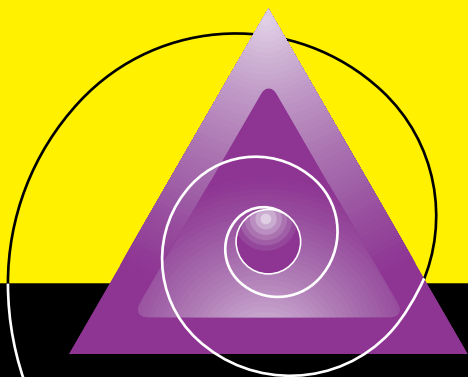


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Building a Virtual Customer Service Representative



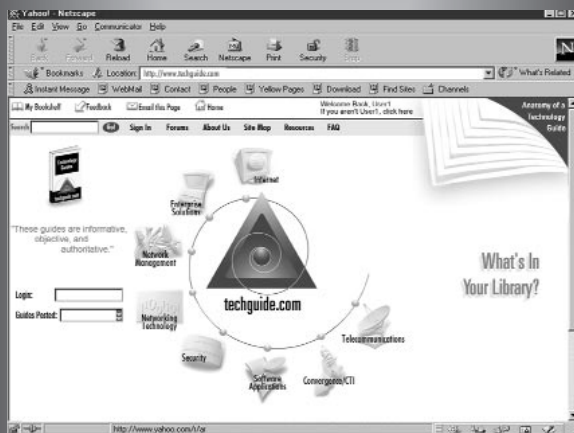
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Abstract

This Technology Guide examines the Virtual Customer Service Representative (vCSR), a new kind of customer-centric software platform that automates a selected set of customer service and sales functions for both the customer and the customer service representative. The vCSR platform integrates new technologies such as speech recognition, natural language understanding, business rules engines, and new abilities to link multiple channels together—such as a wireless gateway that can be linked to electronic mail as well as to a web or voice server or Interactive Voice Response (IVR) technology.

The Guide discusses how vCSR software segments the functionality necessary to integrate different media and systems into an e-commerce application that replicates the manifold layers of skill sets and subsets, based on specialized vertical knowledge required of service and sales agents. The end product arms the customer service representative with a new suite of multi-channel customer support and marketing tools that make the company capable of automatically responding to customer service mandates and proactively promoting new business, thereby transforming customer service into a competitive advantage for the company adopting the platform.

Several vCSR applications are described, which include customer self-service, automated email response, personalization assistant, voice self-service, web navigation, chat monitor and respondent, and customer survey agent. These applications are used in industries such as banking, insurance, financial services, retail, delivery services, academia, human resources, healthcare, and home services vCSR applications.

A well-developed vCSR application strategy should effectively integrate all Customer Service Representatives (CSR) elements into a consistent, pre-integrated architecture that understands customer behavior

across all contact channels, using the customer as the starting point. Accordingly, the white paper discusses vCSR architecture, which is designed around open standards-based computing and provides the scalability, manageability, security, and reliability necessary for large-scale deployment. The paper concludes with an explanation of the benefits provided by a vCSR solution, as well as a summary of R.O.I. factors.

Introduction

Before the age of mass marketing, customer service was a personal affair, oftentimes handled by the salesman who originally sold the product, but in any event handled in person or live on the phone. Selling and product customization was done on a one-to-one basis, and the vendor and customer knew each other personally. But as factory automation and mass production expanded, customer service became more and more impersonal as customer service moved from the storefront to the back office. As a result, most business managers came to perceive customer service as a necessary evil.

The computer and the World Wide Web have changed all of that. The enormous power of the computer to distill and synthesize large amounts of personal data into personal customer profiles that enable sophisticated target marketing campaigns, which in turn create vast selling opportunities, has driven the emergence of a new customer service paradigm. This shift represents the complete overhaul of a model that has been based for the past 25 years on a concept of mass marketing that is now thoroughly antiquated. Along the way, the computer, long regarded as a demon of depersonalization, has been re-personalizing the whole notion of customer service in ways that are far more individualized and

efficient than those governed by back-office activities.

This is a new way of dealing with a traditional cost center. Instead of maintaining a narrow focus on cost-cutting and streamlining back-office procedures, market leaders are re-examining their business strategies and determining that managing customers and providing them with optimum service are the keys to future growth. In so doing, they are moving customer service out of the back office onto the front lines of their enterprise and the Internet and, in the process, transforming customer service into a competitive advantage. This involves arming the CSR with a new suite of multi-channel customer support tools.

■ CSR Software and the New Customer Contact Center

Automated, web-enabled customer service has become a major initiative in virtually every corporation as well as within government agencies. Today, software buyers can download bug fixes and software patches from vendor web sites. Banking and mutual funds customers can manage their accounts over the web, make instant funds transfers, determine portfolio composition, and initiate changes of address. In the government sector, agencies are rushing to publish their documents on the web. Citizens can retrieve any government form, make reservations at state and federal parks, and even file their income taxes electronically over the Internet.

