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White Paper

The Business Case for Speech Recognition

*Speech-enabled applications can
provide better customer service at
1/12th the cost of live agents*

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Overview

There is no denying that speech recognition can reduce the costs of running your call center. In many cases, these cost savings can be huge. Speech recognition makes your call center more efficient – allowing you to accomplish more with fewer people. Your callers are handled in a fast, friendly, and professional manner at a fraction of the cost.

You manage a top-notch call center with P&L responsibility for the entire operation. Your company is counting on you to provide world-class customer service. Yet, with today's competitive landscape, your challenge is to provide excellent service on a tight budget. In fact, call center budgets overall are shrinking even as customer expectations and call volumes are rising.

You do not need to be reminded that these are challenging times for call center managers. Customers continue to demand greater access and ease of doing business. Your middle managers believe that the solution to rising demand is to throw more live bodies behind the ACD. But before you sign off on those job requisitions, consider the compelling economic benefits of a speech-enabled technology solution.

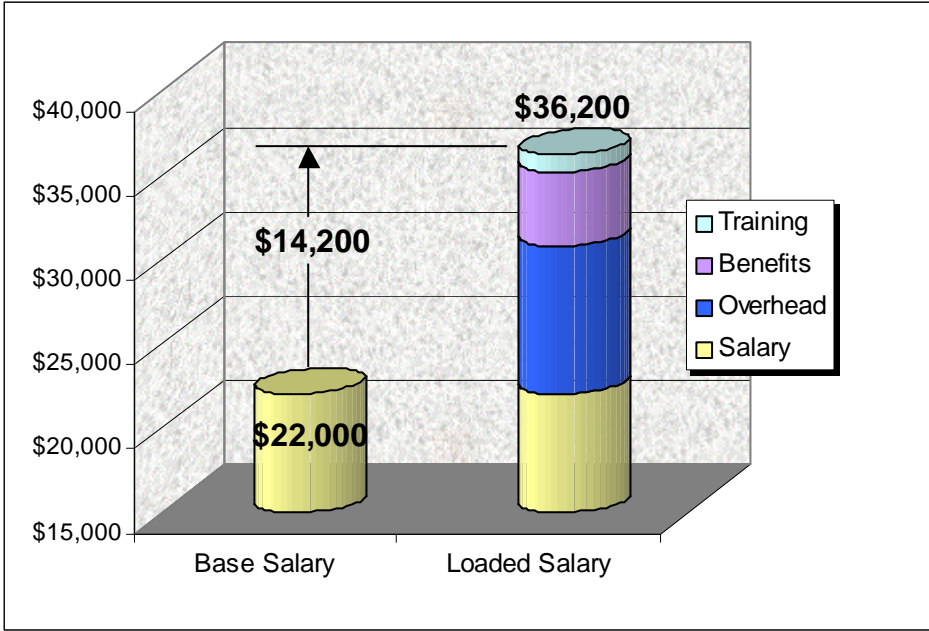
This document has been prepared to help you understand and evaluate the costs and benefits of implementing a speech recognition solution in your call center. You will see that the numbers speak for themselves. In the end, live agents are very expensive, whereas a speech solution is a cost-effective way to augment your existing call center infrastructure. The paper first presents the business case by looking at the system cost versus human agent costs. The paper then discusses the evolving expectations that customers have for self-service access to information.

Live Agents are Expensive

There will always be a need for live agents to handle complex situations such as customer complaints or exceptions to normal procedures. But, let's face it – agents are expensive. It is far better to offload routine requests for information or simple transactions and allow your agents to concentrate on higher value.

When looking at labor costs, there is a lot more to consider than just the employee's annual salary. Take a look at the real cost of an agent being paid \$22,000 per year. First, there's corporate overhead that includes facilities, equipment and software, and supervision and support staff. Estimates for computer and network equipment alone are often over \$3,000 per seat. A 40% overhead equals an additional \$8,800. Second, there's employee payroll tax and benefits. A conservative 20% equals another \$4,400. Third, there's employee training. Assuming new employee training costs about \$3,000 and that agents turn over every three years, we have to add another \$1,000 to the equation. So what began as a \$22,000 cost has nearly doubled to \$36,200 per agent. Even worse, this figure is not constant – rising every year with wage inflation. Figure 1 shows the actual company costs for an agent being paid \$22,000 per year.

