

April 2009

Improving Contact Center Demonstrations at Cisco Systems

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Project Number: MIS-DMS-0802

Improving Contact Center Demonstrations at Cisco Systems

A Major Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

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Date: April 30, 2009

Sponsored by

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Professor Diane Strong

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Abstract

This project involved the design, construction, and implementation of a system to improve Cisco's Contact Center demonstrations to potential customers. The system aimed to provide customized demonstration resources by industry vertical and geographic sales theater and streamline the demonstration creation process by Cisco sales representatives. By collaborating with Cisco sales representatives directly, the final deliverable is a set of demo resources that is likely to be used and ultimately increase Cisco's Contact Center sales.

Executive Summary

Working with the Contact Center Business Unit (CCBU) at Cisco Systems Inc. in Boxborough, MA, the goal of this project was to design a system to improve Cisco Contact Center demonstrations to potential customers. The modern Contact Center is a solution that provides more than just the phone capabilities of a typical Call Center. A Contact Center has the ability to handle phone, e-mail, and instant messaging capabilities (among others) for more complete customer service. The CCBU determined that the standard Cisco Contact Center demonstration lacked flair, was not tailored to the potential customer's market vertical, and was aimed solely at a U.S./Canada based audience. The proposed solution was a system of customized demonstrations for particular verticals (e.g., Healthcare) and sales theaters (e.g., Europe) to make the deployment of custom demos easier for Cisco sales representatives.

The project took place in three phases – the design phase, the construction phase, and the implementation phase. The design phase included initial brainstorming of ways to improve Cisco Contact Center demonstrations. The construction phase included coding of demos to be critiqued by sales representatives and improved with each new prototype release. The implementation phase included meshing the final prototype deliverable with Cisco's current Contact Center demo resources.

The goal of this project was to deliver a system that improved Contact Center demonstrations and that Cisco Contact Center sales representatives were eager to use. This report discusses the background literature, methodology, system requirements, high level design, and additional documentation for this project.

Authorship

Abstract – Kyle Boran, Ulrich Werner

Executive Summary – Kyle Boran, Ulrich Werner

Introduction - Kyle Boran, Ulrich Werner

Literature Review – Kyle Boran, Ulrich Werner

Methodology - Kyle Boran, Ulrich Werner

System Requirements – Kyle Boran, Ulrich Werner

High Level Design – Kyle Boran, Ulrich Werner

Technical Design and Implementation – Kyle Boran, Ulrich Werner

Conclusion – Kyle Boran, Ulrich Werner

Special Thanks

to

Professor Diane Strong

Jay Ward

Tom Bucciero

Dave Orvosh

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1. Introduction

1.1 Project Sponsor

Cisco Systems, Inc.

1.2 Business Need

This project has been initiated to increase sales of Cisco Contact Center solutions through more effective product demonstrations. A system will be created to improve the visual appeal of Contact Center demos, have the demos work effectively across market verticals and languages, and streamline the demo creation process.

1.3 Business Requirements

Cisco Contact Center demonstrations have historically taken a long time to develop from storyboards into a polished demonstration. These demonstrations have also typically focused on a single vertical (e.g., Healthcare), aimed towards an American or Canadian audience, and lacked flair. These problems are mainly because manual demo creation requires a diverse skill set ranging from graphic design to programming and because of the time commitment involved in customizing each portion of the Contact Center demonstration. One way to streamline the demo creation process while creating a vertical and language specific demonstrations would be to develop a system of demonstration resources for quickly deploying customized Contact Center demos.

We created demo resources that highlight some core functionality of the Contact Center in a customized and engaging way. The GUI of the components was designed and developed with the input and critique of Cisco sales representatives across multiple sales theatres (geographic locations) in order to meet the core needs of most users.

The three main outputs of the system are:

- Voice calls through Customer Voice Portal (CVP): The CVP is where customers interact when calling a company. In most scenarios, the customer is greeted with an interactive voice prompt that narrows down the customer's needs before transferring to a live agent.

Users of the demo resources will have the ability to create custom voice prompts according to their specific demonstration needs. Otherwise, voice prompts will be preset according to the vertical that the user selects within the GUI. For instance, selecting the “Finance” vertical would yield voice prompts dealing with account balances, whereas selecting the “Tourism” vertical would output voice prompts for booking a flight.

- Chat or e-mail request from a customer facing web site: Customers visiting a company website looking for help can navigate to the customer support page and may choose to communicate with an agent via chat or e-mail. The demo system has several vertical specific website designs that mirror the look and feel of a real business in that given vertical, giving sales representatives a more compelling and relevant demonstration of how the company can implement the Contact Center solution into the company’s current website. Selecting the Finance vertical would output a website with the look, feel, and relevant links that a real banking website would contain.
- Agent desktop: The agent desktop is the environment an agent is working in while interacting with customers (either through e-mail, chat, or voice). The agent desktop environment ranges depending on the needs of the agent. Some agent desktop setups have only core functionality such as receiving, holding, and forwarding calls. Other agent desktop setups are customized to perform business centric functions, such as booking a flight within the Tourism vertical. This agent desktop customization allows for the centralization of functions that otherwise require multiple programs. Selecting a vertical within the demo system will output a vertical specific agent desktop that will aid sales representatives in demonstrating the Contact Center’s business value.

1.4 Business Value

The availability of customized demo resources streamlines the Contact Center demo creation process, freeing up valuable time for Cisco employees. It can increase the quality and relevance of product demonstrations for customers. These higher quality demonstrations will potentially increase sales of Cisco's Contact Center solutions.

2. Literature Review

2.1 Overview of Cisco Systems, Inc.

Cisco is a name nearly synonymous with networking. The company began selling routers in the early days of switched packet computer networks, the late 1980's, and has held a leadership position in the industry ever since. Despite its current initiative focused on small to medium sized business and smaller home networks, Cisco is still best known for its high end routers, switches, and other networking equipment. Cisco products are in use in almost every environment, including corporate and private web hosting services, LANs¹ and WANs², from academia to private homes, high performance Cloud Computing centers³, and much more.

In addition to its core switching and routing products, Cisco has expanded into many fields including enterprise telephony hardware and software, video conferencing, and bundled, home based network solutions.

Company Type:	Public
Year Incorporated:	1984
Stock Exchange:	NASDAQ – CSCO
Net Sales (2008):	\$39.5 billion
Net Income (2008):	\$8.1 billion

2.1.1 Current Strategy

Recently, part of Cisco has been taking steps to move into an aspect of the computing market unfamiliar to them – creating bundled, all-in-one software packages aimed at giving small to medium sized businesses (SMB's) a full suite of products and/or services according to their business needs. One advantage that Cisco has in this endeavor is its experience in obtaining existing and tested products by acquiring smaller companies that have focused on the development of key components. “Buying innovative small firms rather than developing new technology from scratch has long helped Cisco stay in front of the pack with a fresh stream of new products, while largely sidestepping the merger messes that peers often faced. The San Jose, Calif., company has gobbled up 126 companies since its first acquisition in 1993, most of them

¹ Local Area Network - a computer network confined to a particular area, such as one office building

² Wide Area Network - a computer network covering a broad area. The most prominent example is the Internet.

³ A group of systems linked together to distribute the processing of large workloads

small, privately held and closely related to its networking-equipment business.” (Bobby White 2008)

In some cases, this new direction for the company goes beyond simply supplying a suite of packaged communications software: “These days, the company is peddling e-mail software, video conferencing systems, cable TV boxes — even furniture — as it tries to break out of the data center and get its products in front of ordinary office workers.” (Vance 2008)

As this paper will illustrate, this shift in business direction is still a work in progress. Cisco has begun to take considerable steps towards reaching this market segment, but at this point only the components are being collected and software packages are being designed: “Although Cisco has not yet formally bundled all of these services together into a single suite, the company said it intended to move in that direction.” (Vance 2008)

The market segment consisting of private users and SMB’s is commonly referred to as the ‘Edge’ market, as opposed to the ‘Core’ – the central, server-side components of networking infrastructure. Some of the specific acquisitions Cisco has made to gain a foothold in this market are Linksys, WebEx, and Scientific-Atlantic. These acquisitions clearly show the intended direction of Cisco’s more recent ‘Unified Solutions’ approach in marketing to SMB’s: “When combined with their earlier edge-related acquisitions like Tribe, Five Across and Reactivity, you see a conscious effort by Cisco to pursue a strategy for the Edge Economy by acquiring applications and platforms to build value through communities and networks of end users” (MacVarish 2007).

Cisco bought Tribe, a small social networking site, not for the site itself, but for the underlying technologies that it included (Stone 2007). Five Across’ platform, called ‘Connect Community Builder’, allows companies to easily create communities and add user-generated content (e.g., blogs, photos, video, podcasts, and profiles) to their own company websites (Cisco 2008 A). Reactivity is a major driver in the XML (eXtensible Markup Language) based, Web 2.0 movement “from a collection of relatively static web sites to a services rich computing platform” (Cisco 2008). With these technologies and other major acquisitions like Linksys, WebEx, and Scientific-Atlanta, Cisco aims to further its objective of providing comprehensive network and service solutions to SMB’s.

Cisco has made clear and significant strides towards its newer SMB market, but this does not reflect a change in the company's direction as a whole. Cisco has no intentions of slowing down in its core market – developing high-performance networking equipment: “More than half of Cisco's sales are still in expensive, high-end routers and switches, but it has invested recently in companies and technologies that extend its network gear into areas like telephony, network and physical security, and social networking (Frommer 2007).

2.1.2 Recent Acquisitions

The largest and most pertinent acquisitions to Cisco's new strategy, that is, entering and influencing the 'edge market' while providing unified solutions, are Linksys, Scientific-Atlanta, and WebEx.

Linksys

Cisco purchased Linksys, the leading provider of home networking products, in 2003 when it noticed the emerging mass market acceptance of home networking. At the time, Linksys had proven itself as the premiere home network solutions provider, with a product line of more than 70 products “including wireless routers and access points for simultaneous sharing of broadband Internet connections, wireless network adapters and wireless print servers as well as traditional wired products such as Ethernet routers and cable modems, unmanaged switches and hubs, print servers and network attached storage for easy sharing of digital music, photo and video media files” (Cisco Systems, Inc. 2003).

Cisco had initially planned on building its own portfolio similar to that of Linksys, but determined “that only a unit with a low-cost, high-volume operating model could succeed, and that building such a unit would take several years and require an expensive up-front investment” (Krazit 2003). With the expected growth of the home networking market valued at \$3.7 billion in 2002 to \$7.5 billion in 2006, Cisco decided to follow its successful acquisition strategy and capitalize on Linksys' leading market share and well established brand name. Cisco officially purchased Linksys in 2003 for \$500 million in Cisco stock (Duffy 2003).

Scientific-Atlanta

After the purchase of Linksys and entry into the home networking market, Cisco foresaw that the “future of Internet services in the home may be reorienting towards video entertainment”

(Fisher 2005). In anticipation of this burgeoning market, Cisco purchased Scientific-Atlanta Inc. in 2005 for \$6.9 billion, giving them major headway into the so called “triple play bundle of consumer entertainment, communication and online services” (Regan 2005). The Scientific-Atlanta purchase was such an important acquisition that it put Cisco in approximately 40% of set top cable boxes installed in the U.S. and placed it head to head against the only other major player in the market – Motorola. The purchase also gave Cisco access to Scientific-Atlanta’s business of providing infrastructure to television providers. This is especially important as these providers are beginning to seek fewer vendors to provide their complete network solutions (Cisco to buy Scientific-Atlanta 2005).

Cisco’s aim to become the all-in-one, bundled solution for telephone, Internet, and television in the home is reflected explicitly in the nature of the Scientific-Atlanta deal. During negotiations, Cisco CEO John Chambers commented that “Video is way too important ... to do this in a partnership-type of arrangement” (Cisco to buy Scientific-Atlanta 2005). Cisco’s overall strategy was to “take what are currently disparate elements of IPTV, and even cable TV, and weave them tightly together with software and services that cut across all of the network layers and offer service providers and ultimately consumers more robust, rich experiences” (Gaw, 2005). To offer this complete package, Cisco needed to fully absorb the solutions of Scientific-Atlanta and make them its own. As a result, Scientific-Atlanta was transitioned into and renamed ‘Cisco’s Service Provider Video Technology Group’ (Scientific Atlanta Becomes Cisco SPVTG, 2008). The \$6.9 billion price tag made Scientific-Atlantic one of Cisco’s largest acquisitions, tying only one previous acquisition – the \$6.9 billion purchase of Cerent Corp. in 1999 (Cisco to buy Scientific-Atlanta, 2005).

WebEx

Cisco Systems purchased WebEx in 2007 as a continuation of its “vision for Unified Communications, particularly within the Small to Medium Business (SMB) segment” (Dignan, 2007). WebEx, the creator of online collaboration tools such as hosted web conferencing and file sharing, was the leading solution in the collaboration services market, with a market share of 65% when purchased. Cisco’s purchase of WebEx put them in direct competition with Microsoft, who claimed the second spot in terms of collaboration services market share, followed by Citrix in third (Ziff Davis Media, 2007).

WebEx CEO Subrah S. Lyar spoke about the acquisition, explaining that "Cisco and WebEx share a vision of Web collaboration as a key to accelerating business processes ... Cisco's global reach and customer focus will help us extend our core Web collaboration applications and continue to broaden the services we offer through the WebEx connect platform" (Hickey, Andrew R. 2007). With a customer base of two million, the WebEx acquisition effectively extended Cisco's presence in small to medium sized businesses across the globe (Malik, Om 2007).