The corporate web site is now the place where customers can get immediate answers to their questions and instant solutions to their service problems. Buyers and sellers, vendors and users, all can benefit from the implementation of an Internet-enabled, customer contact center. Indeed, these customer relationship management (CRM) applications are not only cost-effective; they constitute good public

relations. Every account manager knows that the cost of retaining an existing customer is a relatively small fraction of the cost of acquiring a new one. Improved customer service improves customer retention while it helps increase customer “wallet share” by creating cross-selling opportunities and opening up new sales possibilities.

Accordingly, competitive pressures to integrate Internet-based, CRM benefits into organizations have hit monumental proportions, creating record demands for computer programmers and web development specialists. To stay abreast of the changing customer service market, IT managers and engineers require flexible, robust web development and media integration tools that enable them to build interactive, multi-channel, CRM platforms with intelligent features capable of responding immediately to customer service mandates. A new software industry has sprung up to satisfy the demand. The Aberdeen Group estimates that the CRM market generated \$7.8 billion in revenue from software packages, software-vendor licenses, integration services, and peripheral and hardware sales for 1999, with CRM software sales making up \$3.8 billion of that total. Some think that the market will grow to \$9.4 billion by 2002, with CRM sales software and customer-service software growing the fastest.

Using today’s fully-integrated, interactive CRM software, with just a mouse click, a customer service representative can instantly access client folders that contain up-to-date records of all of that customer’s transactions, and, using this information, solve all of his or her problems online in one session. A CSR can “push” required documents directly to a customer through their web browser or fax machine, where the customer can react to them online in real time.

CRM software enables orders to be fulfilled quickly and accurately. For example, by applying rules and lookup tables against information provided by a customer filling out an electronic form, retail goods

can be ordered and verified instantly against existing inventory; and credit validation procedures can be run concurrently while processing the order. If the order entry process hits a snag for any reason, the customer can be informed and queried on the spot, and errors can be corrected in real time. Also, mistakes that are made on either side of the transaction can be instantly corrected: a customer can get immediate answers to his or her inquiries while informing the CSR of corrections like change of address and billing errors. At the same time, customer profile programs can alert that CSR to new sales opportunities.

Multi-channel customer service platforms are used to interactively and directly involve customers, employees, and business partners in the business process that underlies whatever business transaction is taking place—whether it is a business-to-business (B2B) or a CSR application. This means that customer service representatives must have access to the same data as the customer, and react responsively to the customer's queries in real time, using tools such as the web browser, fax machine, and even speech recognition technology at the front end of the phone call to optimize customer interactions. Therefore, in addition to being intelligent and customer-friendly, high quality CRM software must fully integrate with telecommunication structures, legacy systems, and contemporary business applications.

CRM Focus Cuts Both Ways

However, today's customer-focused business perspective has become a double-edged sword for businesses. The heavy emphasis on customer service has brought customers to web portals and "800 numbers" in droves. System overload is becoming a problem. So is finding the staff to fill the desks. In fact, based on current transaction volumes, it is apparent there is a major problem in the form of a tidal wave of additional multi-channel transaction

volume that is about to crush most Fortune 1000 and other enterprises unless they take action.

Taking action does not mean simply buying more tools for existing CSR staff or increasing the number of live agents. For while high-tech tools can help a CSR immensely toward handling today's overwhelming volume of customer service requests, the contemporary migration path is toward fully automating a steadily increasing share of customer transactions such as information requests, proactive contacts, service fulfillment, commodities sales, etc. In actuality, the CSR is the bottleneck in the system. Ironically, the new breed of CRM software that was intended to empower the CSR is about to replace that same employee with its next evolution. That means implementing a new category of software that effectively removes the human from the loop—especially for low-level, added value interactions—while at the same time still retaining personalized service for the individual. This new breed of software, dubbed the Virtual Customer Service Representative (vCSR), almost completely automates a selected set customer service and sales functions, for both the customer and the CSR.

● The New vCSR Imperative

The ever-evolving Internet is relentlessly driving explosive growth in e-commerce, customer service, and other real-time, interactive, transaction-based, business activities. When implemented correctly, the Internet technology infrastructure unifies communications and distributes applications enterprise-wide, thereby increasing productivity, cutting costs, and improving customer relations—while creating new profit centers along the way. Indeed, virtually all consumer markets are shifting their focus toward a web-enabled, multi-channel CRM enterprise platform that is dedicated to immediately satisfying the needs of their customers on an around-the-clock basis.

