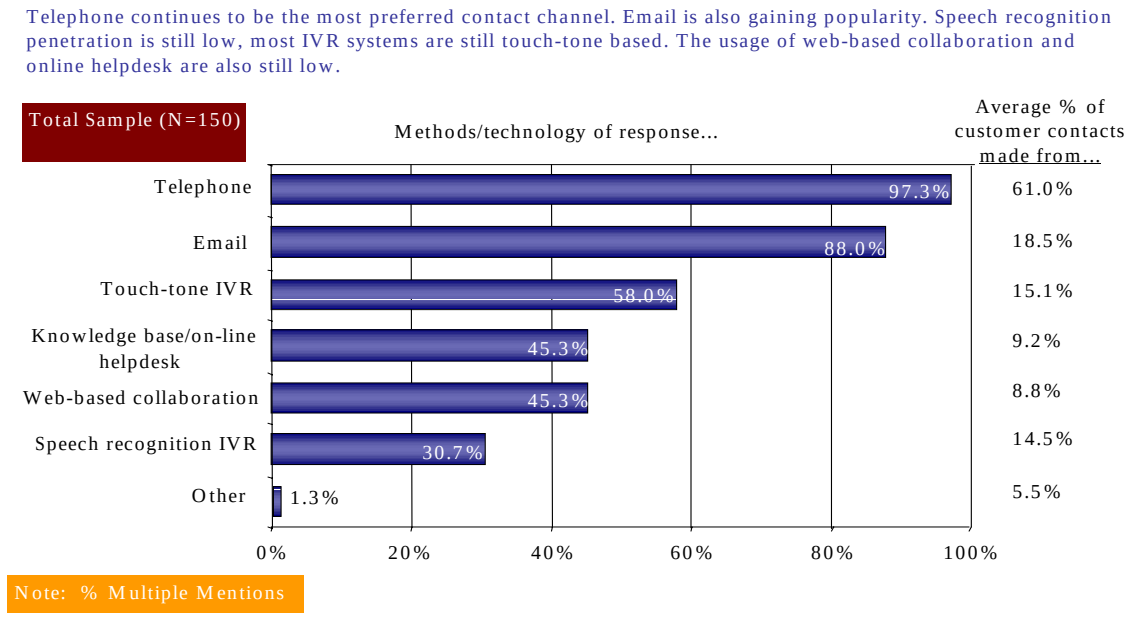
As we can see from the above chart, close to two-thirds of the IVR systems market consists of touch tone solutions, with the balance utilizing speech technologies. Speech based self-service continues to gain market acceptance due to its effects on improving the customer experience. An effectively designed and implemented speech self-service solution can significantly reduce the amount of time customers spend within the IVR, as well as reduce misroutes and agent bailouts. Customer service levels can also remain very high due to the ease of access in a speech recognition environment. While speech technologies are increasingly becoming an integral part of the customer service function, they do come with a hefty price tag and can be cumbersome to develop, implement and maintain. Hosted business models not only provide a cost-effective means to enabling voice customer service front-ends, but also within the managed service environment provide access to speech expertise to assist with the application design, development and maintenance process.

Touch tone solutions have been in the marketplace for more than two decades now and users have become intimately familiar with the keypad entry methodology; touch tone, therefore, represents some level of comfort for users. DTMF solutions continue to be well suited for number intrinsic applications such as entering account information. On the other hand, applications such as obtaining stock quotes and making address changes are simpler with speech self service solutions. Another factor that drives the underlying technology choice is the complexity of the self-service menu. Speech brings immense value in simplifying menus for applications when the IVR menu could potentially be too long and cumbersome with multiple choices. On the other hand, touch tone solutions continue to be suitable for simple menus with just a few routing options.

Chart 1.6 provides the support for various contact channels by North American contact centers according to a 2006 Frost & Sullivan end-user survey.

Chart 1.6

IVR Systems Market: Support for Various Contact Channels—Frost & Sullivan End-user Survey (North America), 2006

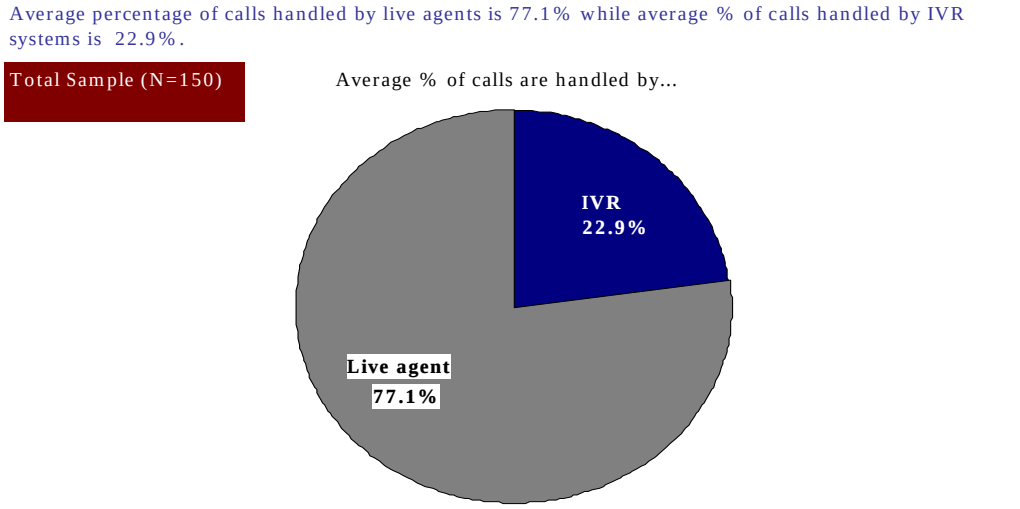


Note: All figures are rounded. Source: Frost & Sullivan

Chart 1.7 provides the percentage of total inbound contacts handled by IVRs according to a 2006 Frost & Sullivan end-user survey.