2.1.3 Marketing

Cisco's emergence into the SMB and home networking markets was a unique challenge for Cisco's sales and marketing team. When Cisco sold only network routers, it was marketing to a very specific type of client – the tech savvy computer engineer or IT professional who spoke network industry jargon. With the purchase of companies like Linksys, Scientific Atlanta, and WebEx, however, their target market has broadened to “entrepreneurs, small businesspeople, students, work-from-homers and technophobes” (Borden 2008). Cisco soon realized that marketing techniques used to great success in the past would be ineffective at attracting their new target market.

In 2005, Cisco executives launched a year-long set of studies and technographic research⁴. The studies and research, focused primarily on less tech savvy consumers, concluded that “There was a strong feeling around connections, that Cisco was providing them with the ability to make connections they had not been able to make before.” (Borden 2008) Consumers in this new target market were not concerned with technical specifications or model types, but instead how the products and solutions could improve their lives. In 2006, with a newfound understanding of its target market, Cisco launched a \$100 million rebranding campaign that took emphasis away from the products themselves and instead focused on the human connection that its products provided: “Cisco identified something new, yet as old as time. ... It's not about the stuff you make, but the people who use it, what they use it for and why they're better for it” (Borden 2008).

⁴ Research used to determine market segmentation based on the role and scope that technology plays in consumers' lives.

Cisco's new branding, dubbed the 'Human Network', has been marketed heavily through TV commercials during primetime National Football League (NFL) games since October of 2006. Additional advertisements placed on Major League Baseball (MLB) and National Collegiate Athletic Association (NCAA) websites displayed the ways in which Cisco products enhance sports viewing. The main effort of these advertisements was to get consumers, tech-savvy or not, onto Cisco's 'Human Network' website, wherein visitors could learn the various applications of Cisco products to everyday life. Examples of product applications on the website "range from an independent singer/songwriter, who uses them to produce and present her music, to a mountain climber, who uses Cisco technology to stay in touch with his wife and three children." Although the focus of this marketing effort was on attracting new customers, Cisco's legacy customers were not forgotten. While the 'Human Network' portion of Cisco's website caters towards a newer crowd, repeat customers will find information more easily than ever, "since Cisco's site has been streamlined to speed ordering" (Borden 2008).

Despite the early success of the campaign, Cisco's marketing team realized they needed more than just traditional commercials to reach their new audience. To augment its campaign, Cisco incorporated its products directly *into* widely viewed television shows. For example, Cisco's TelePresence, a cutting-edge virtual conferencing system, has been featured in Fox's *24*, Fox's *Vanish*, and CBS's *CSI: Crime Scene Investigation*. Viewers of the shows may be surprised to learn that the technology is not a special effect, but instead an existing technology. This product placement is highly effective, as the several minute long clips during each show include shots where the Cisco and Cisco TelePresence logo are prominently displayed. In fact, the product placement has proven so successful, that when there is both a commercial advertisement and a relevant demonstration within the television show, Cisco receives a staggering "17% more recognition than with an advertisement alone" (Borden 2008). Cisco's director of marketing, Diane Devine, explains this relationship: "If we combine the commercial with a powerful demonstration of a product or technology, the viewer remembers the product and the brand a lot more. In this world of more media and more interruptions, you have to be a lot smarter about how you spend your dollars" (Borden, Jeff 2008).

The overall effects of Cisco's new 'Human Network' marketing campaign are dramatic. Cisco's improved website, with sections aimed both at newer, non-techie consumers and legacy,

tech-savvy customers, has led to a 20% increase in site traffic from January 2007 to January 2008 (Borden 2008). Cisco's new branding has also proven highly effective where it matters – the bottom line. Since the launch of the campaign in 2006, Cisco's net sales have increased 39%, from \$28.5 billion in 2006 to \$39.5 billion in fiscal 2008. Net income increased 45%, from \$5.6 billion to \$8.1 billion, within the same two year time frame (Financial Highlights 2008). Cisco's brand value has also grown 22% since the campaign launch, from \$17.5 billion in 2006 to \$21.3 billion in 2008, as recognized by Interbrand's Best Global Brands ranking⁵ (Best Global Brands, 2008).

2.1.4 SWOT Analysis

Strengths

Strong Financial Performance

Cisco has recorded strong financial numbers in recent years, especially after its new 'Human Network' campaign was launched in 2006. Fiscal 2008 marked "record financial results" for Cisco. Net sales increased by 13%, from \$34.9 billion in 2007 to \$39.5 billion in 2008. Net income increased by 10%, from \$7.3 billion in 2007 to \$8.1 billion in 2008 (Management's Discussion 2008).

The diagrams in Figure 1 outline the net sales and net income for Cisco, starting in 2004 and ending in fiscal 2008.

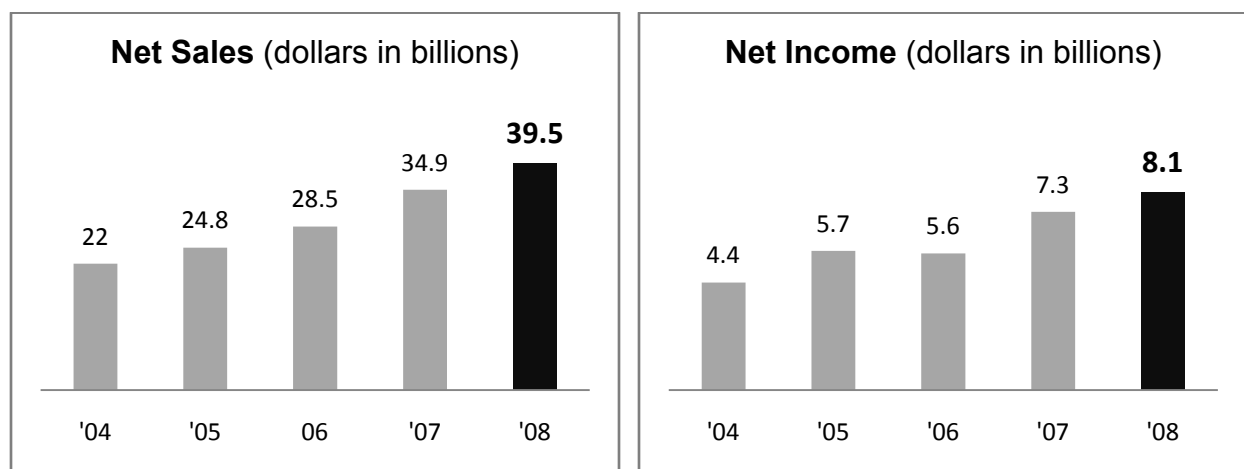


Figure 1 - Cisco Financial Highlights

⁵ Rated the most influential benchmark study by CEOs

Diverse Customer Base

Cisco has a broad portfolio of products that are diversified across various customer markets. Cisco's customer markets are outlined in Table 1.

Table 1 - Cisco's Customer Markets

Customer Market	Examples
Large Enterprises	Public, private, government agencies
Service Providers	Regional, international telecommunications carriers, internet, cable, wireless service providers
Commercial	Small to medium sized businesses (SMB's), midmarket businesses
Consumer	Individuals, small offices with small scale networking requirements

Source: (SWOT Analysis 2008)

Diverse Product Offerings

Cisco Systems has four main product categories: routers, switches, advanced technology, and other products. Routers accounted for 24% of Cisco's total net product sales in fiscal 2008. A large proportion of router sales can be attributed to the sale of higher end routers, such as Cisco CRS-1 Carrier Routing System and Cisco 7600 Series Routers. This is mainly due to service providers making large purchases in order to expand their data infrastructure. As the demand for Unified Communications and Wireless LANs increases, so too does the demand for switches. Switches accounted for 40% of Cisco's total net product sales in fiscal 2008. Net product sales of switches increased \$815 million from 2007 to 2008. Advanced technology, which includes Unified Communications (i.e., IP phones, messaging, conferencing, and Contact Center software), video systems for service providers, and security products, accounted for 29% of Cisco's total net product sales in fiscal 2008. Other products accounted for 7% of total net product sales in fiscal 2008. Cisco's large portfolio of products and services and diversified markets has reduced Cisco's dependence on particular market verticals (Financial Highlights 2008).

Wide Geographic Reach

Cisco has sales teams and offices in more than 200 countries and divides its geographic sales theaters into five categories, as shown in Table 2.

Table 2 - Cisco Geographic Sales Theatres

Region	% of Net Sales
United States and Canada	54%
European Markets	21%
Emerging Markets	11%
Asia Pacific	11%
Japan	3%

Source: (Management's Discussion 2008)

Cisco's presence in both domestic and foreign markets decreases its dependence on any given country. Its geographic reach "also reduces the effect of critical situations like political, economic uncertainties which would have adverse impact over the business operations" (SWOT Analysis 2008).

Weaknesses

Cisco is particularly weak in contact center market share. As of 2007, Cisco held only 3% of the global contact center market, which is currently being led by Avaya at 21%. Overall, "the company's weak presence in the contact center technologies signifies the need for attention" (SWOT Analysis 2008). Cisco is also facing harsh competition in network storage where its market share has been declining to leading competitor Brocade. Cisco also has a weak overall market share in China, one of the few regions in which it does not currently lead in network equipment sales (SWOT Analysis 2008).

Opportunities

Cisco's largest opportunity is in the "growing demand for unified communications solutions". In 2007, the unified communications total market value was approximately \$22 billion and is expected to increase to as much as \$49 billion by 2012. With recent strategic

acquisitions of WebEx and other collaboration technologies, Cisco is in a prime position to capitalize on the upcoming unified communications market boom (SWOT Analysis 2008).

Threats

Cisco faces intense competition in each of its product categories and market verticals. A few of Cisco's main competitors across all platforms include 3COM, Alcatel, Avaya, Brocade Communication Systems, Ericsson, Genesys, Interactive Intelligence, International Business Machines, Interville, NEC Unified, Nortel, ShoreTel, and Siemens.

2.2 Industry Analysis – Contact Centers

Contact Center is a term used by Cisco and its industry competitors to describe a part of its enterprise telephony solution. A traditional telephone call center is a major component of a contact center solution. A Contact Center is meant to encompass many other aspects of customer interaction. This includes automated customer help systems through an IVR (Interactive Voice Response). It may also include web chat and email functionality. One recent addition for Cisco is a video contact center capability in Cisco Unified Voice Portal, typically using a video kiosk.

2.2.1 Industry Overview

Brief History

With the invention and popularization of the telephone, companies began to offer sales and support through the new medium. The call center was typically attached to the business it was serving. Advances in technology enabled changes in the business. For example, computer systems allowed customer services representatives to easily access information that they then provided over the phone. Networking technology meant that the call center could more easily be physically separated from the business it served while still getting access to the information and resources required for telephone interactions. At the same time, the demand for interaction with a business through several different communication mediums was increasing. Traditional methods included telephone, fax, and mail. Interactive voice response systems were rapidly growing in popularity. These systems could handle the customer interaction in a fully automated fashion, with minimal or no agent assistance. The development of the Internet led to several new

communication methods that a business could use to interact with its customers, including web and e-mail communication.

Contact center was a term developed to encompass the broad range of communication mediums now available. Through technology, customer interactions could be unified through a single interconnected system. Intelligent technology and interactive voice response systems were reducing the need for agents and in some cases eliminating them entirely. Where agents are still used, they might interact with a customer through a web chat, an e-mail conversation, or a traditional phone call.

Factors that affect growth

Growth in the contact center industry is connected to the businesses it serves. While a contact center may be viewed as a strategic resource in a company, it is often viewed as a cost center. Some businesses often seek to cut costs in this area during downturns in profitability. Other businesses see benefit in having excellent contact center capabilities. Contact center technology helps the business serve its customers more efficiently. Greater efficiency and greater satisfaction with customer interactions can make the contact center a strategic resource for the company. Both the financial condition of a business and varying views on the role of the contact center within a business will affect the growth of this industry.

VoiceCon

VoiceCon is the premiere conference for the discussion and showcasing of IP-telephony, enterprise voice, and converged networks. The attendee focused program at VoiceCon is designed with a very specific purpose: “To present high-level, forward-thinking, relevant and reliable information” to attendees. Like most tradeshow, attendees at VoiceCon are able to visit company booths to weigh the pros and cons of each system and ask questions specific to a particular product or solution. VoiceCon is more than just system vendors marketing their products on the floor. VoiceCon features “migration strategies, decision criteria, and lessons learned” from IT professionals who have actually implemented converged voice products and solutions into their business. In addition, top enterprise convergence experts discuss “technological capabilities, system features/functions, business/economic models” and “the elements that go into upfront costs and total cost of ownership (TCO).” Ultimately, VoiceCon does not advocate one company or solution over another, but instead allows attendees to decide

the best solution for themselves with a wealth of information, discussion, debate, and analysis (Major End Users Featured In VoiceCon Keynotes, Plenaries, 2004).

2.2.2 Industry Trends

Technical advances in the industry have focused on creating enhanced customer experiences and reducing costs to the business. Advances in interactive voice systems allow for increasingly complex customer interactions to be automated. Text to speech and speech recognition systems provide easier and more natural voice interaction with an automated system. Newer technologies such as video are being integrated with the contact solutions to provide additional flexibility in how a business communicates with its customers.

2.2.3 Competition

A number of companies, in addition to Cisco, compete in this market. Major competitors include Avaya, Interactive Intelligence, Mitel Networks, Nortel Networks, and Siemens. Avaya is the market leader with approximate 21.6% of the global market share (SWOT Analysis, 2008).