The emerging Internet paradigm continually challenges a business's ability to differentiate itself from the competition. In today's high speed, computer-driven business world, customers prefer to deal with those companies who are the most consistently accessible. The current customer service climate demands instant gratification, at any time, from any place, in any way. In today's consumer-driven environment, the rule is, if it takes a customer more than five seconds to reach you, you have lost the customer. If you don't deliver consistent, reliable accessibility to service, someone else will. Ease of customer access to a company's brand is fast becoming the most critical element of global business strategy.

It is important to note that while the vCSR platform is Internet-enabled, it is certainly more than just another "web solution." It is, rather, an enterprise-wide application framework that provides customer interaction solutions of virtually any type. The new business imperative is that a modern company must combine human interactions with intelligent, automated technology that lets the company and its customers manage the whole relationship in an effective way. The vCSR platform integrates new technologies such as speech recognition, natural language understanding, business rules engines and new abilities to link multiple channels together—such as wireless devices gateway that can be linked to electronic mail as well as to a voice server or IVR platform. So equipped, it can fulfill a variety of differently targeted purposes by automating many of the interactions that currently are being handled by live agents at great expense.

While a vCSR may not automate 100 percent of a company's interactions at first, it could start out at, say, 50 percent and incrementally increase the percentage as the technology continues to evolve. Typically, 30 to 60 percent of incoming phone calls can be handled automatically. If the caller can't get the answer they want out of the IVR program, the system tags the call and sends it to a CSR. The CSR

gets a content-rich "screen pop" about the customer, a term that describes data collected by the contact center about the current and previous caller interactions that is spontaneously displayed on the CSR's screen in a pop-up window.

The point is to avoid making the customer ask the questions that they already have had answered—regardless of which communications channel or combination of channels the customer has used, from email inquiries to IVR-driven services delivered via the telephone. The overall goal is to automate as many human functions as possible at each step along the vCSR migration path.

● vCSR and the Evolution of the Customer Contact Center

vCSR applications and technologies must be interwoven into the fabric of a company's CRM strategy for acquiring and retaining customers. Along those lines, the automated customer contact center is rapidly emerging as the strategic weapon of choice for acquiring new customers and building customer loyalty in business today. In the early 1990's, customer contact centers were telephone-centric and known as call centers. Their primary method of assisting the customer consisted of installing an 800 number and talking with those customers who called it. The use of the 800 and 888 telephone numbers grew dramatically in the decade before 1995—from 4.5 billion calls annually in 1985 to over 14.25 billion in 1995. In fact, fully 97 percent of customer inquiries were telephone calls, while, 3 percent were "other."

Today, a state-of-the-art contact center consists of a lot more than an 800 number with an army of customer service representatives waiting to answer incoming calls. Customer relationship management applications gather data out of legacy systems in

the back office of a contact center. Contact management software makes sense of data from CRM applications, data gathered by IVR units that answer incoming calls automatically.

Since 1995, with the advent of widespread PC Internet access, customer contact has diversified into a manifold of contact modes and nodes. Centers are exploding in the number of transactions they are expected to handle—not only by volume, but also by type, of transactions: telephony, email, web interactions, fax, and wireless web access, to name the most common. A large percentage of customer contact centers are now becoming email management centers. They are also becoming nodes of web interactivity, with a need to manage the enormous number of web-based requests that come in. Moreover, despite the proliferation of other customer service channels, the absolute number of voice requests is still increasing. Figure 1 is a schematic of the trend lines for various means of customer contact in the past, while Figure 2 provides an illustration of trend lines in the future. (Taken from the article, “At Any Time, From Anywhere, In Any Form,” by Richard Feinberg, Mike Trotter, and Jon Anton Purdue University; Center for Customer Driven Quality, West Lafayette, Indiana). Some 90 percent of call centers now offer web site access, and 80 percent offer email capabilities, but only one percent of them has integrated web and voice access, according to separate studies by the Center for Customer Driven Quality, and Blue Pumpkin Software, Sunnyvale, Calif. By the year 2005, the number of customer to business contacts annually is projected to grow substantially.

The current solution to handling the explosion in customer requests is to throw more live bodies at the call centers to respond to the torrent of interactions. Technology is providing better and better tools to customer service representative to help them be more productive, but even though that strategy helps, it is incomplete at best.

In the face of continued growth of customer service calls, there is no way that the current model is sustainable economically, either from a transaction volume standpoint or a customer satisfaction perspective.