Figure 1
Annual Costs per Agent



Agent Productivity

So what are you getting for that \$36,200? A live agent can handle about 28,350 calls per year. Multiplying the number of calls an agent can handle in an hour by the total hours an agent works in a year gives us this total call volume.¹ Thus, as shown in Table 1, the average cost per agent call is \$1.28.

Table 1

Agent Cost per Call Summary	
Loaded salary per year	\$36,200
Total calls per year	28,350
<i>Agent cost per call</i>	<i>\$1.28</i>

¹ Assume the average call length in 3 minutes. An agent at 90% productivity can handle 18 calls per hour. When not at lunch or on break, assume agents are at their desks, ready to take calls, for 7 hours per day. After accounting for vacation, holiday, and sick days there are 225 workdays in a given year. 28,350 calls = 18 calls/day x 7 hrs/day x 225 days/yr.

Obviously, the average cost per agent-handled call will vary from call center to call center depending on wage structure and call durations. This analysis has used rather conservative estimates. Several customers report much higher cost per call averages. We have seen \$4, \$6, and even \$10 per call in situations where wages are higher than \$22,000 and average call length is higher than 3 minutes.

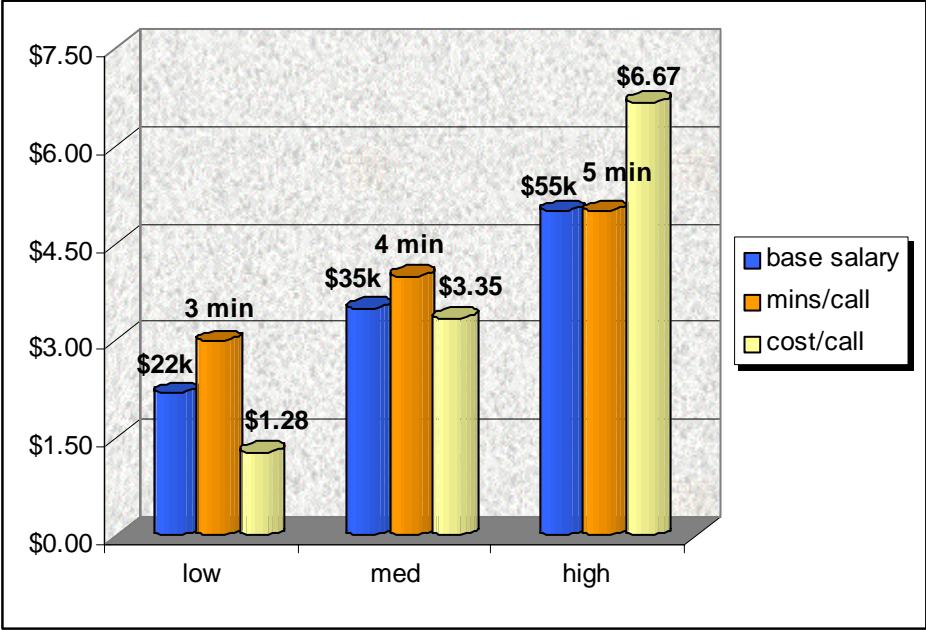
Table 2 shows the per call results by looking at our results and data from two other scenarios. The “low” case uses our original data of \$22k and 3-minute calls. The “med” case assumes that the agent is being paid \$35k and that average call duration is 4 minutes. The “high” case assumes an agent salary of \$55k and an average call of 5 minutes. As you can see, average cost per call can be much higher than \$1.28 when salaries and call durations are higher.

Table 2

Agent Per Call Cost Summary			
	low	med	high
base salary	\$22,000	\$35,000	\$55,000
call minutes	3	4	5
cost per call	\$1.28	\$3.35	\$6.67

The three scenarios are shown graphically in Figure 2 below.