2.2.4 Contact Center Technologies

Inbound IVR

Call centers staffed entirely with live representatives are expensive. For this reason, most companies have replaced typical, rote call transactions with automated voice recordings and text-to-speech prompts. In modern day contact centers, inbound integrated voice response (IVR) is the underlying technology that enables these automated calls. Systems with inbound IVR and text-to-speech capabilities are able to perform database queries to provide customers with relevant and useful information. For example, banks and credit card companies can give customers up to date account information via phone without a live agent on the phone (North American Market for Outbound IVR to More Than Double, 2008).

Outbound IVR

Outbound integrated voice response (IVR) is an emerging contact center technology that automates outbound phone communications. For instance, if a flight is cancelled, outbound IVR enables a travel company to send out a text-to-speech or prerecorded message to the phone of

each passenger detailing the rescheduled flight. This method results in enormous cost savings in human agent fees and improved customer satisfaction. In this case, the call will only be routed to a live customer service agent if the customer requires more help or wishes to reschedule manually. In essence, outbound IVR is the perfect tool for filtering customers who require very little interaction from those who really do need the expertise of a live agent.

The North American market for outbound IVR is expected to more than double from 2008 to 2013, from an estimated \$213 million to \$524 million. Currently, outbound IVR is already deployed by “financial service organizations – for debt collections and billing, and travel & tourism companies, to provide information about flights and gain a competitive advantage” (Worldwide Videotex 1). Outbound IVR is also currently being used by the “healthcare industry to send prescription refill, medication dose or appointment reminders to patients” (Worldwide Videotex 1). These outgoing phone communications have already improved customer service and the bottom line for companies. In the healthcare industry, for example, administrative costs have been reduced due to fewer missed appointments (North American Market for Outbound IVR to More Than Double, 2008).

2.3 Cisco Contact Center

2.3.1 Technologies Involved

Customer Voice Portal

Customer Voice Portal (CVP) is an important piece of the Cisco Contact Center solution. It primarily handles customer voice interactions, including IVR systems. Interactions are programmed using VoiceXML (Voice Extensible Markup Language). Voice applications may be built to interact with databases and other external systems. One typical example is an IVR system for a bank, which may have an application to allow a customer to call in and retrieve an account balance. CVP would receive the call and process voice prompts defined in the VoiceXML. Given entry of some information into the IVR, such as an account number and PIN, CVP could then retrieve the current account balance from a connected database.

Cisco Unified Call Studio

Cisco Call Studio is a development environment for building VoiceXML applications. Elements, their relationships, and their properties are configured using a drag-and-drop interface. This allows for intuitive and fast development of VoiceXML applications. Call Studio also validates the VoiceXML and generates a package for deployment on a voice gateway. Figure 2 shows a screenshot of a very simple call flow, including the start of the call, an audio clip, and the call hang up.

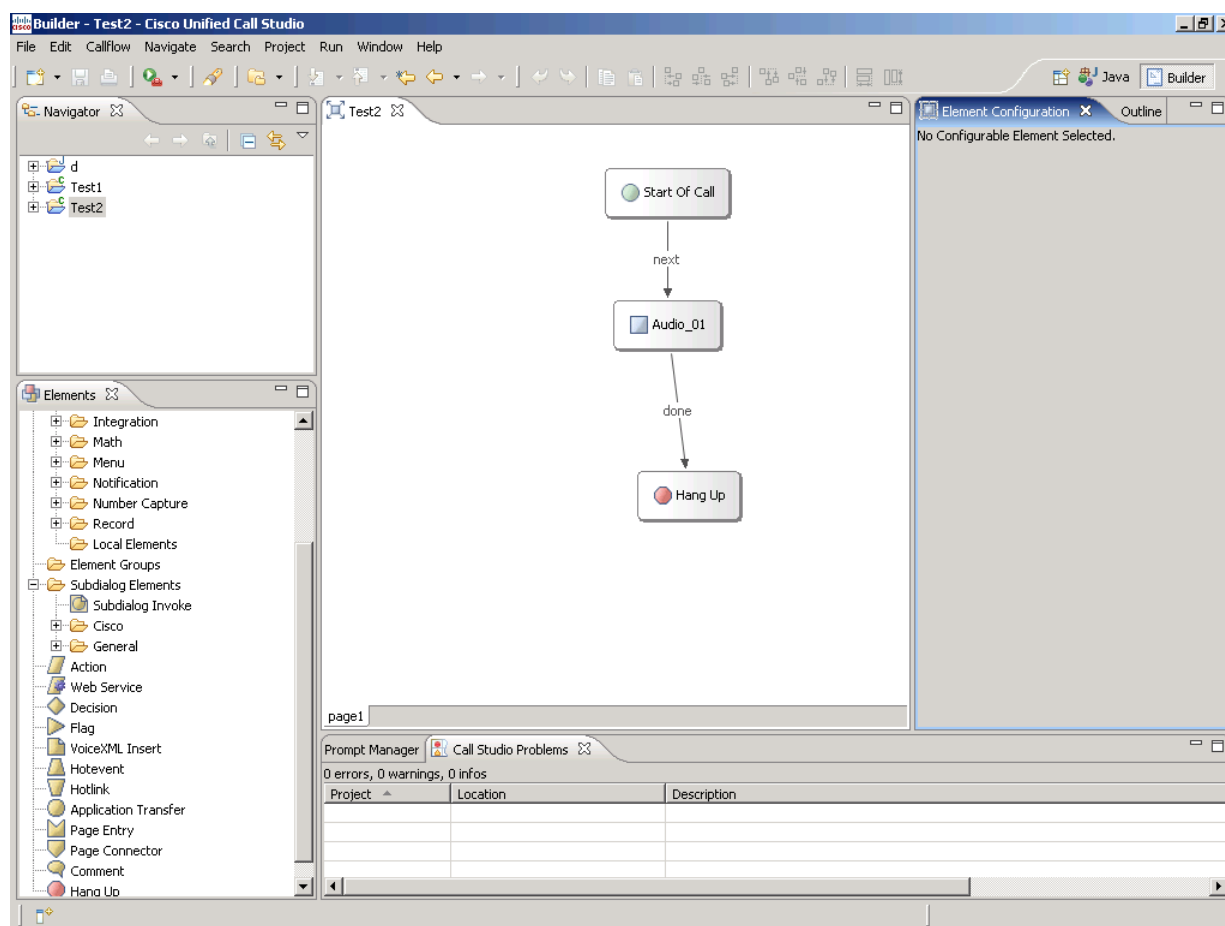


Figure 2 - Unified Call Studio Screenshot with sample call flow

CallManager

Cisco CallManager, officially called Cisco Unified Communications Manager, forms the core call processing component in the contact center. It manages and provides call switching between phones. When an IP phone is connected to the contact center, it must be configured and

connected to the CallManager. It also handles any call control functions, such as transfer between agents.

Intelligent Contact Manager

Intelligent Contact Manager (ICM) performs call routing and Automatic Call Distribution (ACD) functions. When a call comes in to a contact center, there may be different group of agents configured for different functions. One group of agents may be assigned to handle billing, or sales, and so on. The ICM can automatically route calls to the appropriate location based on information entered in the IVR system.

E-Mail and Web Interaction Manager

Web and e-mail can also be used as a method of interaction in the contact center. An agent may chat with customers while they are on a website or respond to e-mails asking questions. Cisco Web Interaction Manager makes creating such a web chat system a simple task of embedding some code into a company's existing web page. The E-Mail Interaction Manager integrates with a web form on the company's web site to allow messages to be sent to the agent. A single agent desktop allows agents to interact with customers over both mediums. Features such as a premade response library allow the agent to quickly respond to customer inquiries.

Computer Telephony Integration Object Server (CTIOS)

This part of the contact center solution handles integration with the agent side of communications. A contact center agent is a person actually receiving phone calls through the system. Typically, this is someone like a customer service representative. The core technology in use by the agent is some kind of telephone. Agents can get additional information and call control capability by using agent desktop software. In the agent desktop software, an agent can perform such functions as viewing queued callers, putting a caller on hold, or transferring a caller to a different destination. This combination of computer software to assist in telephony control is the essence Computer Telephony Integration.

The CTIOS performs the server functions needed for integrating the agent's telephone with a client computer application. Cisco then has two client side software options available, CTI Toolkit and Cisco Agent Desktop. These are discussed in the following sections.

Cisco Systems CTI Toolkit

The CTI toolkit provides a base for development of custom CTI applications. The screenshot in Figure 3 - Cisco Systems CTI Toolkit (Agent Desktop) provides an example agent desktop providing basic call control and information display.

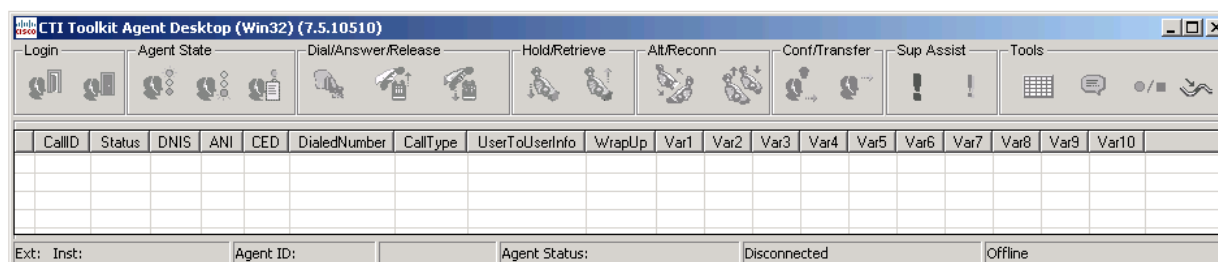


Figure 3 - Cisco Systems CTI Toolkit (Agent Desktop)

In practice, these basic controls would be integrated into a custom application developed for the company. The toolkit provides development tools and documentation for languages such as C++, Visual Basic, and Java. Typically, the goal of the custom application development is to provide the agent with information needed to assist callers.

Integrating call control functions like agent login, agent state, dial/answer/release and agent assistant functions such as pulling user information from external databases into a single application allows for better information flow. If the caller had previously entered an account number into the IVR system before reaching the agent, this data can automatically be passed on to the agent desktop. Such account information could then be automatically retrieved from the company database without requiring the caller to repeat themselves and the agent to manually enter the data.

Cisco Agent Desktop

Cisco Agent Desktop provides functionality substantially similar to the CTI Toolkit Agent Desktop. One distinguishing feature is its built-in web browser function, as seen in Figure 4 - Cisco Agent Desktop. This makes it ideal if a company has an existing web based system that they want to make available to agents. It may also provide a solution that can be implemented with minimal custom software development.

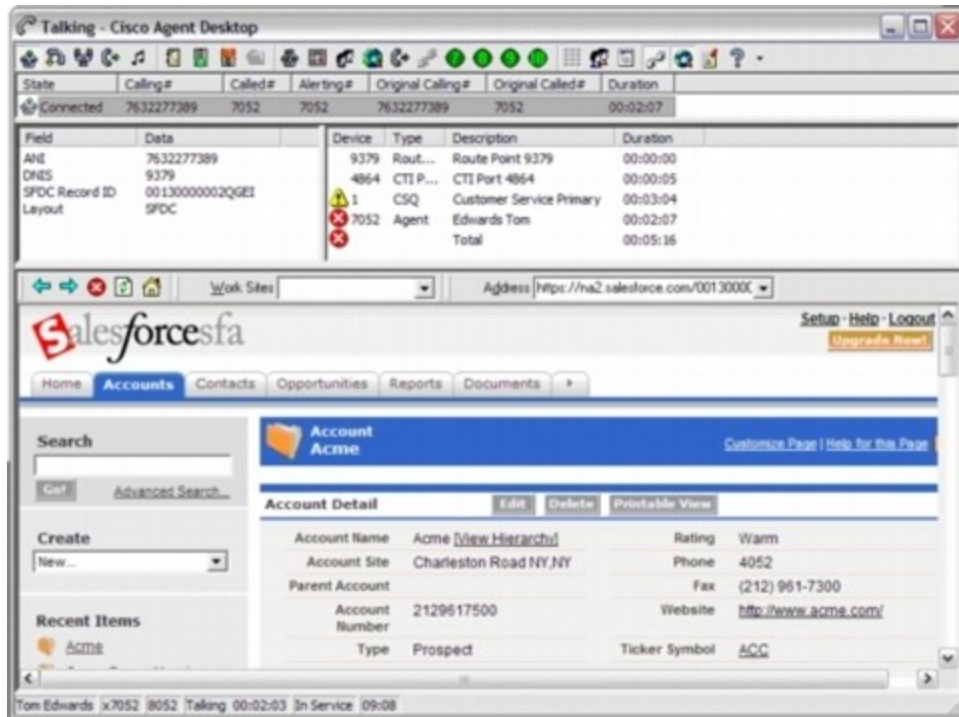


Figure 4 - Cisco Agent Desktop

3. Methodology

3.1 Systems Development Methodologies

The primary goal of this project is developing a system that will actually be used by Cisco sales representatives. Deciding the correct development methodology and consequent user involvement in the development process is of utmost importance. Table 3 outlines some typical criteria for selection of a system methodology:

Table 3 - Systems Development Methodologies

<u>Ability to Develop Systems</u>	<u>Structured Methodologies</u>		<u>RAD Methodologies</u>			<u>Agile Methodology</u>
	Waterfall	Parallel	Phased	Prototyping	Throwaway Prototyping	Extreme Programming
With Unclear User Requirements	Poor	Poor	Good	Excellent	Excellent	Excellent
With Unfamiliar Technology	Poor	Poor	Good	Poor	Excellent	Poor
That are Complex	Good	Good	Good	Poor	Excellent	Poor
That are Reliable	Good	Good	Good	Poor	Excellent	Good
With a Short Time Schedule	Poor	Good	Excellent	Excellent	Good	Excellent
With Schedule Visibility	Poor	Poor	Excellent	Excellent	Good	Good

Source: (Dennis, et al., 2006, p. 18)

Ultimately, we found that none of these methodologies was a perfect fit for this project. We formulated a hybrid development methodology for different stages of the project with features from several of the Rapid Application Development (RAD) methodologies. This hybrid

strategy employed many of the features of the prototyping methodology, but also divided the project into several stages that resembled a phased development methodology.