Figure 1: Past Trends in Customer to Business Contacts

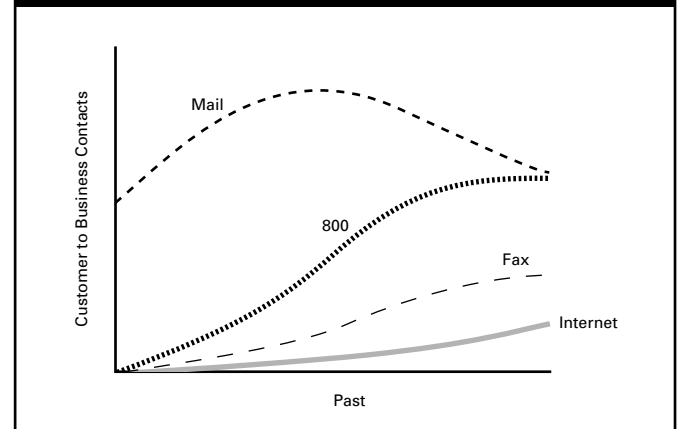
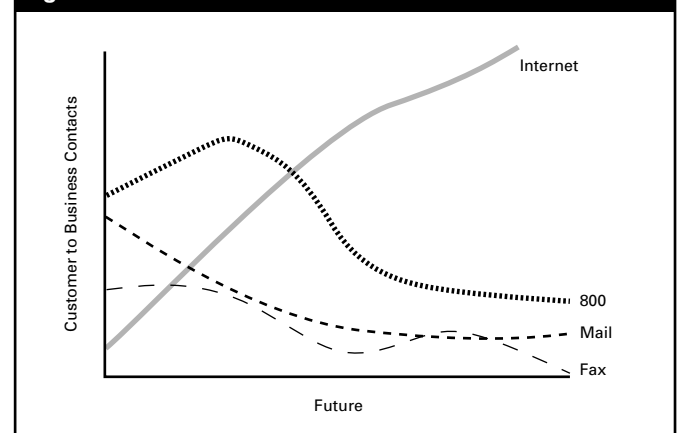


Figure 2: Future Trends in Customer to Business Contacts



The ratio of customers to customer service agents that exists today simply cannot be maintained as customer service contacts if all types continue to grow. Customers want timely, immediate responses

to their requests. As previously mentioned, surveys show that they will wait only five seconds at a web site before clicking off to a competitor's site; similarly, untimely responses to emails degrade customer loyalty. CSRs will be overwhelmed and companies will lose customers unless they have the competitive advantage created by bundling various technologies together into an effective, multi-channel, vCSR platform that can automatically apply business rules that facilitate customer fulfillment and personalization.

vCSR System Architecture and Functionality

Successful implementation of a vCSR system within the complex and evolving nature of today's e-business environment is possible only through solutions that utilize a fully integrated, modular, scalable, end-to-end system architecture. Such a solution must seamlessly combine and deploy distributed applications unobtrusively on a common, multi-channel business process platform, then manage them as services to both internal and external customers in a scalable, run-time, "zero-latency" technology environment. To meet these demands, top-of-the-line vCSR software incorporates the following functions and features:

1. An open specification, component-based, multi-channel architecture that allows quick development and deployment of advanced CSR applications across multiple channels, from web to wireless, and is made up of the following parts:
 - Prefab vCSR software objects with reusable code as they are arranged in a development space. Software objects are used to build automation in information retrieve/submittal communications through multi channel mediums and data processing.

- A visual object assembly environment offering drag-and-drop speed and simplicity, allowing for rapid refinement to adapt to changing customer needs, with a visual runtime debugger for streamlined testing and debugging.
 - An application runtime environment for application management and deployment with superb scalability, full integration with leading firewall solutions to ensure end-to-end security, robust system management, and an open API to protect your investment by easily permitting future integration of custom or third-party objects.
2. Intelligent application features include solutions for formulating, targeting, and delivering one-to-one marketing initiatives, at any point of contact—in real time and include the following:
 - Intelligent targeting draws on back-office knowledge and resources for prospecting customers and initiating cross-selling opportunities.
 - Seamless transaction histories capture the content of every telephone call, web page, completed form and email associated with a given customer transaction. Capturing all of the content of a customer transaction, and making sure that it is included in their digital file folder, can be crucial to providing state-of-the-art, customer self-service.
 - Sophisticated profiling, prediction, and decision management engines help to plan marketing campaigns and act on immediate opportunities according to company business rules and strategic objectives.
 - Real-time execution responds to the customer at the point of contact, provides feedback for immediate evaluation, and permits the CSR (as well as the vCSR) to instantaneously adapt offers to new customer information. Some systems even learn in real time, altering their

predictive models in response to the latest customer input.

3. Multiple channel coverage should be fully functional across the entire customer service operation, no matter how the customer reaches the company or has been marketed to.
4. Seamless integration provides comprehensive integration with all legacy, custom, and third-party back-office systems, as well as CRM, ERP, and e-commerce applications.
5. An information-processing engine links all back-office databases and legacy systems to front-line applications via third-party client software. Instantaneous access to each customers' transaction history and personal information is provided via a user-friendly GUI as soon as he or she is identified by the system. Advanced verification technology, such as phone voice-prints, enables call center agents to immediately begin a fully informed interaction. By integrating all back-office systems on a single platform, each and any of them can be upgraded more easily and inexpensively.