Figure 2
Per Call Cost Comparison



Speech Recognition Solutions

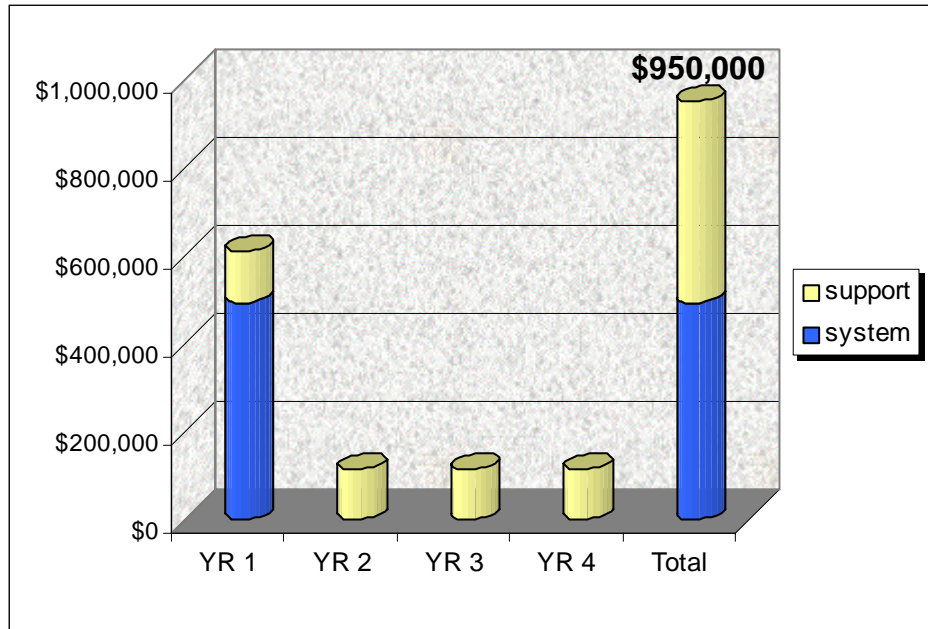
Now that you've seen that agents are expensive, you must be asking yourself, "what can I do to keep my labor costs in line while increasing our ability to handle rising call volumes? Let's explore the costs and productivity gains of a Nuance speech solution.

There are numerous benefits to a speech solution -- better availability, better response time, and better consistency, to name a few. We'll address these benefits later. For now, let's stay focused on the purely economic benefits of a speech solution.

Let's assume that you have a medium size call center operating with 100 agents. Based on your projected call volumes, you require a 72-port IVR system.²

The four-year total cost of ownership (TCO) of a 72 port IVR system with speech recognition is shown in Figure 3.

Figure 3
Speech Enabled IVR Costs



The total cost of ownership (TCO) is \$950,000. This \$950,000 figure may seem a bit hefty. Keeping in mind that the actual cost may be lower, let's break this figure down and see what costs go into owning a speech-enabled IVR system.

The TCO is a combination of the initial system cost and four years of maintenance. The system cost of \$450,000 is made up of the VRU and associated hardware, the speech software, the application development, and implementation fees.³

² Of course, your exact needs will vary. Nuance sales professionals are available to run your needs through our cost/benefit analysis tool. With these inputs we are able to give you a more precise demonstration of the cost/benefits that would pertain to your call center situation.

³ Assumes the VRU and hardware costs \$164,000 plus speech software at \$180,000, plus \$95,000 for application development and \$55,000 for implementation.

Maintenance comes to \$114,000 per year, which includes a four-year full support agreement at 18% of total system price and an internal resource to manage the IVR system.

Speech Solution Productivity

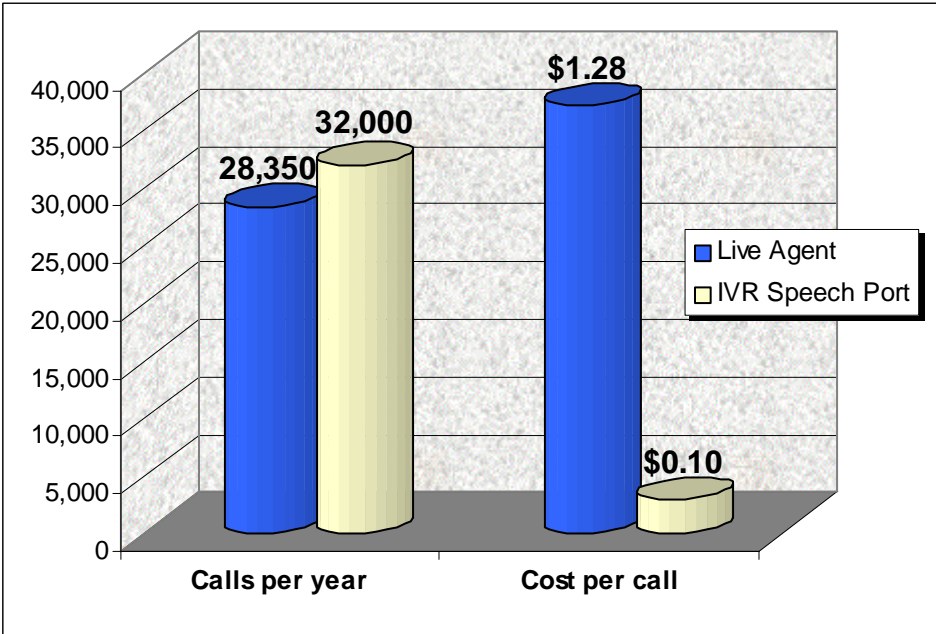
So, in terms of call handling, what are you getting from your 72-port speech-enabled IVR? To answer this question, and compare it to agent handling, we need to translate our system capacity down into a per call cost.