3.1.1 Phases

This project consisted of three main phases. The first phase was Analysis/Design, during which we declared system expectations, analyzed the current and to-be system, and concluded with a project proposal that outlined, in detail, our deliverables during the remainder of the project. The second phase was project Construction, where we began construction of prototypes with all the core functionality outlined during the first phase. The third and final stage consisted of implementation, where we tested the system, fixed bugs, and made final documentation of the system for Cisco.

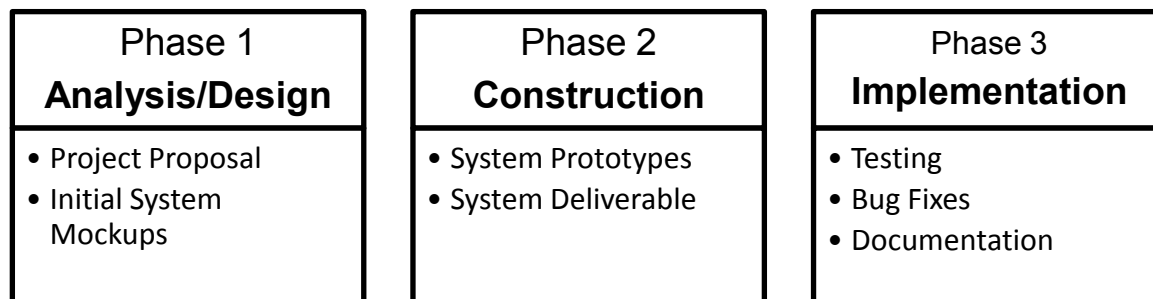


Figure 5 - Project Phases

3.1.2 Rationale for Choice of Methodology

Cisco sales representatives across the globe use differing techniques and approaches when creating Contact Center demos. As a result, one user's ideal system interface may be of little use to another system user for creating demos. For example, one user may place ease of use as the highest priority, with little priority given to customizability. On the other hand, a different system user may desire features that allow for the meticulous customizability of demos. Other users may simply want to select from preset templates and have the entire process performed as quickly as possible from start to finish.

Many of the features for the Contact Center demo system suggested by both users and project team members were not fully understood at the start of development. To resolve this issue over time, we used a prototyping methodology during phase 2 of the project. Instead of creating a fully working system from start to finish, we created a series of partially functional,

and in some cases purely visual systems, so users are able to understand and critique the workflow. Again, the most important part of this system is not the technologies involved, but that Cisco Contact Center sales representatives use the demo resources on their own accord for its value added.

Familiarity with the technologies used during the project is another important factor to consider when choosing a system development methodology. Table 4 lists the main technologies used during the project construction phase:

Table 4 - Familiarity with Technologies Involved

Technology	UI	Description	Familiarity
HTML	Web	Primary markup language for web pages.	High
PHP	Web	Scripting language for producing dynamic web pages.	High
MySQL	Web	Relational Database Management System	High
CSS	Web	Language used to describe the presentation of markup languages (typically HTML)	High
VXML	Voice CVP	W3C's standard XML format for voice interactions	Low
CTI OS	Agent	Computer Telephony Integration Object Server	Low

The members of the project group are most familiar with the web-based technologies, but we had very little familiarity with the technologies involved in programming the Voice CVP and Agent interfaces (i.e., VXML and CTI OS) at the start of the project. Our phased prototyping strategy was useful in this case because the project team was unfamiliar with technologies involved. The progressive phases of the project allowed us to further develop our analysis, enhance a prototype system, and eventually deliver a final production version of the system.

The Contact Center demo resources we developed are a complex system, due to the numerous technologies involved. A phased development strategy can be beneficial when trying to develop a complex system (see Table 3).

An important focus for the Contact Center demo system is reliability. An unreliable system not only wastes time, but produces little value for system users. Our phased prototyping

method allowed us to develop a minimally functioning system quickly so that reliability issues could be resolved within the development schedule.

3.2 Project Schedule

The total time originally scheduled for this project was three academic terms at Worcester Polytechnic Institute for a total of approximately 21 weeks. The project was later extended an additional academic term, or 7 weeks. The relatively short schedule required that project milestones were carefully managed. Prototyping and phased development strategies are the best choices for shorter schedules because they allow for greater flexibility than approaches such as waterfall development.

Throughout the course of this project, there has been a highly visible project schedule. Both the project advisor and Cisco project sponsors were aware of upcoming deliverables throughout the course of the project. Our phased prototyping development strategy allowed us adequate time for analysis and also allowed for management of unexpected difficulties.

4. System Requirements

4.1 Functional Requirements

4.1.1 Demo Framework Tool Inputs

System accepts input for general demo theme and specific demo interfaces (website, agent interface, voice CVP):

General

- Industry Vertical
Industry vertical is the primary determinant of the content of demo resources. The user must be able to choose the vertical of the outputted demo resources.
- Language
Users may make changes to the demo resources to customize the demo for a different language.

Website

- Custom logo
- Custom welcome text
Fields defining the logo and text resources of the website components are documented to allow sales personnel to customize certain aspects of the demo resources.

Agent Interface

- Custom logo
- Custom text
A method is available for modifying resources files and form fields to customize the logo and certain text fields within the agent interfaces.

Voice CVP

- Custom voice prompts
Once VXML resources are imported into Cisco Call Studio, sales personnel may make changes to the default voice prompts provided.

4.2 Feasibility Analysis

4.2.1 Technical Feasibility

Familiarity with the application

There was a medium familiarity with the application. The system developed was outside of anything done before at Cisco. Customized product demonstrations have previously been created on an ad-hoc basis within the company, but there has been no system that manages and automates the process as is being proposed. Therefore, a careful technical analysis was required to try to ensure that the system meets the needs of all the stakeholders.

Familiarity with the technology

There was a medium familiarity with the technology. The members of the product group had some prior knowledge of Cisco Contact Center solution software. The software, however, is complicated and contains many components. Therefore, it took some time for the project team to learn how to use the software to be able to build the system. The team had excellent knowledge of the programming tools and applications used for implementation of the system.

Project size

This was a medium to large size project. Much analysis was needed for a proper implementation. Development of the system was somewhat complex. Much work was required to ensure that the application interacts with the rest of Contact Center solution correctly and that the application has a working and easy to use deployment capability.

Compatibility

The system being developed has good compatibility with the existing systems. Cisco has a history of creating small custom applications to automate and improve its internal systems. This project is in keeping with that development style.

4.2.2 Economic Feasibility

Direct costs to Cisco for this project amounted to a project sponsorship fee of \$15,000. Some of the economic benefits of the system can be quantified. One projected benefit of the system is time savings to employees when creating customized product demonstrations. While

this is not an extensive activity at present, the potential savings would accumulate quickly. Table 5 - Cost/Benefit Analysis, provides a cost/benefit analysis of the demo resource system.

Table 5 - Cost/Benefit Analysis

Cost Benefit Analysis:	
Initial Cost of MQP to Cisco	\$15,000
Total Cost of Cisco Employee Assistance for Duration of Project	\$7,500
Approx. # Demos Requiring Customization Given / day (U.S.)	5
Avg. hours saved on demo preparation	2
Total hours saved per day (U.S.)	10
Employee approx. hourly pay	\$50
U.S. Savings / day	\$500
U.S. Savings / year	\$80,000
Cost Savings to Cisco U.S. Contact Center Demo Preparation / year	\$57,500
*Benefit of Project to Contact Center sales are not yet quantifiable	
Assumptions:	
Large demo customization time (hrs)	3
Medium size demo customization time (hrs)	2
Small size demo customization time (hrs)	1
Average customization time per demo	2
Work weeks per year	52
Work days per week	5
Total work days per year	260
Total work days where customized demos are given / year	160
Cisco employee hours used for assistance each week	6
Total weeks regular time worked on project	25
Total Cisco employee hours used for assistance	150
Cisco employee average salary / hour	\$50
Total Cisco employee expenditure on Project project	\$7,500

While making many broad assumptions, this analysis shows that the system has great potential for saving employee time and cost to the company.

Another desired benefit is increased sales due to improved customization of product demonstrations. While this is difficult to directly quantify, the potential sales increases are likely to be significant. Many current demos are done using either generic demo resources or an example vertical that is not in line with the business of the company for which the product is

being demonstrated. A custom demo has potential to make the product more appealing to customers and lead to more sales. Therefore, the project appears to have a good economic feasibility.

4.2.3 Organizational Feasibility

Organizational feasibility appears to be medium. The project is aligned with goals of the company. Company staff has expressed a desire to have such resources available. On the other hand, only four stakeholders have participated by providing feedback on project prototypes. Therefore, eventual acceptance of the system by end users remains uncertain.

5. High Level Design

5.1 Design Overview

5.1.1 Customer Voice Portal

One of the main systems to be demonstrated is the Customer Voice Portal. CVP is designed to "deliver intelligent, personalized self-service over the phone" and "enable customers to efficiently and enjoyably retrieve the information they need from the contact center" (Cisco Unified Customer Voice Portal - Products & Services - Cisco Systems).

Cisco CVP uses a language called VoiceXML to describe interactions between the contact center and the caller. Many of these interactions take the form of prompts played to the caller in a voice menu. When using TTS (text to speech) servers, these prompts are dynamically generated. The interactions may also include music or other media played to the caller, such as when waiting in a queue for an agent to become available. Finally, the system has a feature to receive input by having the caller speak something or enter digits on the phone keypad. The VoiceXML scripts implementing these interactions are often created using the Cisco Call Studio software.

Within this demo system, we seek to customize the interactions to match different environments. This is accomplished by creating a set of interactions that matches the targeted vertical and sales theatre.

5.1.2 E-Mail and Web Interaction Manager

Cisco Unified Web Interaction Manager provides a web component for the contact center solution. Agents can use the system for voice or text chat with a customer or to collaboratively browse a website. This allows an agent to quickly and interactively help a customer on a website. For example, an agent might assist a customer with a problem he or she had when attempting to order an item from an online store.

Cisco Unified E-Mail Interaction Manager allows an agent to handle e-mail and web form help requests from customers. It can provide customer history and suggested responses to

simplify the agent's task. This product is integrated with the Web Interaction Manager for a consistent interface.

Within the demo system, we created a customized customer facing website that showcases the E-Mail and Web Interaction Managers. We have created websites for several example verticals to show the integration of web forms that connect to the Web and E-mail Interaction Managers.

5.1.3 CTI

CTI Agent is a software package that is run on the computer desktop of a call center agent. The agent will typically have a Cisco IP telephone on his or her desk. CTIOS integrates the physical phone with the computer. An agent can handle call control through the interface, including setting agent status, picking up or hanging up a call, or transferring a call.

The CTIOS development kit allows the core functions of the agent desktop to be integrated into another application. This allows for greater customization of the interface and custom objects pulled into the system. For example, an agent may be able to pull up a customer's history as soon as the call is received. This customization is the focus of the features to be included in the demo framework tool. We have created an application that integrates the CTIOS agent functions with some custom controls and data specific to several industry verticals. For example, an example vertical of an airline would have a tool for retrieving information about flights the customer has booked. The demo system allows a particular industry vertical to be selected and provide for some customization of the interface and data to be used in the demo application.

5.2 User Interface Design

5.2.1 Sample Demo Design Tool

The screenshot displays the 'Cisco Call Center Demo Framework' configuration tool. It is organized into several sections: 'General Information' for setting the industry vertical (Finance) and locale (USA); 'Website' for uploading a logo; 'Agent Interface' for selecting a layout; and 'Voice CVP' for configuring prompts. The 'Voice CVP' section includes radio buttons for 'Selected Industry Template' and 'Custom prompts', followed by text input fields for 'Intro Prompt', 'Prompt 1', 'Prompt 1_1', and 'Prompt 2'. An 'Export Demo' button is located at the bottom of the form.

Call Center Demo Framework

General Information
The general theme throughout the demo.

Select your industry vertical: *
Finance

Select locale: *
USA

Website
Information for the website portion of the Call Center demo.

Upload your website logo:
R:\flow\flow_html\flow_ht Browse...
JPEG and GIF only.

Agent Interface
Information for the Agent portion of the Call Center Demo..

Select your agent interface layout: *

Voice CVP
Information for Voice CVP prompts in Call Center.

For prompts, I would like to use:

☒ Selected Industry Template

☐ Custom prompts

Intro Prompt

Prompt 1

Prompt 1_1

Prompt 2

Export Demo

Figure 6 - Demo Tool Prototype

This was an early prototype of an interface to choose the demo vertical and customize certain aspects of the demo. The system contains an interface available to a salesperson that allows some contact center components to be customized for presentation. The system has a

front end consisting of a form in which each component of the demo can have certain options changed. The user may also choose default values and download a pre-made template for several industry verticals.

5.2.2 Sample Agent Interface – Customer First Air



Figure 7 - Customer First Air Agent Design – Created by Jay Ward of Cisco

The Agent Interface sample shown in Figure 7 is from a fictional company in the travel industry. The field at the top of the interface is a static design allowing the agent to perform basic functions such as answering a customer call, putting the customer on hold, setting the agent status, inviting another agent to a conference call, and more.