The optimal solution redefines the customer experience. It eliminates phone conversations with customers, including e-customers as well as the brick-and-mortar variety. Accordingly, a multi-channel solution is essential in order to accommodate today's evolving customer needs. Using multiple communication channels simultaneously accommodates an increasing consumer propensity to act on both impulse and opportunity. Moreover, a vCSR solution must be able to save information in all steps of any business transaction and make that data available to the human CSR or customer on demand.

vCSR Software and Enabling Technologies

In pre-Internet days, customer service used to be segmented across a multiplicity of departments: one department handled customer credit; another resolved billing disputes, while another department was responsible for shipping the order. The salesman often ended up being the primary point of customer contact—especially when things went wrong and an ombudsman at the company was needed to straighten things out. The Internet-enabled, customer-focused, vCSR software plays the role of service representative, ombudsman, and salesman—all in one.

vCSR software can replicate the various levels of human interaction quality that is required for wall-to-wall customer relationship management, starting from the agent in the contact center right up to the knowledge worker, as a corporation rolls out its vCSR system across the entire enterprise. This requires high-function, pre-built software objects that can be combined to create feature-rich applications. These applications fulfill the role of live CSRs by dynamically handling and responding to customer inquiries.

vCSR software objects have both depth and breadth: each has high-level functionality, and each can be smoothly integrated with other objects to build across-the-board e-commerce solutions. vCSR architecture is also designed for support of software objects built by using industry-standard object models such as Microsoft COM. vCSR architecture segments the functionality necessary to integrate the different media and systems in an e-Commerce application that replicates the multiple layers of skill sets and subsets based on specialized vertical knowledge that agents need to have.

Knowledge management software applications are built in sufficiently so that the vCSR system is dealing with relatively complicated questions by automating the knowledge base in the system through the application of business rules and

process workflow. For example, customer context information is stored in a folder that contains data about the customer contact history, plus customer indexes like the value of the customer, his purchase profile, current or pending transactions, etc. All of this customer information can be reflected in a customer context object that can access the customer folder and knows when the customer called, what their history is, and what they have done with their account.

When a telephone call or email request comes in, customer information can be extracted from back-office data sources and associated through business rules-based, workflow software with the customer and automatically fulfill his or her request. The customer folder can be made instantly available by the virtual CSR to many different applications using a standard API.

New, improved tools and technologies enhance the customer experience. High-tech innovations proliferate as web technology evolves. New formats and protocols, such as XML and WAP, and controls such as Java, COM, and Active-X, open up new possibilities for customer contact and service, and for better control over customer operations. Value-added, enabling technologies that differentiate top-shelf vCSR development solutions from the norm include:

- *Intelligent telephone daemons* that use advanced speech recognition, with large custom vocabularies and natural language support, to automate customer phone interactions. Channel integration with intelligent speech recognition streamlines consumer information delivery and makes out bound telemarketing more cost-effective.
- *Intelligent speaker verification* uses stored voiceprints to efficiently and unobtrusively identify repeat customers, which enables on-the-spot delivery of customer profiles to CSRs, which

opens up opportunities for additional sales and cross-selling possibilities.

- *Advanced CTI* effectively manages the transfer of customer interactions from software to live CSRs, and ensures against making customers repeat themselves to those human agents.
- *Advanced web technology* uses “push” technology to periodically inform and update customers, update customer profiles, and invoice clients via electronic bill presentment.
- *Fax-on-demand* interactively delivers paper-based and imaged documents to customers through phone menu or web browser activation.
- *Email automation* intelligently manages one-to-one email communications with personalized messages that automatically invoke the most effective response and completely fulfill a customer's request for information.
- *Wireless interface* communicates with mobile customers using the WAP or SMS protocols, which ensures that cell phone and pager applications are fully integrated with all other channels.

By combining CSR software objects that use these technologies, developers can create integrated, customer-focused, proactive, feature-rich applications that span various media and systems across the enterprise. vCSR applications can manipulate, transform, and personalize information in real time or based on a user-defined time or event. This enables developers to create sophisticated self-service applications that can meet the most complex user needs. Each department, branch office, and employee can leverage these applications to make the organization customer-centric, so that the same level of information regarding the customer is available to and used by everybody in the company.

Major vCSR Applications

There are many innovative ways of taking advantage of vCSR software applications for business. Not only can vCSR solutions help companies tap into the power of customer service interactions in novel and exciting ways, but they can also centralize and incorporate a company's existing algorithms and business rules and apply them to vCSR applications through multiple technology channels.

vCSR intelligent software systems combine computer interaction with natural language understanding to bring a lifelike presence to the interface between a company and its customers, partners, suppliers, and employees. vCSR applications can yield a unique competitive advantage in two important ways. First, a networked economy permits a business to offer customers a personalized experience that is utterly different from the traditional shopping experience. Rather than trying to mold online sales, marketing, and support to match standard offline models, vCSR solutions allow users to target their online markets more specifically, through intelligent customer profiling.