Chart 1.7

IVR Systems Market: Percentage of Contacts Handled by IVRs—Frost & Sullivan End-user Survey (North America), 2006

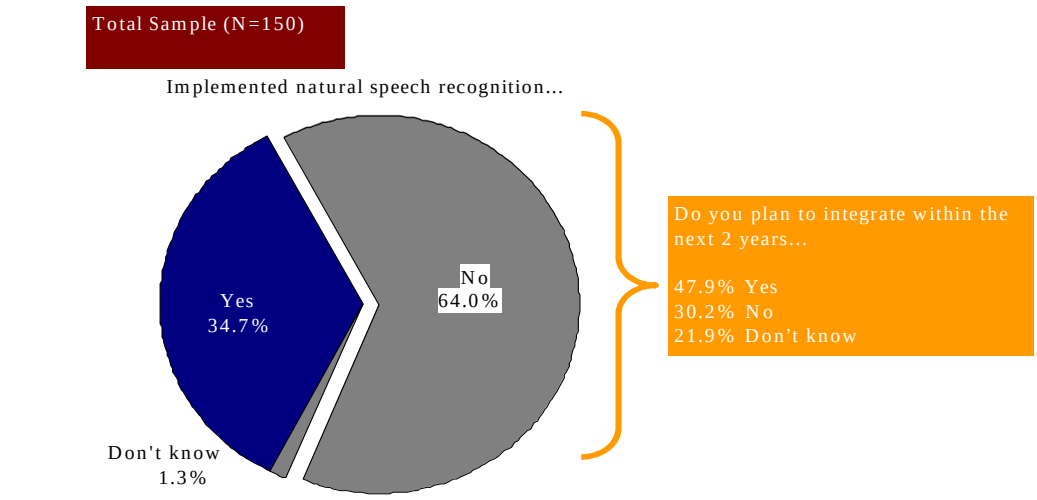


Note: All figures are rounded. Source: Frost & Sullivan

Chart 1.8 provides the percentage of IVRs using speech recognition technology according to a 2006 Frost & Sullivan end-user survey.

Chart 1.8

IVR Systems Market: Percentage of IVRs Using Speech Recognition—Frost & Sullivan End-user Survey (North America), 2006



Note: All figures are rounded. Source: Frost & Sullivan

In August 2006, Frost & Sullivan surveyed 150 U.S. contact center decision makers, specifically, those who manage, support or influence purchase decisions and operations in contact centers. As part of that survey, participants were asked about the usage of IVRs in their contact center. Some of the results of that survey are shown in the three charts above. The survey revealed that more than half of respondents used DTMF-based IVRs, with under a third using speech recognition technology. Overall, the survey found that 22.9% of inbound calls were handled by IVRs, a rather low figure given the prevalence of IVR deployments. Part of the reason for such low utilization rates could be weak functionality of the deployed applications. While implementing these technologies, the focus must not be just on cost reduction; companies need to focus on improving the quality of the customer interaction and deliver a positive customer experience.

As an indicator of the large potential that speech recognition provides to IVR vendors, the survey found that almost half of the respondents that were not currently using a speech-based IVR in their customer support processes planned to do so within the next two years.

Competitive Dynamics

Market Share Analysis

Figure 1-7 and Chart 1.9 show the estimated market shares of major vendors by revenues in the North American IVR systems market in 2006.

Figure 1-7

IVR Systems Market: Company Market Share by Revenues (North America), 2006

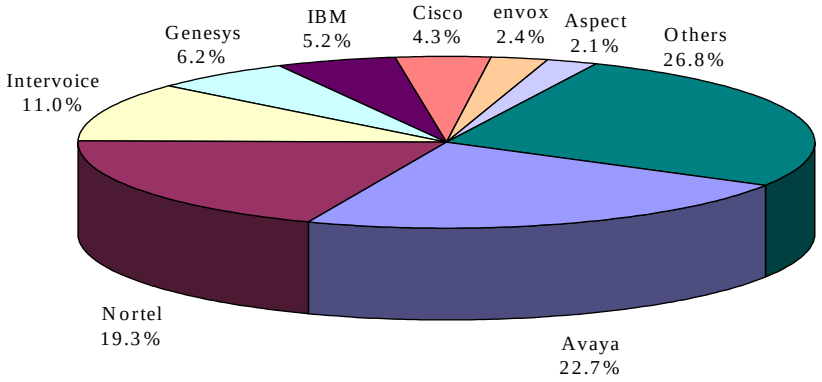
Company	2006 (%)
Avaya	22.7
Nortel	19.3
Intervoice	11.0
Genesys	6.2
IBM	5.2
Cisco	4.3
envox	2.4
Aspect Software	2.1
Others	26.8
TOTAL	100.0

Note: Others include BCE Elix, Big Sky, ComputerTalk, Copia, DAC Systems, Holly Connects, Interactive Intelligence, Message Technologies, Plum Voice, Pronexus, pulse, Simplified Telephony Solutions, Sonant, Syntellect, Tier Technologies, T&S Software, Voxeo.

Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

Chart 1.9

IVR Systems Market: Company Market Share by Revenues (North America), 2006



Note: All figures are rounded; the base year is 2006. Source: Frost & Sullivan

Some of the key findings in determining market share of vendors in the IVR market in 2006 are:

- In 2005 and 2006 the market as a whole suffered from the saturation levels associated with touch tone IVRs and the relatively slow adoption of speech. Frost & Sullivan believes that most participants have used this period as an evolution phase for equipping their portfolio and solidifying their business model, primarily in preparation for an anticipated upcoming rush in sales.
- As of 2006, the top three vendors in the North American IVR market continue to be Avaya, Nortel, and Intervoice. This dominance is in part due to their large installed base of customers. The three vendors are now reaping the benefits of a migration strategy of speech services and open standards.
- Nortel and Avaya, continue to be the two largest and dominant players in the IVR market, as, in fact, in the overall enterprise solutions market, with tremendous R&D, marketing and sales resources. Both companies prefer to provide complete solutions and have continued to focus on providing such solutions to their respective installed bases. Intervoice has also emerged as a dominant force in the IVR market due to its strategic focus on the space and represents a formidable and growing competitor for Avaya and Nortel.

- Although Avaya has faced the slow growth that plagued the entire IVR market, the company has been steadily growing through 2006 to emerge as a clear market leader. Avaya currently has a share of more than 20 percent of the North American IVR market in terms of revenues. With an extensive installed base of Conversant customers that can be migrated over to Avaya's next-generation platform, Avaya Interactive Response, and its new VoIP solution, Avaya Voice Portal, the company has a sound strategy for continued growth in the IVR market.

- Nortel has had to face a few setbacks over the past couple of years that continues to impact their performance in 2006. Frost & Sullivan believes financial setbacks and a lull in product development and release over the past couple of years may have caused a drop in shipments of IVR ports. In spite of these setbacks, Nortel still maintains a formidable position in the market and is now providing initiatives to recover from its setback. Whether it is the new Nortel Partner Advantage Program and "Velocity" incentives to help its distributors and resellers better cope with the changes and technologies of the converged communications market, or its host of next-generation products to cater to various business segments and replace the legacy Periphonics systems, this is not a company that will disappear from the IVR solutions market.

- In 2006, Intervoice made significant gains in market share and inched considerably closer to Nortel. The company continues to strengthen its position by developing key alliances with diverse market participants, creating new applications for new market segments and recently engaging in acquisition activities to increase its resources. The launch of Intervoice's next generation Voice Portal products positions it very effectively for future rapid growth within the market. Intervoice made tremendous strides in both market and mind share based on its sound competitive market development strategies.

- Frost & Sullivan believes that IBM's advantage in this market is that it has both parts of the value chain when it comes to speech-enabled IVR solutions. IBM's IVR solution the WebSphere Voice Response Server integrates with IBM's own speech platform the WebSphere Voice Server. This contributes as a strength as compared to most other vendors that purchase speech recognition or text-to-speech technology from speech technology vendors and are therefore dependent on the R&D output and stability of those companies.

- However, overall, IBM's focus is in providing reliable middleware in its IVR strategy. Through 2004 and 2005, IBM has continued to concentrate less on the core IVR market and focus more on the potential of being a speech technology provider. Since most contact centers are firmly controlled by the legacy vendors like Avaya and Nortel, IBM is increasingly using its speech server to penetrate into those environments.

- In 2005, Aspect strengthened its position as a complete contact center solution provider via its merger with Concerto. The company provides self-service as part of a larger picture of contact center capabilities and as a link to enterprise communications applications. This direction was made explicit by its release of the latest version of its self-service platform in conjunction with a speech-enabled auto attendant. The company's intention is to allow customers to derive far more value from deploying speech by spreading resources across various enterprise and contact center applications.
- Genesys, with its complete next-generation portfolio, has been steadily gaining market share from the incumbent vendors. Although possessing an open solution that can easily integrate with other vendor call-center components, the company has been steadily focusing on providing IVR capabilities as part of a larger services picture. The acquisition of VoiceGenie has further strengthened Genesys expertise on the speech based products and services. Genesys is the fastest growing next generation IVR solution vendor and will be a force with which the market share leaders will need to increasingly deal.
- Interactive Intelligence positions itself as a "Communications Solutions Company." The company is relatively new to the IVR and contact center market. The company commenced operations in 1994 and tapped into the IVR market with the launch of the Vocalite product in March of 2002. Since then, revenues have grown steadily.

Vendor Profiles

Aspect Software

In September 2005, Concerto Software and Aspect Communications announced the completion of a merger to form Aspect Software. The merged entity expects to focus on providing innovative products and services for contact centers for customer service, collections, and sales and telemarketing functions. The merger creates a company solely focused on the contact center and brings together more than 30 years of knowledge, skill and experience in the industry.

Aspect's self-service solutions are part of and integrate tightly with its complete contact center solution. Aspect provides a choice in deployment through its portfolio for enterprises that want self-service. For companies that want to deploy self-service independent of the contact center suite, Aspect provides Aspect Customer Self-Service. This solution can be integrated into existing contact center infrastructure, if required.