The body of the page contains information specific to the company and information currently relevant to the agent. Additional fields could be available to the agent for viewing past transactions or other information related to the calling customer.

5.3 Vertical Designs

5.3.1 Overview

Our first presentation to Cisco sales representatives and key stakeholders was intended to give an overview of projects goals and elicit strong feedback. The main question we posed to those attending the meeting was the verticals we would select for customization across the Agent, Web, and VXML mediums. In talking to those in attendance, we agreed to focus on five verticals: Banking, Education, Healthcare, Public/Government, and Retail. We adapted the general vertical names to appear more personalized to Cisco's audience as follows: MyBank (Banking), MySchool (Education), MyHealth (Healthcare), MyDMV (Public/Government), and MyRetail (Retail). The MyDMV name deviated most from its original title because we felt that showcasing a Department of Motor Vehicles Contact Center was a very recognizable and easily demonstrated way of representing the Public and Government sector. The following paragraphs give a brief summary of each vertical.

MyBank

MyBank represents the banking sector. Typical call flows include customer calls for bank account information such as money in savings, credit, checking, etc. Other calls may include opening new bank accounts and reporting a lost or stolen card.

MyHealth

MyHealth represents the healthcare sector, which includes anything from major hospitals to small dental offices. Typical call flows include customer calls for appointment information, appointment scheduling, or physician information.

MyDMV

MyDMV represents the Public/Government sector, which includes anything from a Department of Motor Vehicles to a Police Department to a Courtroom Office. We chose MyDMV to represent the Public/Government sector because Department of Motor Vehicle offices are an easily recognized example of requiring a Contact Center solution. Sample call flows include calling to renew a registration, set up a drivers license test, or ordering a custom license plate.

MyRetail

MyRetail represents the retail industry. Example call flows include calling to return an item, requesting information about a warranty, or ordering a product.

MySchool

MySchool represents the education sector, which includes anything from a large university to a small private high school. Typical call flows include calling to request financial aid information, register for classes, or request other academic information.

5.3.2 Customer Web Pages

When seeking support for a product or a service, a customer will often first visit the webpage of the company for information. For each vertical, we have created a homepage that captures the look and feel of a typical live company website. Figure 8 is a screenshot of the MyHealth vertical homepage. After visiting the homepage, a customer will click on the “Contact Us” or “Customer Support” link, to find more information.



Figure 8 - MyHealth Website Design – Home Page

Figure 9 is a screenshot of the MyHealth “Contact Us” page, which gives contact options by phone, by chat, or by e-mail. If the customer chooses to contact the company by phone, he/she will be greeted by an interactive voice response (IVR) system. The IVR system will present text-to-speech or recorded voice options such as “Press 1 to hear the balance in your savings account” and “Press 2 to speak with a live agent”. If the customer chooses to speak with a live agent, he will be directed to a live agent and the agent’s desktop software, seen in section 5.3.3 - The Agent Desktops. If the customer chooses to communicate via chat, a chat application will launch providing the customer direct messaging with a live agent. Finally, if the customer chooses to communicate via e-mail, an e-mail will be sent to the customer to begin the e-mail customer support.

MyHealth+

Search MyHealth: Search

Home Contact Us Events Careers Physicians

Contact Us

Contact MyHealth

By phone:

Phone number: () -

Call me: Right now

By Chat:

Your Name:

Your Issue:

By E-mail:

Your E-mail:

I'm requesting information on: Topic 1

MYHEALTH 2009

Future Plans

MyHealth is always on the cutting edge of healthcare.

At MyHealth, we have the most qualified doctors in the field and the most up to date equipment to help you when you are in need.

Figure 9 - MyHealth Website Design – Contact Page

Figure 10 through Figure 17 represent screenshots of the remaining vertical “Home” and “Contact Us” web pages.