Second, vCSR software solutions address all aspects of networked connections to customers, from marketing to sales and support. A vertically integrated approach can give a company the competitive advantage that it needs to attract and retain customers in today's cutthroat market. New vCSR uses are discovered every day. A sampling of horizontal applications is listed below:

- *Customer self-service*—vCSR software is capable of handling multi-channel customer inquiries across all industries.
- *Automated email response*—Content analysis software can determine the subject matter of email and then automatically respond appropriately by fulfilling requests, change of addresses, routing the email to the appropriate department, etc.

- *Personalization assistant*—vCSR software can function as a multi-channel personal servant, screening out unwanted emails, phone calls and faxes, answering routine inquiries, and alerting its owner to urgent messages.
- *Voice self-service*—Voice authentication technology can provide security that Internet passwords cannot. By analyzing the voiceprint of a caller, potential fraud can be detected and prevented early if a customer fails verification procedures. Advanced speech recognition capabilities allow customers to serve themselves and transact business using conversational language.
- *Routing manager*—vCSR software has built-in workflow and business process-based rules that, in conjunction with content analysis, enabling it to examine correspondence faxes, emails, and other business documents, and then to direct them to their proper destination.
- *Web navigation*—Customers can contact companies by email, through the web, or even by telephone, without having to learn how to navigate the web site, or know which department to send mail to, or memorize the list of keywords that work best with the site's search engine. Now the use of natural language processing means that all a customer has to do is to ask for what he or she wants, in plain language.
- *Chat monitor and respondent*—Content analysis software can introduce newcomers to chat rooms, and anonymously monitor chat in Internet chat rooms for inappropriate or illegal discussions. It also can be programmed to automatically answer the inquiries and questions of people in chat rooms that are looking for specific help.
- *Customer survey agent*—vCSR software can voice or email or fax query targeted customers, then monitor and record their responses, doing

logic checks in the process to ensure that the surveys are answered properly.

Internet customer service, email routing, web-chat, web-collaboration, speech-enabled applications, and CTI are some of the common elements of vCSR architecture. A well-developed vCSR application strategy should effectively integrate all elements into a consistent, pre-integrated architecture to understand customer behavior across all contact channels, using the customer as the starting point. Industry-specific, vertical applications include:

- *Banking*—Through vCSR applications and a phone or Internet connection, bank customers can access their deposit and loan accounts as well as request rate information on all bank products. They can confirm account balances; get a list of their last ten transactions, and request interest rates and other information about any of their accounts. Additionally, the system can provide information on bank and ATM hours and branch locations.
- *Insurance*—Personal lines agents and policyholders can get current policy, renewal, and billing information on their home, auto, boat, and umbrella insurance policies. These customers can also make payments using their Visa, MasterCard, or Discover credit cards, plus open up or respond to claim requests. vCSR systems make these services available via the telephone and the Internet.
- *Financial Services*—Customers are able to access general market information, specific product information, and personal account details. These services are made available to customers via the telephone and the Internet.
- *Retail*—A vCSR accounts payable application allows vendors to call in, check on the status of an outstanding payment and verify that a check

has been cut. When the vendor enters a vendor identification number and a zip code, the vCSR system accesses a mainframe located at a remote site through a terminal or PC. The system then reports when the check was sent, the amount of the payment and the check number. The caller can also request information by invoice number or pending payments. On request, a summary of payment information within the previous thirty days can be automatically faxed to the vendor.

- *Delivery Services*—When a customer calls a carrier to check on shipment status, the vCSR system requests the airway bill number, queries the delivery database, and provides the status of the caller's package, all automatically. If a questionable airway bill number is entered, the vCSR system transfers the call to a customer service representative, displaying on a pop-up screen the airway bill number and the reason that the call was transferred. Upon customer request, the system also provides the option of faxing the delivery report.
- *Academia*—vCSR-enabled student self-services allow students to update address information, specify personal data for the campus directory, access their Degree Progress Report to determine remaining requirements, check for academic or financial holds on student services, and obtain a study list for selected classes. All of these services are securely delivered from a variety of legacy systems through a simple web browser interface.
- *Human Resources*—Potential employees can get up-to-the-minute information on positions available at insurance offices of a well-known firm nationwide. Callers can also receive instructions on pursuing these positions, and have a map with directions to the nearest office faxed to them. All of the applications are available on a

24 x 7 basis. Information is delivered primarily by phone and web, although some applications also use fax and email.