In August 2006, Aspect released version 7.2 of Aspect Customer Self-Service. This new standards based VXML 2.1 enabled, SIP or TDM solution provides all of the benefits of traditional IVR and voice portal technology and integrates easily with contact center products from Aspect and other vendors. Aspect Customer Self-Service solution offers full CTI support for both TDM and IP environments and an optional VXML studio that can shorten design and development time needed to create speech and touchtone self service applications.

The Aspect Customer Self Service architecture also enables the development of self-service workflows leveraging Aspect Software's Architect tool, a feature rich GUI tool that can be used alone or in combination with VXML Studio. The Aspect Customer Self-Service architect is a drag & drop graphical object oriented environment that contains 90+ standard building blocks and requires no compilation, you can simply save and run.

In March 2007 Aspect announced an alliance with Microsoft aimed at offering a cost-effective speech based self service solution for small to mid sized contact centers. The initiative will provide Microsoft Speech Server as an embedded component of the Aspect Unified IP product.

Aspect Software also offers an IVR solution as part of its Unified Product Line which converges previously stand-alone contact center applications such as ACD, predictive dialing, IVR, CTI, and multichannel routing onto a single, centrally managed platform. Aspect Software enables customers to easily migrate from Aspect Customer Self-Service to the Unified Product line by ensuring that investments in application development are preserved.

Avaya

Avaya is one of the leading global providers of business communications applications, systems and services. Avaya has been in the IVR business since 1985 when it introduced the Conversant IVR line of products. The company introduced its first speech applications in 2000 and had about 100+ speech implementations in just three years.

Avaya's primary IVR product Interactive Response integrates tightly with Avaya's contact center portfolio the Avaya Interaction Center and with the Operational Analyst to provide integrated self and assisted service. The Avaya Interaction Center is an open, IP standards-based platform that offers integration to standards-based enterprise applications and communication platforms. Avaya Interaction Center is based on a highly scalable, distributed, component-based technology that can be deployed across multiple systems and locations. Interactive Response can also be used with Avaya Predictive Dialing applications to automate outbound communications.

Avaya Interactive Response (AIR) is the traditional enterprise-grade IVR platform built on TDM technology. It incorporates open standards such as VoiceXML (VXML), and Media Resource Control Protocol (MRCP). It allows application development through Avaya's existing environment the Speech Application Builder and Avaya's new VXML application development environment.

In addition to its TDM-based IVR system, as of November 2005, the company offers a web-services architecture-based IVR product called the Avaya Voice Portal (VP). This is an IP-based IVR system that accommodates both circuit switched telephony networks and IP networks. The Avaya Voice Portal runs across Session Initiation Protocol (SIP) and H.323 compliant media gateways, as well as traditional TDM architectures. Through MRCP, VP supports standard speech engines such as the IBM WebSphere Voice Server and the Nuance Open Speech Recognizer.

Avaya Voice Portal offers enhanced features such as dynamic re-licensing of the ports that were not available on legacy IVR systems. Dynamic re-licensing of ports, fast becoming a norm in the IVR market, ensures high availability for mission critical applications and a lower cost of ownership. There exist common elements across the Avaya Interactive Response and the Voice Portal. For example, the VXML browser is the same across both products and the licensing mechanism is the same allowing transfers of licenses.

The Avaya Dialog Designer (ADD) is another component that the company offers as part of its IVR portfolio is. Introduced in September 2005, the Avaya Dialog Designer 3.0 is an open Eclipse-based integrated speech and DTMF VXML application development environment. Avaya Dialog Designer supports both Avaya Voice Portal and Avaya Interactive Response and therefore acts as a common element between AIR and the VP. The Dialog Designer features a common VoiceXML 2.0 browser for use with Avaya Voice Portal and Interactive Response, helping reduce design risks caused by browser incompatibility. Thus, applications written in VXML on Avaya AIR can also be seamlessly migrated to the Voice Portal platform. The Dialog Designer is packaged with Avaya IVR or the VP at no cost.

Current market requirements and the increasing benefits of speech self service have resulted in speech becoming the cornerstone of Avaya's self service solution strategy. Additionally Avaya has seen accelerated uptake for its Voice Portal product with a triple digit increase in Voice Portal shipments over the past year. Avaya Dialog Designer is increasingly being utilized to command and control, modify and design multiple Avaya technologies. Avaya has planned a series of enhanced product releases for 2007 including Voice Portal 4.0, Interactive Response 3.0 and Dialog Designer 4.0. All of these products are expected to deliver an expanded set of customer self-service features and upgraded standards support.

Cisco Systems

Cisco Systems is an emerging player in the IVR market. Cisco offers two self-service options for the market namely, IP IVR and the Cisco Customer Voice Portal (CVP). The Cisco Customer Voice Portal (CVP) is a web-based platform that provides IVR and IP switching services on VoIP networks. The Cisco Customer Voice Portal (CVP) suite consists of the CVP VoiceXML Browser, the CVP Service creation environment (CVP Studio) and the CVP Call Director.