Figure 10 - MySchool Website Design – Home Page

Figure 11 - MySchool Website Design – Contact Page

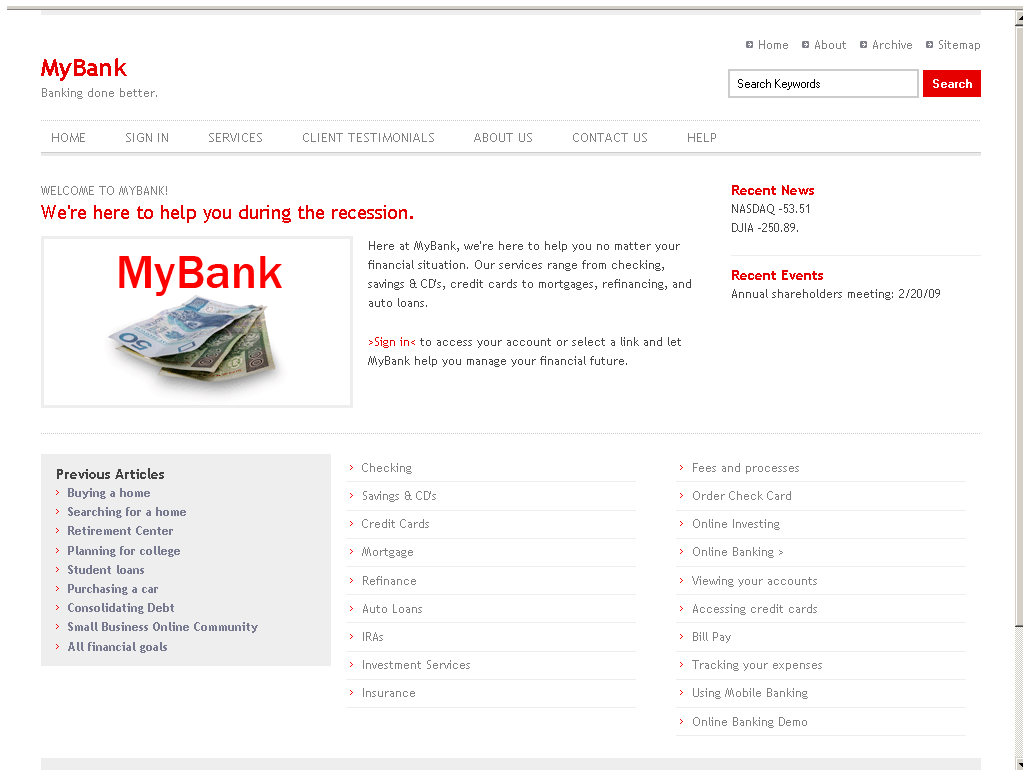


Figure 12 - MyBank Website Design – Home Page

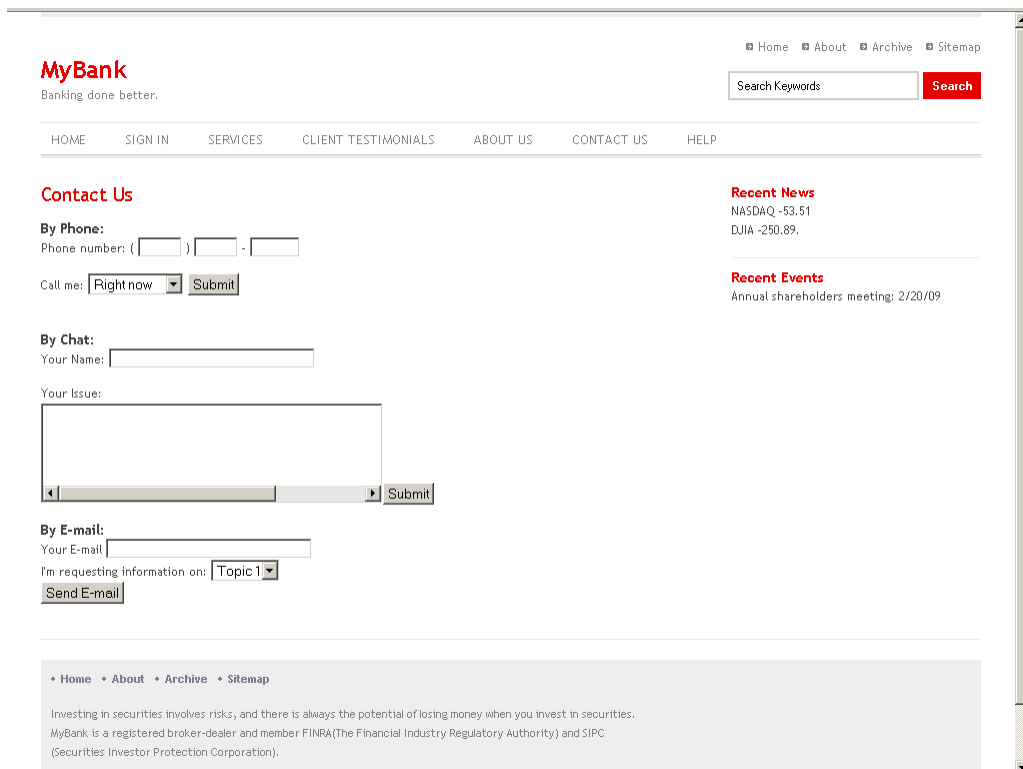


Figure 13 - MyBank Website Design – Contact Page

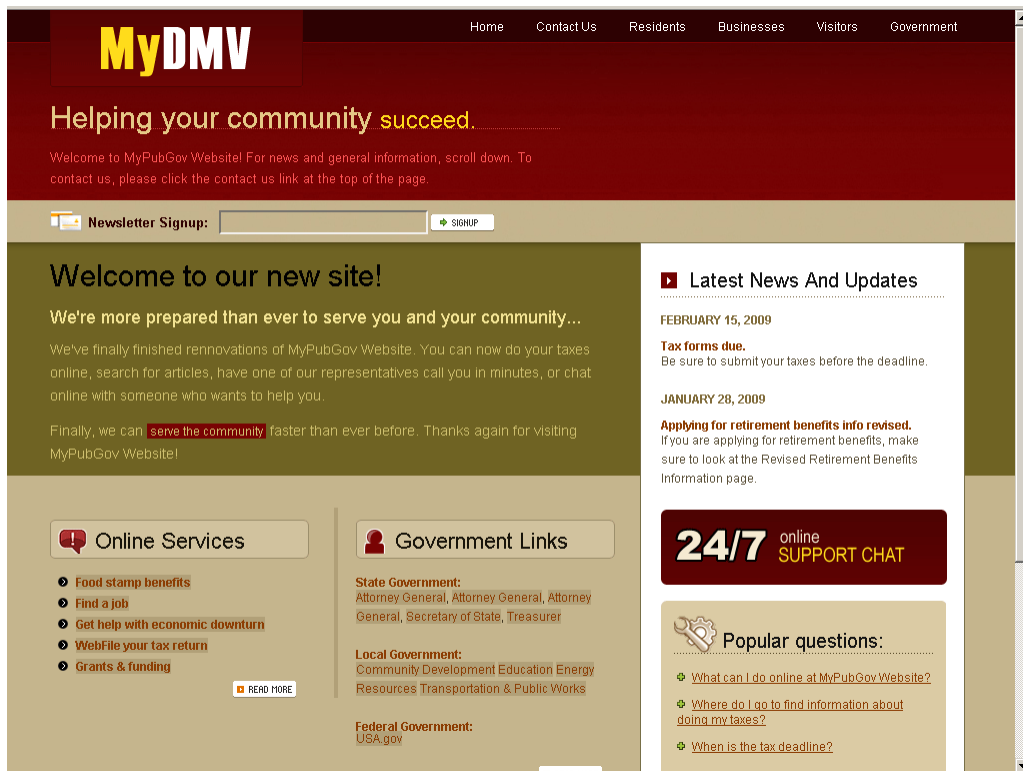


Figure 14 - MyDMV Website Design – Home Page

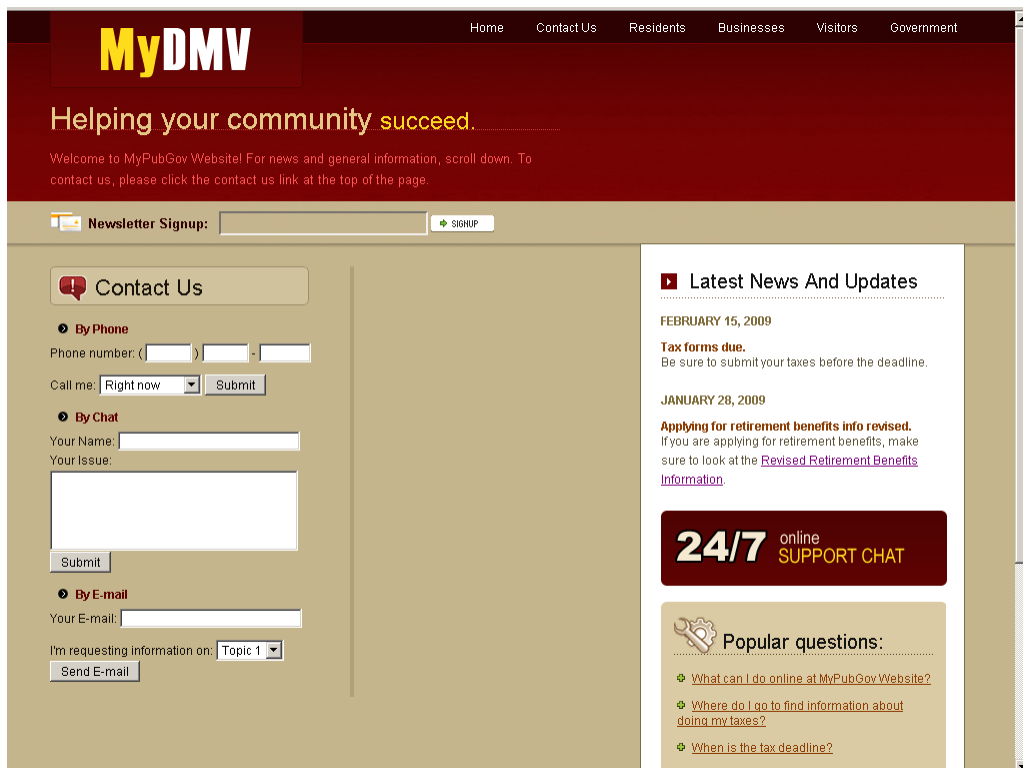


Figure 15 - MyDMV Website Design – Contact Page

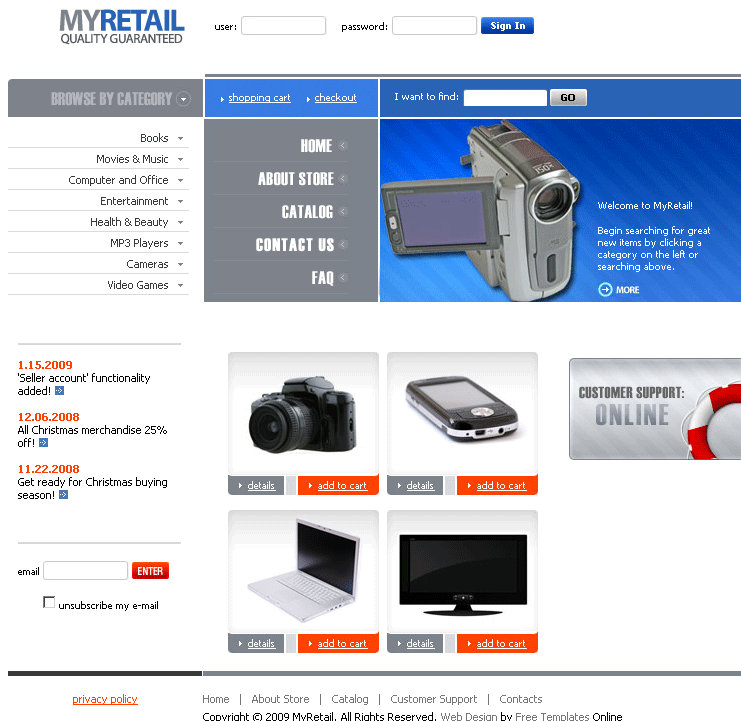


Figure 16 - MyRetail Website Design – Home Page

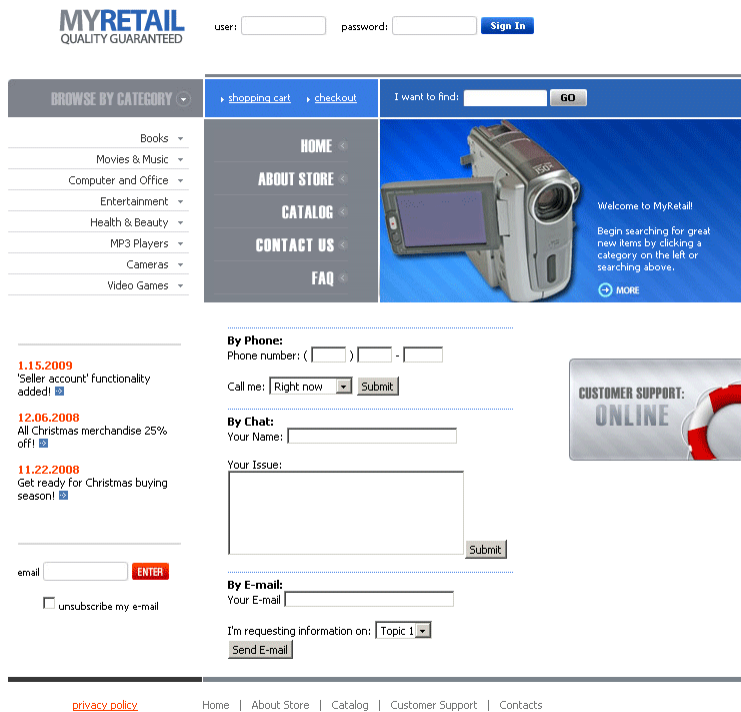


Figure 17 - MyRetail Website Design – Contact Page

5.3.3 The Agent Desktops

Figure 18 shows a screenshot of the Agent desktop without customization. When a Cisco sales representative gives a demo of its Contact Center solutions without a customized Agent desktop, it is difficult for the potential client to grasp the full potential of the software.

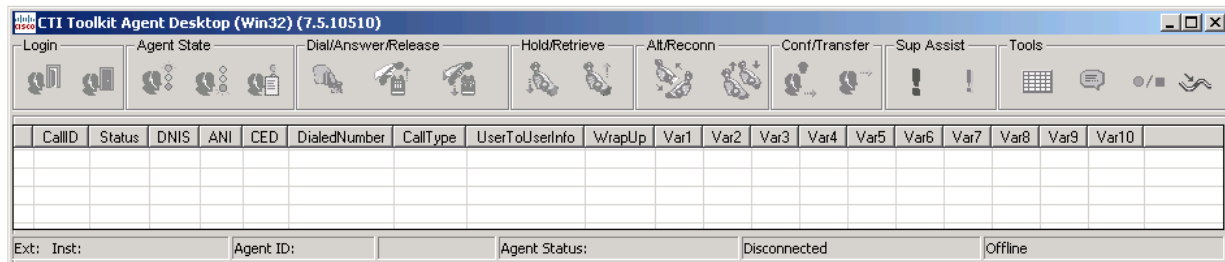


Figure 18 - Agent desktop without customization

Figure 19 shows a screenshot of the MyHealth vertical “Patient Info” panel. The robust capabilities of the Agent Desktop are more easily displayed and aid the Cisco sales representatives in describing the product capabilities to a potential healthcare client. In a scenario where a patient calls a healthcare company to book an appointment, he/she enters a patient number via phone. The call then transfers to a live agent and the patient information populates the agent desktop (by accessing databases where patient data is stored). The agent then greets the patient, asking how the agent can be of assistance.



Figure 19 - MyHealth Agent Design – Patient Info Panel

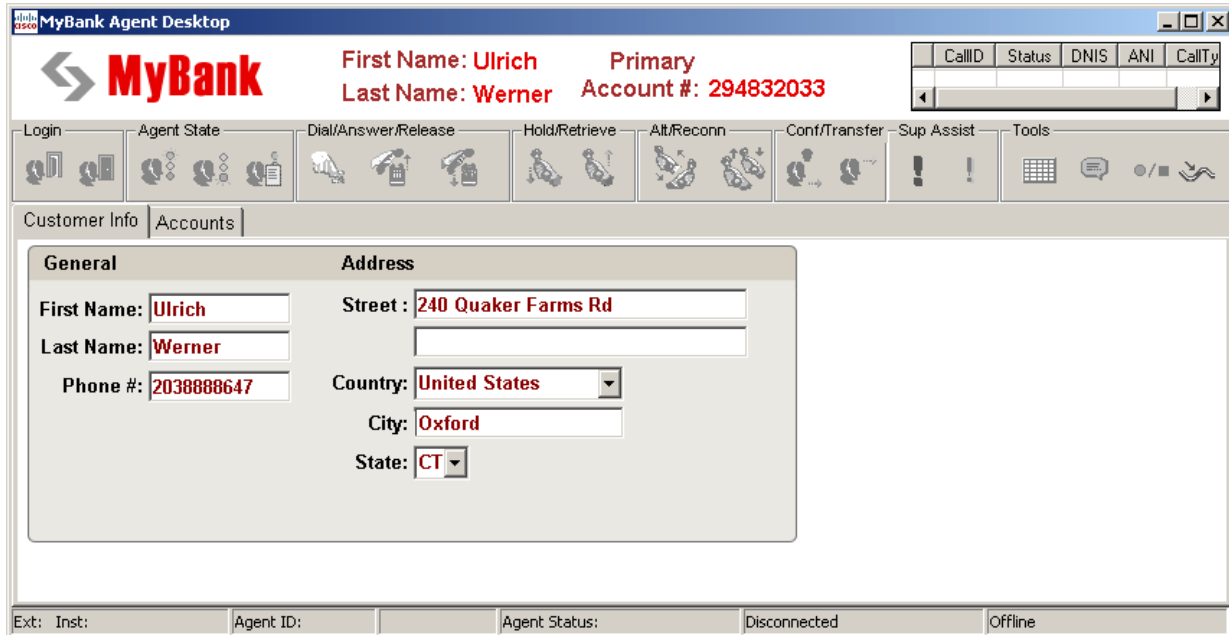
Figure 20 shows a screenshot of the MyHealth “Appointments” panel. When the caller asks for his/her upcoming appointments, the information is conveniently displayed within the Agent desktop, saving time for both the Agent and the caller. When the caller asks to set up an appointment, the Agent is able to book the appointment quickly and easily within the Agent desktop.

Date	Time	Description	Physician
4/15/09	9:00 AM	Scaphoid non-union surgery	Dr. Peterson
4/22/09	10:00 AM	1 week post-surgery checkup	Dr. Peterson

Figure 20 - MyHealth Agent Design – Appointments Panel

Figure 21 - MyHealth Agent Design – Physician Referral Panel

Figures 22 through 28 represent the remaining Agent desktops, each with customized panels to mimic the look and feel of a potential Agent desktop in a real Contact Center.



MyBank Agent Desktop

MyBank First Name: Ulrich Primary Last Name: Werner Account #: 294832033

CallID Status DNIS ANI CallTy

Login Agent State Dial/Answer/Release Hold/Retrieve Alt/Reconn Conf/Transfer Sup Assist Tools

Customer Info Accounts

General **Address**

First Name: Ulrich Street: 240 Quaker Farms Rd

Last Name: Werner

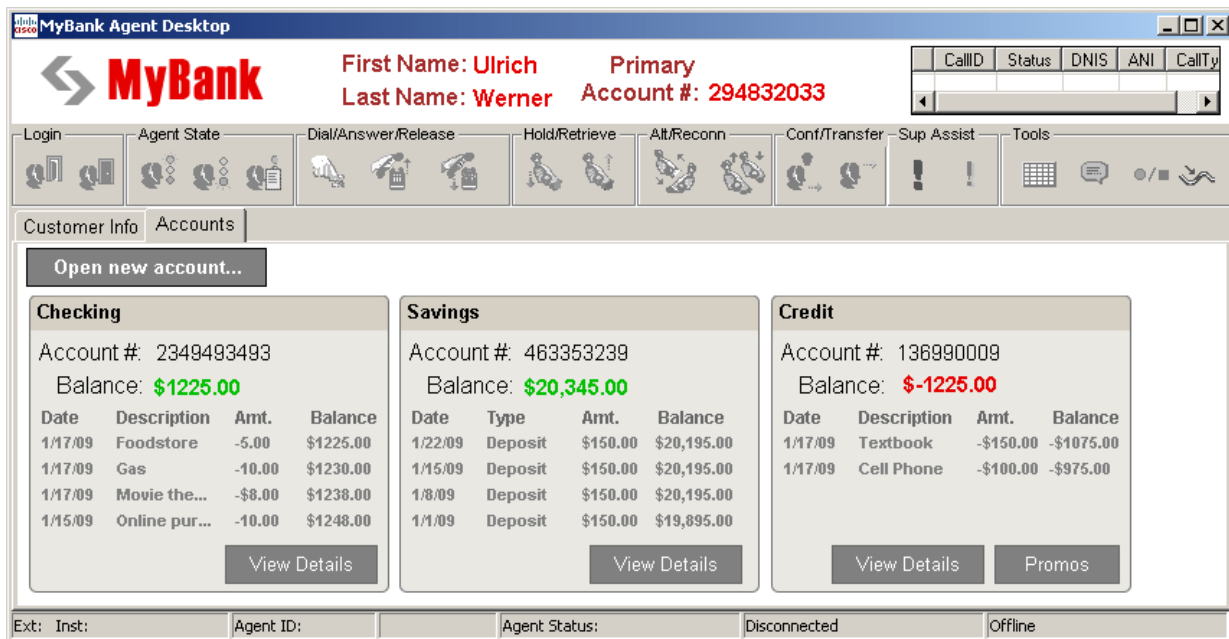
Phone #: 203888647 Country: United States

City: Oxford

State: CT

Ext: Inst: Agent ID: Agent Status: Disconnected Offline

Figure 22 - MyBank Agent Design – Customer Info Panel



MyBank Agent Desktop

MyBank First Name: Ulrich Primary Last Name: Werner Account #: 294832033

CallID Status DNIS ANI CallTy

Login Agent State Dial/Answer/Release Hold/Retrieve Alt/Reconn Conf/Transfer Sup Assist Tools

Customer Info Accounts

Open new account...

Checking

Account #: 2349493493

Balance: \$1225.00

Date	Description	Amt.	Balance
1/17/09	Foodstore	-5.00	\$1225.00
1/17/09	Gas	-10.00	\$1230.00
1/17/09	Movie the...	-\$8.00	\$1238.00
1/15/09	Online pur...	-10.00	\$1248.00

View Details

Savings

Account #: 463353239

Balance: \$20,345.00

Date	Type	Amt.	Balance
1/22/09	Deposit	\$150.00	\$20,195.00
1/15/09	Deposit	\$150.00	\$20,195.00
1/8/09	Deposit	\$150.00	\$20,195.00
1/1/09	Deposit	\$150.00	\$19,895.00

View Details

Credit

Account #: 136990009

Balance: -\$1225.00

Date	Description	Amt.	Balance
1/17/09	Textbook	-\$150.00	-\$1075.00
1/17/09	Cell Phone	-\$100.00	-\$975.00

View Details Promos

Ext: Inst: Agent ID: Agent Status: Disconnected Offline

Figure 23 - MyBank Agent Design – Accounts Panel

MyHealth Agent Desktop

MySchool

Because your Education Matters.