- **Healthcare**—vCSR systems provide HMO members with automatic access to physician referrals and verify patient eligibility for participating physicians, handling hundreds of calls per day. Patients receive convenient, accurate information quickly and automatically.
- **Home Services**—A caller to a local hardware store might have a question regarding availability of a toolbox featured in the Sunday newspaper insert. The caller would dial the number for the local store, be greeted by the IVR auto-attendant, asking for the department to which they wished to speak. Our caller might reply “hardware” or “tools” or “uh, tools, please.” The natural language system has the intelligence to listen for a variety of key words or phrases that share the same meaning. It even has the intelligence to listen through normal human voice fillers such as “uh,” “ah,” and “um.”

■ vCSR Business Benefits

Today, most companies implement a totally separate business process for each paper and electronic input channel, including voice, Internet, fax, and wireless. As paper goes down and electronic volumes go up, the inefficiency of this multi-segmented, process approach becomes increasingly apparent. In a full-blown vCSR solution, multiple communication channels are tightly integrated with web portal applications, workflow software, business process rules, and a software object repository with legacy data access. Workflow software permits the converged data streams to be treated under a common set of business process rules, while the web browser functions as a common GUI that can be

used at either end of the application—customer or CSR.

The resulting vCSR product provides the ideal environment for migrating from the antiquated world of paper-based transactions to the electronic, paperless customer contact center of the future. The resulting efficiencies provide the following hard dollar, soft dollar, and strategic business benefits:

- **Improved customer service**—Today the quality of customer service is a key to competitiveness, but typically only customer interactions handled over the phone are accessible to customer service representatives. By capturing customer interactions (transactions, correspondence, information requests, etc.) received via mail, email, or the web and making them available as part of the customer’s interaction history record, a vCSR application provides more personalized service, which can significantly improve customer satisfaction and retention.
- **Increased customer satisfaction and loyalty**—vCSR solutions create a more desirable customer experience through tailored offers and quicker, more personalized response. They create potential added value that can be realized in any given customer interaction, including handling grievances or delivering unexpected but needed services.
- **Lower operational and transaction processing costs**—A key benefit of electronic transactions is cost savings due to the elimination of labor-intensive paper processing and data entry. The vCSR applications, workflow software, and information processing engine together provide the infrastructure through which costs can be lowered by accelerating the shift from paper and live agent transactions to electronic, automated transactions.

- *Elimination of customer callbacks*—Another source of savings is the elimination of customer callbacks and phone conversations in general. By interactively automating so many processes through multiple channels, the need for live agent interaction is substantially diminished.
- *Act and react in real time*—vCSR systems enable CSRs to capitalize on selling opportunities that otherwise would slip through the cracks. Customers are more likely to buy when they are already in contact with a company representative. Intelligent customer profiling and advanced CTI let a vCSR application know when to hand off a phone call, wireless, or web transaction to a CSR who can take full advantage of the sales moment.
- *Easier path to electronic transactions*—Many companies want to move from paper to electronic customer transactions but are held back by concerns about security, customer service, record keeping, and general unfamiliarity with rapidly changing Internet and digital technology. A fully functional vCSR system makes Internet, fax, email, and voice-activated transactions equivalent to paper in terms of security, authenticity, non-repudiation, and archivability—all delivered to the customer via email, fax machine, web browser or telephone in one comprehensive, user-friendly, application package.
- *Increased customer “wallet share” through creation of cross-selling and up-selling opportunities*—When tightly integrated with a company’s electronic infrastructure, a vCSR enables organizations to intelligently identify relationship enhancement opportunities—based on customer context and business rules—and deliver targeted offers consistently across all customer touch-points in real time.

- *Business process reengineering tool*—Applying a single set of business rules, exception-processing workflow, customer service interface, archiving, etc., comprehensively to all business processes will produce significant cost savings, productivity gains, and other business process reengineering benefits.
- *Enhance profitability by maximizing customer value*—Every vCSR transaction yields more information from which to build increasingly targeted and revenue-pushing initiatives with a company’s customer base. Real-time data mining creates up-selling offers that generate new revenues from repeat customers at no additional cost.

When it comes to calculating the R.O.I. created by vCSR implementation, it is a good idea to keep the following figures in mind. According to Boston Consulting Group, it costs \$6.80 to market to existing customers via the web versus \$34 to acquire a new web customer. The Industry Standard, in their March 27th issue, lay out the numbers as follows:

- It costs e-commerce companies, on average, \$250 in marketing and advertising to acquire one customer.
- The gross income from a typical customer (after operating costs are deducted) is a paltry \$24.50 in the first quarter-but \$52.50 in every succeeding quarter that he or she stays with the company.
- Close to 65 percent of all online customers never make repeat purchases.