In 2004 Cisco introduced Version 3.0 of Customer Voice Portal (CVP) (formerly Cisco Internet Service Node). The CVP is directed towards the service providers and large organizations. The Cisco CVP supports both speech-enabled and touch-tone applications that can be integrated with back-end data and business rules available via the Web, using Java 2 Enterprise Edition (J2EE) and VoiceXML standards. The graphical development tools provided with the CVP help enable assembly of voice applications faster and at lower cost than traditional IVR by using voice dialog components to facilitate reuse.

Cisco's CVP meets current contact center objectives by combining VXML-based IVR with the capability to seamlessly integrate multiple locations into a unified virtual contact center with IP switching. The Cisco Customer Voice Portal integrates with both traditional time-division multiplexing (TDM) and IP-based contact centers. Thus, the CVP leverages existing contact center technology investments and provides a migration path from a multi-site TDM ACD environment to an IP contact center with integrated web and telephony contact without requiring a fork-lift upgrade.

Cisco CVP and Cisco IP Contact Center (IPCC) solutions form the core of the Customer Interaction Network, a distributed, IP-based customer service infrastructure that allows companies to extend customer service across an entire organization and transparently blend self-and assisted-service for an enhanced customer experience.

In April 2005, Cisco announced a joint strategy with IBM, to deliver speech-enabled self-service solutions that combine IBM's WebSphere Voice Server product and Cisco's Customer Voice Portal, to contact centers. Through this joint effort, Cisco hopes to let customers extend speech self-service to remote locations across both IP and non-IP networks —including local and branch offices.

IP IVR is directed towards customers that need fewer than 128 ports and are using Cisco's IPCC Express and IPCC Enterprise. The solution is typically bundled with IPCC Express. Nestle Waters North America is one of Cisco's prominent IVR customers that has deployed CVP to offer its customers a much more personalized service by incorporating speech recognition into its self-service platform.

Envox

Envox Worldwide is a leading provider of voice self service solutions and has deployed over a million ports worldwide. Envox Communications Development Platform 7 is an open standards based platform with integrated application development and management components. Envox 7 is a multimodal platform that supports unified communications including traditional voice, IP telephony, video messaging, SMS, and email. Envox 7 also provides support for industry standards such as VXML, CCXML, MRCP, SIP and web services.

Envox OnDemand is a speech-enabled contact center voice service for enterprises and service providers that want the benefits of a hosted voice solution. Envox also offers DTMF based solutions and supports a range of multimodal solutions. Additional contact center services provided by Envox include intelligent routing, CTI and live-agent fallback.

Envox OnDemand is delivered on the carrier grade network of VoltDelta—provider of high performing directory assistance and operator services solutions. The company has several strategic partnerships in place in order to ensure best of breed solutions from a single source. Envox offers professional and implementation services including project assessment and design, solution architecture design, voice-user interface design, application development, system integration etc. The company's expertise in application design and development helps them deliver solutions that are highly customized and meet unique customer needs. In addition Envox offers its customers full-featured development environments, flexible development tools or a comprehensive VXML development platform to enable voice solution development.

Genesys Telecommunications

Genesys, an Alcatel company, entered the speech IVR market with the acquisition of Telera, a pioneer in the speech platform space. The Genesys Voice Platform (GVP) is a software-only open standards product that uses off-the-shelf hardware, VXML and web development methodologies for developing speech self-service solutions.

Genesys has seen impressive acceptance and growth for this open standards products resulting in significant market share in a very short time period in an industry dominated by heavy weights such as Nortel, Avaya and Intervoice. GVP is the fastest growing product in Genesys' history, having had 100 unique sales in the first seven quarters of its availability. Over a million seats worldwide are currently being powered by Genesys platform.

Genesys strives to offer its standards-based solution as part of a complete service to its customers. The company believes that the automated self-service solution is only the first interface in a service-oriented infrastructure. Along these lines, Genesys has ensured that the GVP is tightly integrated with the Genesys Contact Center Suite of products. This kind of integration provides seamless transition of information, therefore allowing companies to extend their customer service capabilities from automated to agent-supported transactions.

GVP has a flexible architecture, which allows it to be placed behind or in front of a PBX or ACD. The "in front" option reduces port investment on the PBX or ACD. However, it can also be used as a plug-and-play solution with minimal changes to the PBX or ACD with the "behind" option.

Genesys Voice Platform is available in three editions:

- GVP: Enterprise Edition, the premise-based IVR model
- GVP: Network Edition, an in-network solution built for service providers and large enterprises with multi-site contact center operations
- GVP: Developer Edition, built for developers creating applications on the Genesys Voice Platform

Genesys has also been active in introducing products that cater to the evolving market needs. In July 2005 Genesys introduced an IP (Internet Protocol)-enabled version of the Genesys Voice Platform (GVP) to serve enterprise customers of all sizes. This was in addition to the IP offering already available for its carrier customers. The IP-enabled enterprise edition of GVP supports Genesys' strategy to expand IP capabilities throughout the Genesys Voice Platform product portfolio. Some of the future enhancements that can be expected with the GVP include CCXML compliance, VXML 2.1 standard compliance and a module that does application control reporting.

Genesys has partnerships with application vendors such as TuVox, Apptera, Unveil and Voxify. This allows Genesys to approach its customers with a complete solution that has the best-of-breed VXML application, leading speech technology, and an industry leading VXML platform that can all finally integrate with an open-standards-based contact center suite of products.