First Name: **Ulrich** Primary Account #: **294832033**
 Last Name: **Werner**

CallID	Status	DNIS	ANI	CallType

Login Agent State Dial/Answer/Release Hold/Retrieve Alt/Reconn Conf/Transfer Sup Assist Tools

Student Information | Financial Info | Classes

General Information

First Name: **Ulrich**

Last Name: **Werner**

Phone #: **2038888647**

Address Information

Street : **240 Quaker Farms Rd**

Country: **United States**

City: **Oxford**

State: **CT**

Account Information

Username: **uwerner**

E-mail: **uwerner@myschool.edu**

Academic Advisor: **Prof. Huxley**

Mailbox #: **3352**

Ext: Inst: Agent ID: Agent Status: Disconnected Offline

Figure 24 - MySchool Agent Design – Student Information Panel

MyHealth Agent Desktop

MySchool

Because your Education Matters.

First Name: **Ulrich** Primary Account #: **294832033**
 Last Name: **Werner**

CallID	Status	DNIS	ANI	CallType

Login Agent State Dial/Answer/Release Hold/Retrieve Alt/Reconn Conf/Transfer Sup Assist Tools

Student Information | **Financial Info** | Classes

Total Tuition Cost - 08/09

Component	Amount
Books and Supplies:	\$1,000
Health Fee:	\$100
Meal Plan:	\$4,000
Personal Expenses:	\$1,000
Room:	\$5,000
Social Fee:	\$250
Tuition:	\$30,000
Total:	\$41,350

Financial Aid - 08/09

Fund	Amount
Perkins Loan	\$4,000
Federal Stafford Loan	\$11,000
Total:	\$15,000

Links

[CSS Profile](#)

[On-Line FAFSA Application](#)

[Student Gateway to Government Services](#)

Ext: Inst: Agent ID: Agent Status: Disconnected Offline

Figure 25 - MySchool Agent Design – Financial Info Panel

MyHealth Agent Desktop

MySchool

Because your Education Matters.

First Name: **Ulrich** Primary Account #: **294832033**
 Last Name: **Werner**

CallID	Status	DNIS	ANI	CallType

Login Agent State Dial/Answer/Release Hold/Retrieve Alt/Reconn Conf/Transfer Sup Assist Tools

Student Information | Financial Info | **Classes**

Semester: **Spring 2009** Registration Number:

☐ Check if addition will cause overload. **Add Class**

MOLECULARITY
 CH 1010
 Registration # : 27919
 Instructor: **Uma T. Kumar**
 Credits: 3
 Time: 8:00 am - 8:50 am
 Type: Lecture

Drop Class **Contact Teacher** **More...**

INTRO TO PROGRAM DESIGN
 CS 1101
 Registration # : 23892
 Instructor: **Glynis M. Hamel**
 Credits: 3
 Time: 10:00 am - 10:50
 Type: Lecture

Drop Class **Contact Teacher** **More...**

CONSTITUTIONAL LAW
 GOV 2310
 Registration # : 27113
 Instructor: **Kent J. Rissmiller**
 Credits: 3
 Time: 11:00 am - 11:50
 Type: Lecture

Drop Class **Contact Teacher** **More...**

Ext: Inst: Agent ID: Agent Status: Disconnected Offline

Figure 26 - MySchool Agent Design – Classes Panel

MyHealth Agent Desktop

MYRETAIL

QUALITY GUARANTEED

FIRST NAME: **Ulrich** CUSTOMER #: **294832033**
 LAST NAME: **Werner**

CallID	Status	DNIS	ANI	CallType

Login Agent State Dial/Answer/Release Hold/Retrieve Alt/Reconn Conf/Transfer Sup Assist Tools

Customer Information | Purchases | Order Tracking

General Information

First Name:

Last Name:

Phone #:

Address Information

Street :

Country:

City:

State:

Account Information

Username:

E-mail:

Ext: Inst: Agent ID: Agent Status: Disconnected Offline

Figure 27 - MyRetail Agent Design – Customer Information Panel

MYRETAIL
 QUALITY GUARANTEED

FIRST NAME: **Ulrich** CUSTOMER #: **294832033**
 LAST NAME: **Werner**

CallID	Status	DNIS	ANI	CallType

Login

Agent State

Dial/Answer/Release

Hold/Retrieve

Alt/Reconn

Conf/Transfer

Sup Assist

Tools

Customer Information

Purchases

Order Tracking

Product: **Camera XR502**
 Serial #: **C49265839**
 Date Purchased: **4/1/2009**
 Warranty Expires: **1/11/10**
 Price at Purchase: **\$650.00**

Warranty Info
Details...

Product: **Phone NU**
 Serial #: **P80274394**
 Date Purchased: **8/23/08**
 Warranty Expires: **8/23/09**
 Price at Purchase: **\$100.00**

Warranty Info
Details...

Product: **Laptop NxGen100**
 Serial #: **L7507583**
 Date Purchased: **1/5/08**
 Warranty Expires: **1/5/09**
 Price at Purchase: **\$1449.00**

Warranty Info
Details...

Product: **TV LsrView**
 Serial #: **T49265839**
 Date Purchased: **7/2/07**
 Warranty Expires: **7/2/08**
 Price at Purchase: **\$2399.00**

Warranty Info
Details...

Ext: Inst:

Agent ID:

Agent Status:

Disconnected

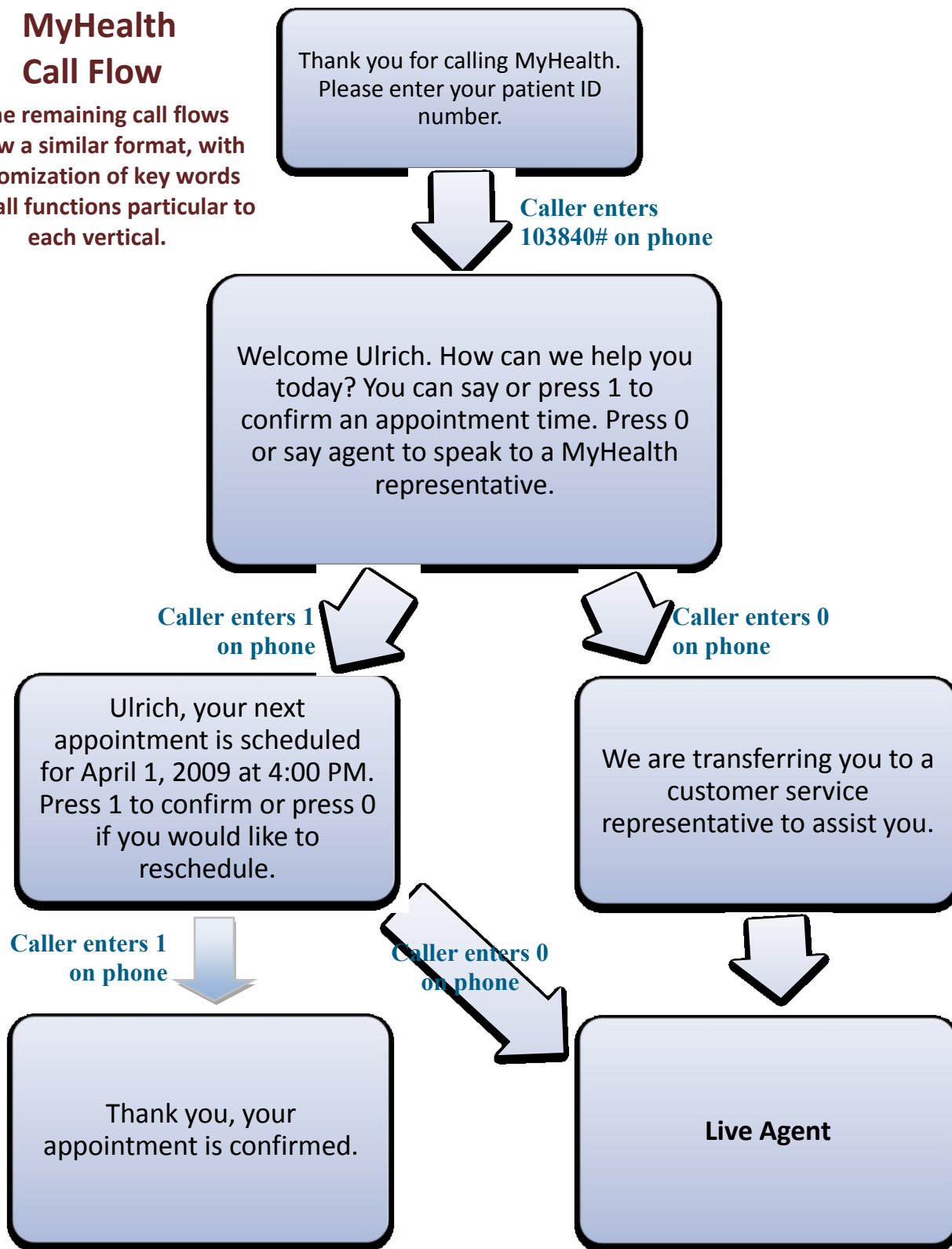
Offline

Figure 28 - MyRetail Agent Design – Purchases Panel

5.3.4 Voice Call Flows

MyHealth Call Flow

*The remaining call flows follow a similar format, with customization of key words and call functions particular to each vertical.



6. Technical Design and Implementation

6.1 Agent

Agent designs are based on the Cisco CTIOS Toolkit. The toolkit provides COM objects and ActiveX controls that can be integrated into applications to provide call control functions. Essentially, these form a toolbar with buttons that the agent clicks to control the phone. Figure 29 shows this toolbar.



Figure 29 – Agent Desktop Call Functions

We chose to use Visual Basic 2008 to build the application. This was chosen because it is compatible with the toolkit and provided an easy development environment to rapidly prototype and build the interfaces. Figure 30 provides a screenshot of the custom MyHealth agent within the development environment.

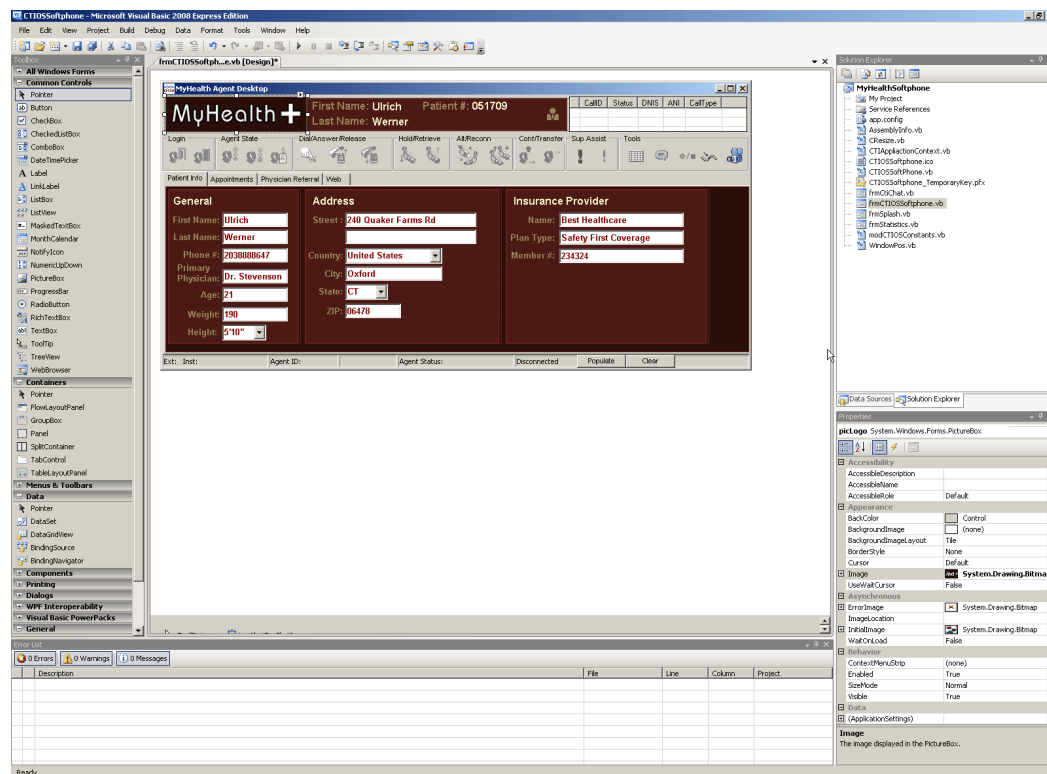


Figure 30 – MyHealth Visual Basic Development Environment

Visual Basic controls were created to demonstrate functions that could be built into the agent desktop for vertical specific tasks. In this example, we have created controls that show patient information including personal characteristics, address, insurance provider, physician assignment, and upcoming appointments. These have been divided into sections using frame controls. Label and text box controls display the relevant information to the agent. Figure 31 provides a close-up view of some of these controls.