A 72-port IVR can handle a whopping 2.3 million calls per year⁴. This breaks down into 32,000 calls per port. The cost per port per year is found by dividing our TCO figure of \$950,000 by 72 by 4 years = \$3,300 cost per port.

Therefore, a single port costs \$3,300 per year and can handle 32,000 calls. The average cost for a speech-handled call is 10 cents, which is more than 12 times less expensive than an agent handled call.

As Figure 4 shows, these results are dramatic. A single IVR port can handle more calls per year than an agent can and for a fraction (1/12th) of the cost.

Figure 4
IVR versus Agent Costs



Payback Period

Capital purchases immediately affect your budget. In order to justify the purchase, you need to look at what effect your purchase will have on future cash flows. Your decision to spend dollars today must either save or make you money in the future. The quicker the investment pays for itself, the better. Given the dramatic per call

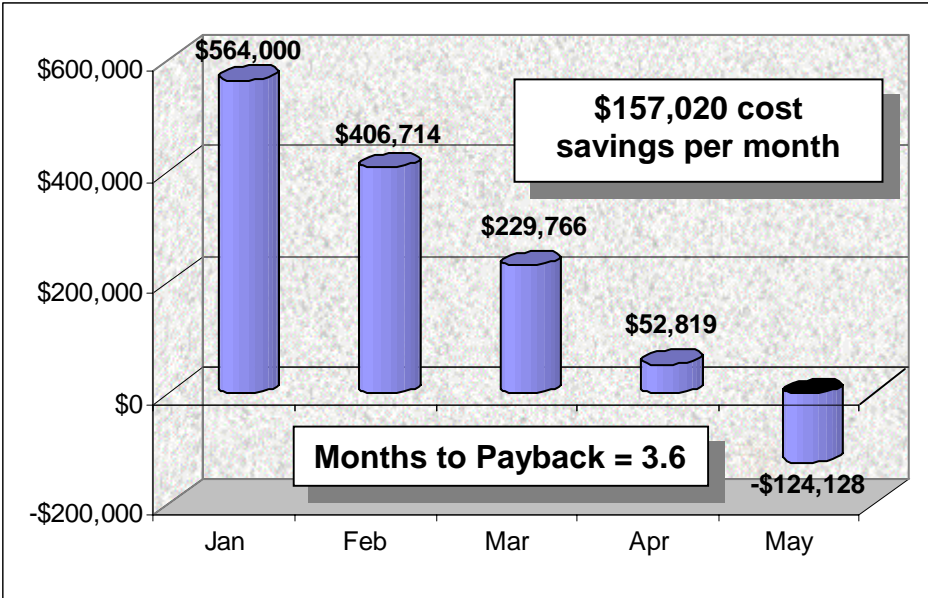
⁴ Assumes average IVR call length of 3 minutes

savings, a speech-enabled IVR can have a very quick payback period - measured in terms of months as opposed to years.

Let's see how. We have seen that each IVR port can handle 32,000 calls per year. Most IVR systems, however, do not operate at 100% capacity. Typically, they are over-provisioned to ensure that a customer never gets a busy signal. Assume that our system is operating at 80% of its total capacity. This means each of the system's 72 ports is handling 25,600 calls per year. When deploying an automated system, it is always important to allow callers to connect with a human agent if they encounter problems or have special needs. With a speech solution, callers should be able to say "operator" to connect with a customer service agent. Let's assume that 80% of callers into our speech-system complete their transaction without needing to involve an agent. Thus, each speech port is handling 20,500 calls per year that would have otherwise been handled by a live agent. As we have seen, each of these calls would have cost the organization \$1.28. Thus, our 72-port system is producing savings of \$1.9 million ($\$1.28/\text{call} \times 20,500 \text{ calls} \times 72 \text{ ports}$) per year and pays for itself in only 3.6 months.