Genesys has historically been a reseller of both ScanSoft's and Nuance's speech technology. The merger of the two companies has strengthened Genesys's relationship with the speech technology vendors and it claims to currently be one of the largest reselling channels of the new Nuance's speech technology.

IBM was added to Genesys's core speech technology partner list in October 2005. Genesys and IBM announced a technology and reseller agreement in which the Genesys Voice Platform (GVP) technology offering would be expanded to include the IBM WebSphere Voice Server (WVS) speech solutions. The IBM WVS provides (ASR) and text-to-speech (TTS) resources that enable speech-based interactions on both GVP platforms.

Some of Genesys GVP customers include Qwest and Verizon among service providers, and Banco Rio, Kaiser Permanente and Mutual of Omaha among enterprise customers.

I B M

The WebSphere suite of products has been the core of IBM’s pervasive computing vision, which aims to deliver mobile access to information over any device, any network and any style of interaction. In December 2004, Pervasive Computing was merged into mainstream IBM WebSphere divisions, with Pervasive’s development groups being placed in IBM WebSphere development groups but maintaining their focus on voice.

WebSphere® Voice Response for AIX is IBM's IVR system for medium and large enterprises, telcos, and service providers. The WebSphere Voice Response (WVR) architected specifically for AIX environments is a flexible voice processing platform with extended IVR functionality. The WVR for AIX supports between 12 and 480 ports in a single system and has support from IBM's own speech solution, the WebSphere Voice Server, for speech recognition and TTS. Applications can be developed using the legacy DirectTalk module or with the WebSphere Voice Toolkit.

In 2004 IBM released V5.1 of its speech platform the WebSphere Voice Server. An open connectivity capability within this product, with all interfaces built around MRCP, enables integrations with other vendor IVR solutions. Genesys is one of the first companies to offer integrated support to the IBM voice server product using MRCP.

In 2004 IBM also introduced V4.2 of the WebSphere Voice Response adding additional network connectivity capabilities within the platform. These include a combination of software and hardware components to provide support for VoIP networks via SIP. V4.2 uses a DTEA card to connect to the VoIP network. The DTEA card also provides enhanced echo cancellation, a requirement for running speech applications over IP networks. WebSphere Voice Response for AIX, V4.2 integrates with WebSphere Voice Server, V4.2 and V5.1 allowing customers to create integrated Web and telephone self-service access to their companies' business data and processes.

IBM has a human factors engineering team that can assist customers in effective design and deployment of speech solutions. Members of this team do not have a technology background but specialize in the implications of phraseology, dialog and communication in garnering the right responses from end-users. Addressing the human factors element ultimately results in increased user satisfaction and acceptance.

IBM also has a focus on embedded speech solutions targeting automobiles, handheld devices, medical instruments, appliances etc. IBM recently announced that using IBM Embedded ViaVoice software, Honda will equip automobiles with in-car navigation systems using advanced speech recognition and text-to-speech capabilities that can identify spoken street and city names. Honda will offer the system as standard equipment on the 2005 Acura RL and as options on both the 2005 Acura MDX and 2005 Honda Odyssey in the United States and Canada.

IBM has also taken strategic initiative in providing its framework of Reusable Dialogue Components (RDC) to the open-source community. Speech components built using these RDCs will work together regardless of which vendor created the application. This move will have a positive impact on the industry at large by significantly lowering the cost of deployment for speech technology. The power of reusable components lies in the fact that now each speech application does not have to start from scratch and can use the RDC building blocks to speed development.

IBM has a very strong focus on speech and it is at the fore front of its entire market strategy for contact centers. IBM has adopted an open programming model, a standards based approach and a partnership strategy going forward. A fundamental shift in IBM's strategy is its ability to now support its speech technology on other vendor IVR platforms, in addition to IBM's own IVR product. This shift in strategy significantly opens up the marketplace for IBM speech technologies. IBM is also one of the leading proponents of VXML as the standard for developing speech applications and is banking on VXML becoming the single industry standard.

Interactive Intelligence

Interactive Intelligence (ININ) develops software-based IP communication products that help integrate a variety of communication media including phone calls, voicemail, email, faxes and Web chat. Interactive Intelligence has a global network of approximately 160 value-added resellers and has 12 offices throughout North America, Europe and Asia Pacific.

Interactive Intelligence tapped into the IVR market with the launch of the Vocalite product in March of 2002. Vocalite is compatible with conventional PBXs through the Intel HMP software, with Cisco's AVVID platform and other SIP-based VoIP platforms. ININ offers its IVR solution either as a stand-alone platform under the name of Vocalite or as part of the complete CIC contact center portfolio.

In 2004, the company introduced its new xIC 2.3 (CIC) Speech Recognition framework that has been completely redesigned for speech. Salient features included support for MxN configurations for high scalability (multiple IC servers using the services of multiple ASR servers) and the fact that you are not tied to a single ASR vendor but can pick and choose best-of-breed engines for specific language requirements.

Vocalite integrates with Nuance 8.5 and OSR 3.0 to provide speech recognition capabilities, RealSpeak 4.0 and Vocalizer 4.0 to provide text to speech capabilities and Verifier 3.5 to provide speaker verification capabilities.

ININ has strived to protect its customers' investment in its solutions. One such way it does so it through its application design environment called the Interaction Designer. The same tools and design environment that were used to develop DTMF applications can be used for the development of speech applications through a simple license turn on.