Moreover, an Andersen Consulting study released in March of 1999 entitled “How Much Are Customer Relationship Management Capabilities Worth?” concludes that a typical \$1 billion high-tech company can gain as much as \$130 million in profits by improving its ability to manage customer relationships. Andersen found that as much as 64 percent

of the difference in return on sales between average and high-performing companies is attributable to customer service performance.

■ vCSR Deployment Across the Enterprise

vCSR architecture is designed around open standards-based computing and provides the scalability, manageability, security, and reliability necessary for large-scale deployment. It gives developers the confidence to build mission-critical applications of any size. Accordingly, vCSR software systems run on various flavors of Windows, including Windows® 2000 and Windows NT®, permitting developers to leverage existing internal skills and systems, and are designed to work with industry-standard hardware. A major advantage of vCSR architecture is that it integrates with existing technologies and infrastructures, enabling developers to leverage existing technology and not be forced to resort to forklift upgrades. This design strategy benefits customers by providing them with investment protection and a lower cost of ownership.

Typically, a flexible, user-friendly, API allows vCSR software programmers and developers to take immediate advantage of emerging technologies and to easily build differentiated e-commerce applications for today's competitive business environment. Accordingly, vCSR software design makes possible the efficient development of one-to-one, interaction-optimizing applications that produce high levels of cost-efficient, customer self-service.

An object-oriented approach and development-friendly GUI enables programmers, developers, and integrators to build feature-rich applications that can provide broad data access, communication media support, and that also can create application logic for value-added, self-service solutions. Additionally,

they enable the rapid development of application prototypes in response to shifting business strategies.

Cross-channel integration covers the full range of customer communication devices: phone, web, email, fax, pager, and WAP devices. Powerful application features include personalized, proactive messaging; multi-channel servers that integrate with voiceprint speaker verification; real time, sales message customization, advanced process automation, and more. Cross-platform integration capabilities can link together and coordinate back-office systems, communications media, and workflow automation processes so that they all work together and are automatically self-updating.

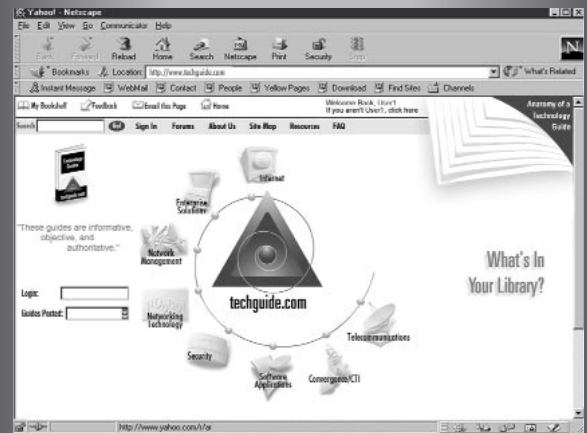
To simplify the management and deployment of vCSR applications, high-end vCSR software vendors provide a comprehensive and reliable runtime environment. Typically, an application server is the control center for managing the delivery of all applications to support large solutions across the enterprise. The runtime environment schedules resources and activities, manages resource usage, tracks application status, handles resource contention and responds to changing conditions. Characteristically, the application server integrates with leading firewall solutions to ensure that deployed applications are secure, end-to-end.

The most successful vCSR applications meet customers on their own ground in the manner in which they desire to be met. Contemporary customers are essentially selfish: online looking for even more individual attention, even more responsiveness, and much more customization. They don't want to hear "I'll have to get back to you on that," and are willing to build long-term relationships based on trust and mutual respect with firms that reciprocate accordingly. Along these lines, it is a good idea to control target marketing, cross-selling, and up-selling campaign frequency. Customers don't want every interaction with a company to lead to a sales presentation; they just want to get

the information they need or get their problem solved in a timely fashion when they really need to.

vCSR applications are high-powered tools for creating the new era of customer relationships. They will certainly go a long way towards redefining the nature of customer relationships in the first decade of the 21st century. However, it is useful to keep in mind that, in the end, they will not determine the ultimate nature of the customer business relationship: the customer will inevitably do that.

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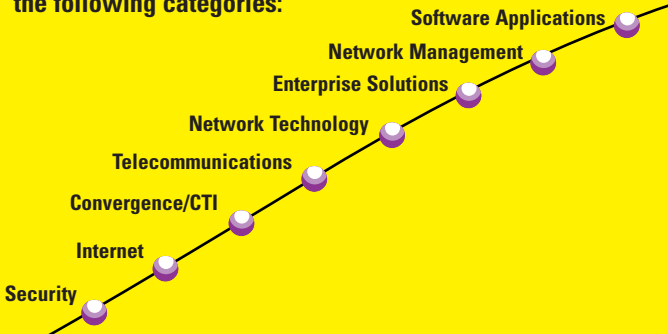
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