How is this possible? Essentially each IVR port is now handling the workload that would otherwise be performed by 3/4th of an agent. Thus our 72-port system handles the workload of about 50 agents. With the automated system in place, you are able to eliminate or re-deploy 50 of the 100 agents in your call center. Recall that Year 1 outlays equal \$564k, which includes the system cost of \$450k plus the first year of support at \$144k. The system is handling 2,187 calls per month. Each call would have cost \$1.28 per call. Thus, the monthly savings are \$157,020. Figure 5 shows the break-even timeline for this system.

Figure 5
System Breakeven Timeline



Speech Systems Provide Many Benefits

In addition to saving money, speech systems can provide better customer service and more secure transactions.

Improved Customer Service

Speech recognition dramatically reduces on-hold time and eliminates confusing touch-tone menus. It also makes delivering 24x7 service cost-effective and ensures callers receive consistent, dependable, and friendly assistance. As compared to the Web, self-service is available from any phone by using the most natural form of communication – speech. A consumer does not need to know how to use a computer or wait to boot up their PC and log on.

For all of these reasons, consumers have reacted very favorably to speech recognition. In February of 1999, Nuance completed a comprehensive study of speech-system users. This study found that 83% preferred speech systems to touch-tone, and the overall satisfaction rating with these systems exceeded 83%. Many respondents also preferred speech systems to agents and/or operators because of the consistent service level this medium provides.

Northwest Airlines deployed a reservations system based on Nuance software and conducted extensive market research to find similar, very positive, results. Most notably, over 66% of respondents rated the Nuance-based system as better than the Web-based alternative!

V-Commerce™: Voice-driven E-Commerce

Many companies are setting up systems to enable their customers to obtain self-service and purchase products over the Web. Yet these companies are finding that the Web alone cannot address all their customers' needs. By adding a voice interface to their Web applications, companies can provide voice access to the more than one billion telephone users around the world, in addition to the 150 million users with PCs connected to the Internet. These V-Commerce™ (voice-driven e-commerce) systems enable companies to use the same application servers, business rules, and databases to serve both phone and Web users, thus dramatically extending their value.

To make deploying V-Commerce solutions fast, easy, and cost effective, Nuance founded an organization called the V-Commerce Alliance. The group consists of more than 30 companies from the e-commerce, IVR/telephony, and networking industries that are working together on standards in these areas as well as powerful product offerings. Members include BroadVision, Motorola, VISA, and many others.

Secure and Convenient Transactions with Voice Authentication

Nuance Verifier enables a user to be identified via speech recognition and authenticated simultaneously by checking the user's voice against a previously enrolled voiceprint. Nuance Verifier provides a level of security that is not available through other means and can save tremendous amounts of money by reducing fraud.

Moreover, it eliminates the need for passwords and PINs. No longer does a consumer need to remember many different passwords to access each account! Because a user does not need to speak a password, it also shortens the overall call duration. This means fewer telephony ports and reduced total system hardware cost.

Conclusion

As you can see, the economic benefits of implementing a speech solution speak for themselves. What's better, your customers will actually view your company as being more responsive. The new paradigm calls for providing customers with more control over fulfilling their needs. Today's customers are coming to expect this from organizations. Don't just take our word for it. Talk to our customers like Sears, Home Shopping Network, Charles Schwab, American Airlines, UPS, and many others that have implemented speech solutions. Yes, these companies were dazzled by the technology. But in the end, they all faced similar problems and found that speech solutions pay for themselves. In fact, not only are they cost effective, speech solutions actually increase customer satisfaction for the range of services they provide.

"Everyone is happy. We save money and our customers love the system"

- Terry McGinnis, National Director of Customer Service, Sears

"It's 14 times less expensive than an agent!"

- Douglas Fields, Vice President of Customer Development Applications and Telecommunications, UPS

About Nuance

Nuance is the leader in natural voice interface software that makes access to information, transactions, and services over the telephone convenient and secure. Every day, millions of people place calls, make travel reservations, trade stocks, and interact with other telecommunications, enterprise and Web-based systems running Nuance's speech recognition, language understanding, and voice authentication software. American Airlines, Bell Atlantic, Charles Schwab, The Home Shopping Network, Lloyds TSB, Sears, UPS, and many other leading companies use Nuance software to provide better customer service while dramatically lowering costs. Nuance is a founding member of the V-Commerce Alliance and has led the industry in the creation of open standards for speech application development. Nuance is headquartered in Menlo Park, California with global sales offices and partners supporting multilingual solutions around the world. To experience Nuance's state-of-the-art speech technology, call 1-888-NUANCE-8 or visit the company's Web site www.nuance.com

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