The Vocalite has run on a proprietary platform so far. However as of 1st quarter of 2006, ININ expects to provide a VXML browser for its solution as an option for customers who prefer to stay with ININ's solution while being standards-based. Also available during the first quarter of 2006 will be the next version of CIC and Vocalite, version 4.0.

ININ's solutions have historically had a lot of traction in the small and medium business segments and in the higher education vertical. However, with SIP-enablement, the company has acquired a number of large-sized customers as well. Some of ININ's customers include Excellus Blue Cross/Blue Shield, CDS, University of Berkeley, University of Miami and Bridgestone/Firestone.

Intervoice

Intervoice, considered to be one of the pioneers in the IVR market has over 23,000 system deployments in over 75 countries around the world. Intervoice offers a variety of products to meed the voice automation needs of its customers including Enterprise Voice Interaction Platform (EVIP), Intervoice Voice Portal, and Intervoice Voice Banking.

EVIP is one of the platforms supported by Intervoice as a result of its acquisition of Edify. Intervoice is now shipping EVIP 10.0 with support for the latest speech engines, text to speech integrations, speaker verification, hardware and software VoIP solutions and robust telephony support. With EVIP 10.0 Intervoice customers will be able to leverage InVision Studio, the company's VXML based development environment. Customers that use EVIP 10.0 will also be able to utilize Control Center to administer and maintain their EVIP platform and applications.

In 2007, Intervoice launched its new next generation Voice Portal products as part of the company's unified communications and multimodal strategy. The company's Voice Portal product enables simultaneous voice and data interactions across multiple access channels. As a result Intervoice is able to offer its customers consistent and personalized user experiences across multiple channels via the power of a sophisticated multimodal application. Intervoice's Voice Portal product has been based on patented multimedia and multimodal functionality. A run-time service-orchestration engine based on SCXML enables simultaneous communications and blend voice and data to deliver a true multimodal experience. Intervoice is the first Voice Portal vendor to implement the new SCXML standard that allows developers to create applications with asynchronous or parallel processing of transactions. Voice Portal is available in Express, Enterprise and Enterprise Pro editions.

In 2006 Intervoice acquired Nuasis a leading IP Contact Center solutions provider and plans to offer complete hosted IP Contact center solutions powered by NuContact Center in the very near future. Intervoice offers a complete range of consulting services aimed at providing help with application design and development and overcoming lack of customer expertise in deploying voice self service solutions. Intervoice offers ongoing system optimization services that help identify areas of improvement to increase first call resolutions and reduce agent transfers. In addition the company offers SLAs based on actual call completion rates thereby maintaining the quality of service and enhancing the customer experience.

In November 2005, Intervoice signed the agreement to purchase Edify, another prominent IVR solution provider, from S1. This merger has as expected strengthened Intervoice's competitive positioning in the IVR market. Both companies have a strong commitment to speech and are very active in the development and deployment of innovative speech-based self-service applications.

Edify's parent company S1 had strong roots in the financial industry. Edify has leveraged this expertise to build pre-packaged applications for the banking industry. Edify's original banking application—now Intervoice Voice Banking, is a software application that enables banking establishments to automate customer interactions and provide access to account, branch, and other financial information through speech-enabled self-service. The company claims that it can be deployed in about eight weeks. In 2006, the company introduced version 3.0 of this banking application with natural language speech recognition and a range of sophisticated features.

Nortel Networks

Nortel Networks has been a leading provider of self-service IVR solutions for more than thirty years and was a clear pioneer in deploying one of the first commercial speech applications more than fifteen years ago. Nortel's current self-service portfolio combines a multimedia platform, Service Creation Environment tool with a drag and drop GUI for web-based design, advanced speech technology and network services, all designed specifically to improve the customer experience.

Nortel's product strategy focuses on open standards and architecture combining contact center, self-service, advanced speech, unified messaging, and multimedia collaboration into a cohesive application environment. The complete contact center solution has a common media server, tools, and reporting and administration. Nortel's product set operates atop the Nortel Applications Center, a framework to provide improved customer service via IP-enabled video communications, virtual contact center, real-time multimedia, collaboration, unified messaging, advanced speech, and computer-telephony integration for a complete contact center.

In the IVR space, Nortel offers a range of voice response solutions targeting different business segments based on size and functionality. Its portfolio includes, starting at the very small end for multi-site implementations, the Business Communication Manager Integrated Voice Response (BCM IVR). The key focus of the portfolio for the Enterprise includes Media Processing Server (MPS 500 and MPS 1000) platforms. The MPS 500 scales from 24 to 240 ports and is targeted at small and mid-sized businesses. Nortel offers the MPS 500 as an all inclusive, complete turnkey self-service solution, or it is available in a user's choice of platform if they prefer. The MPS 1000 is crafted specifically for mid-sized-to-very large enterprises and service providers that need more than 192 ports. The MPS 1000 scales to over 11,000 ports on a single system and offers a superior level of redundancy over the MPS 500, along with advanced functionality compatible with carrier requirements. The MPS 500 and MPS 1000 are both suitable for hosted environments.

Nortel's MPS 500 and MPS 1000 products support advanced speech technologies and VoIP capabilities. Both are VoiceXML 2.0 compliant. The MPS platforms offer expanded IVR functionality, while providing investment protection to legacy Periphonics Voice Processing Series/Information Server (VPS/is) customers. Applications written for VPS/is are easily adapted for use on the MPS platforms.

In the BCM-IVR, the MPS software has been ported into Nortel's Business Communication Manager (BCM) converged voice and data switch. The BCM IVR is scalable from 2 to 24 ports and is targeted towards the lower end of the market. The BCM-IVR is a value-add product best suited for a multi-site operation with decentralized self-service utilizing the cost advantage of deploying sophisticated applications to smaller locations and needs

The MPS 500 and MPS 1000 solutions can sit behind any vendor PBX or switch to provide automated self-service and call navigation, without using menus to automated or agent assisted services. Advanced speech capabilities on the user's choice of engines include Speech Recognition, Text-to-Speech, Speaker Verification.

Nortel is also an end-to-end solution provider for customers deploying speech-enabled self-service applications. Nortel's large and very strong professional services group includes a studio for professional recording services and can help design, develop and implement very complex speech applications. The dedicated team focuses on speech application development and addresses discovery sessions, voice user interface development, speech grammar, tuning of speech applications and usability testing.

Nortel is one of the largest resellers of Nuance's speech engine. It also supports leading automatic speech recognition, text-to-speech and authentication products. Additionally, Nortel has strong partnerships with numerous technology partners, providing complete, end-to-end solutions, without requiring multiple vendor support.

In July 2006, Nortel and Microsoft announced a wide-ranging four-year partnership and the formation of the Innovative Communications Alliance. The goal of this alliance is to foster the growth of lower-cost, highly flexible, unified communications technologies. The road map from the two partners includes a unified communications contact center, based on VoIP. Although the complete ramifications for the contact center market have yet to become clear, the pairing will clearly have an impact on the adoption of unified communications strategies and the interaction between self-service and agent-assisted service.

Nortel's IVR diverse customer base includes such high-volume customer interaction organizations such as Bank of America, CN (Canadian National Railway), Lloyds TSB, HP, PG&E, Delta Dental, and AT&T Nortel's speech recognition IVR implementation at Bank of America handles a staggering total of more than 2 million calls per day. Almost half of the Fortune 100 are Nortel IVR/speech technology customers. Nortel also has numerous city, state, and government customers.

Strategic Growth Recommendations

Assist Customers in the Migration Path Towards Speech-enabled IVR Solutions

Touch-tone applications have been delivering value to customers for at least a decade now with a high degree of penetration within the large enterprise sector. Rapid advances in speech recognition technologies have ushered in a new era of speech enabled IVRs driven by compelling value propositions and strong business cases. Enterprises now have a reason to upgrade their legacy IVR applications and embrace speech as part of the new imperative for self service. But speech enabling an existing IVR application is not a matter of simply plugging in a speech enabling technology black box. The complexity of the upgrade depends largely on the age of the existing IVR platform and its capabilities, but a good speech IVR application that delivers what it set out to do often requires the entire application to be re-written. Vendors need to have creative strategies in place in order to assist customers in making this change, mitigate risk and reduce total cost of ownership.

Introduce Packaged Applications with a Vertical Market Focus

Customized speech applications, with their hefty price tags and higher costs for professional services, have been out of the reach of the small-medium sector. Packaged applications, often with simpler off-the shelf deployments, can prove to be a win-win situation for both vendors and customers. Enterprises can now have access to the best that speech-self service has to offer and vendors can obtain economies of scale as a result of multiple sales. Customer requirements are expected to become more standardized and refined as vendors go through multiple speech-IVR implementations. As the market matures, vendors will be able to capitalize on the knowledge and expertise gained to offer increasingly attractive packaged applications to meet end-user needs. Vendors need to develop packaged applications with a vertical market focus in order to achieve greater vertical market penetration.

End-User Education on the Capabilities of Speech Applications

Advances in speech technologies and associated implications for self-service have created a buzz in the market place. An infrastructure refresh cycle is expected to provide a further boost in capital expenditure spending driving the IVR industry forward. Vendors need to set the proper expectations in terms of the capabilities of speech self-service applications and assist customers in exploring creative areas within the enterprise that could benefit from the power of speech. Detailed case studies of successful speech implementations will further illustrate the value propositions and set the expectations.

Develop Effective Growth Strategies with Strategic Alliances and Partnerships

The IVR market has a healthy mix of established vendors with complete solution sets and smaller players with innovative products and a dedicated market focus. Strategic alliances and market ecosystems will allow smaller players to offer more complete solutions with best of breed functionality and a quicker time-to market. Open architectures and standards-based development will further promote interoperability between various product offerings and facilitate the development of these partnerships and alliances. Vendors need to develop effective growth strategies keeping in mind the changing dynamics of the marketplace.

Balanced Distribution Strategy

Direct sales strategies are more effective in targeting the large enterprise sector whereas an indirect sales strategy is generally more effective in extending reach within the small-medium sector. Speech IVR implementations with customized deployments are best handled with a direct approach with the added benefit of getting first hand customer feedback on the pain points during the implementation. Knowledge gained as a result of these can come in very handy in improving product design and capabilities of future releases, as well as making the implementation process more of a repeatable exercise across customers. Packaged applications, with their attendant minimal need of professional services, will benefit greatly from an indirect sales approach in order to increase penetration. Vendors need to have an effective and balanced sales strategy in order to maximize growth.