Patient Info		Appointments	Physician Refer
General			
First Name:	Ulrich		
Last Name:	Werner		
Phone #:	2038888647		
Primary Physician:	Dr. Stevenson		
Age:	21		
Weight:	190		
Height:	5'10"		

Figure 31 – Customized MyHealth Agent Desktop – Patient Info Panel – General Information

The text box controls are initially set to be empty. When a call comes in, they are set to display the patient information. The Visual Basic code in Figure 32 is part of the function that sets this display. Ordinarily, this information would be retrieved from another system such as a database. All information here is hardcoded for purposes of simplifying the demonstration system.

```

Private Sub fill()
    'Populates all controls with preset account info

    'Header Info
    lblHeaderFirstName.Text = "Ulrich"
    lblHeaderLastName.Text = "Werner"
    lblHeaderAcctNum.Text = "051709"

    'Patient Info
    txtFirstName.Text = "Ulrich"
    txtLastName.Text = "Werner"
    txtPhone.Text = "5084717983"
    txtPrimaryPhysician.Text = "Dr. Stevenson"
    txtAge.Text = "21"
    txtWeight.Text = "190"
    cbHeight.Text = "5' 10""

```

Figure 32 – MyHealth Agent Desktop Control fill() Function

Certain elements of the agent may easily be customized further by someone utilizing the demonstration resources. The properties window of an agent form is shown in Figure 33. The highlighted box shows the property that sets the window title for the agent application. This may be arbitrarily changed to customize the demonstration. If this title is changed, it is desirable to also modify the logo displayed within the agent.

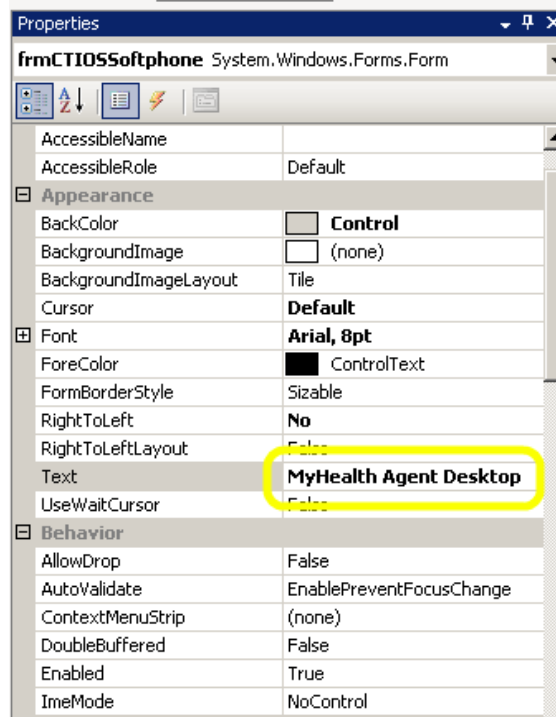


Figure 33 – Properties Window in Agent Desktop Development Environment

Figure 34 shows the resource window for the agent logo. A different logo may be imported to customize the agent. By editing all of these custom controls, the agent interface can be completely altered to demonstrate potential capabilities in different contexts.

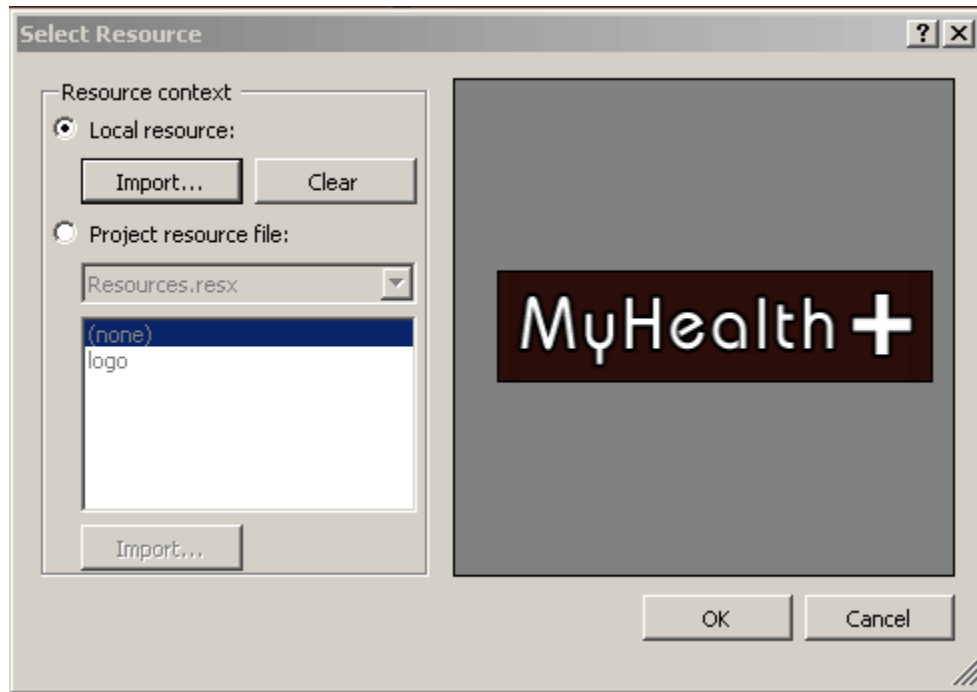


Figure 34 – MyHealth Agent Desktop Logo Image

6.2 Web

Websites are designed in standard HyperText Markup Language (HTML) with Cascading Style Sheets (CSS). The CSS essentially specifies the layout and appearance of the pages while HTML defines the content. An example of the CSS code that defines the style for a page header is shown in Figure 35.

```
17
18  /*----- HEADER -----*/
19  div#header-bg{
20      background:#2B0D0A url(images/header-bg.gif) 0 100% repeat-x;
21      padding:10px 0 10px 0;
22      color:#FCF7CC;
23  }
24  div#header-bg div#header{
25      width:922px; margin:0 auto;
26  }
27  div#header-bg div#header img.logo{
28      float:left; margin:2px 0 0 0;
29  }
30
```

Figure 35 – MyHealth CSS Excerpt

The primary purpose of the website in the demonstration is to provide a frontend to the Web Interaction Manager and E-Mail Interaction Manager which provide web chat and e-mail interaction for the contact center. A link was placed on the main web page for “Contact Us”. Several HTML forms were created on the Contact page, highlighted in Figure 36.

The screenshot shows a web page titled "Contact MyHealth" with a light green background. It features three distinct contact forms arranged in a two-column layout. The left column contains the "By phone:" and "By Chat:" forms, while the right column contains the "By E-mail:" form. Each form is headed by a yellow box with a question mark icon and a title. The "By phone:" form includes fields for phone number (with area code, number, and extension) and a "Call me:" dropdown menu set to "Right now", followed by a "Submit" button. The "By Chat:" form includes fields for "Your Name:" and "Your Issue:" (a large text area), followed by a "Submit" button. The "By E-mail:" form includes a "Your E-mail:" field, a dropdown menu for "I'm requesting information on:" set to "Topic 1", and a "Send E-mail" button.

Figure 36 – MyHealth Contact Us Page

The “By Phone” area demonstrates a potential agent call-back function. The visitor to the website would enter his or her phone number and the time frame in which to be contacted. This demonstrates the outbound features of the contact software and would allow the visitor to talk to an agent without any navigating of a voice menu or waiting on hold. The “By Chat” area is used for initiating a text based web chat with an agent. The “By E-Mail” area is used for requesting information on a particular topic to be received by e-mail. If the user has further questions regarding the requested topic, they may reply and have the message acted on by an agent.

Several areas of the website interface can easily be customized with different content. Figure 37 shows a close-up of the menu area of this example website.

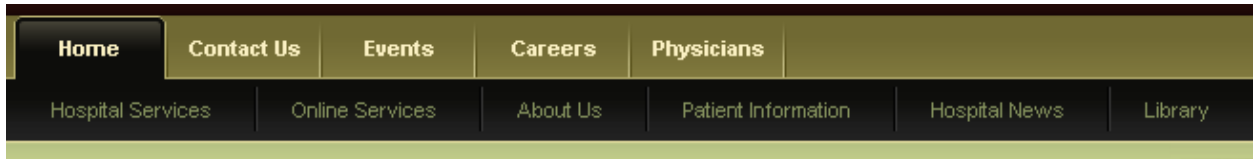


Figure 37 – MyHealth Website Menu

The content of this menu is specified in the HTML for this vertical. Underlying HTML for this menu is shown in Figure 38. These form fields could be changed to further customize the demo.

```

36 <!--Navigation Part Starts -->
37 <div id="navigation">
38   <ul class="mainMenu">
39     <li><a href="index.html" class="selectMenu" title="Home">Home</a></li>
40     <li><a href="index2.html" title="Contact Us">Contact Us</a></li>
41     <li><a href="#" title="Events">Events</a></li>
42     <li><a href="#" title="Careers">Careers</a></li>
43     <li><a href="#" title="Physicians">Physicians</a></li>
44   </ul>
45
46   <br class="spacer" />
47   <ul class="subNav">
48     <li class="noBg"><a href="#" title="Hospital Services">Hospital Services</a></li>
49     <li><a href="#" title="Online Services">Online Services</a></li>
50     <li><a href="#" title="About Us">About Us</a></li>
51     <li><a href="#" title="Patient Information">Patient Information</a></li>
52     <li><a href="#" title="Hospital News">Hospital News</a></li>
53     <li><a href="#" title="Library">Library</a></li>
54   </ul>
55   <br class="spacer" />
56 </div>
57 <!--Navigation Part Ends -->
58

```

Figure 38 – MyHealth Menu HTML

6.3 Voice

Voice interactions were programmed in VoiceXML and built with Cisco Unified Call Studio. This software provides a drag-and-drop flowchart style interface to graphically assemble VXML elements into a call flow. One portion of a call flow is highlighted in Figure 39. The shown example is used to confirm an appointment time within the MyHealth vertical application.

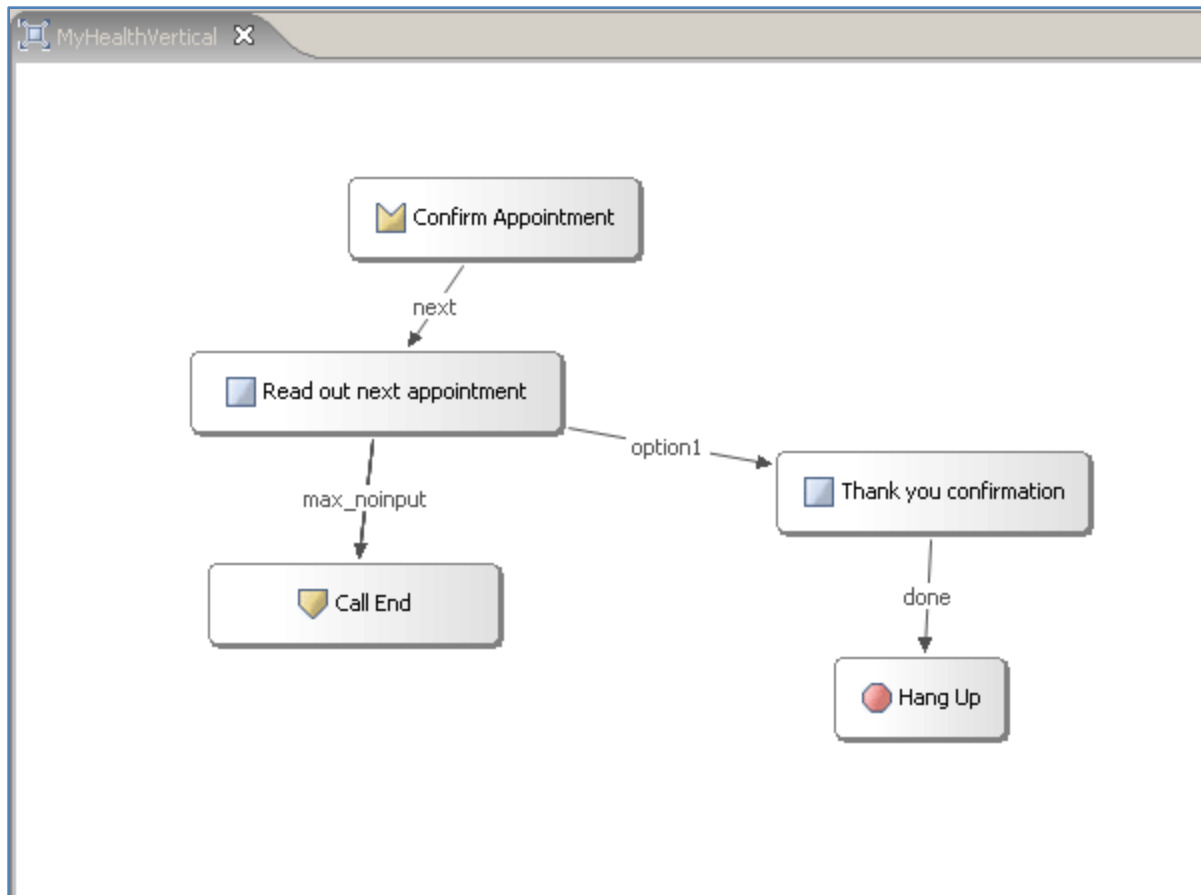


Figure 39 – MyHealth Cisco Unified Call Studio Screenshot

Each of the boxes in the flowchart represents a VXML element. These elements have certain properties to define their function. For example, the “Read out next appointment element” appropriately speaks the next appointment time for the caller. If the caller presses 1 to confirm the appointment, he or she is directed to the “Thank you confirmation” element that thanks the caller and proceeds to hang up the call. If the caller instead presses 0 to reschedule the appointment, they are directed to the “Call End” page link that will transfer them to an agent.

Form fields are used to define the content of the prompts. Using a text-to-speech server, these can be automatically generated. Figure 40 shows the configuration panel for one VXML element. The highlighted area shows the TTS text field. Content placed in this field will be automatically spoken to the caller by the text-to-speech server.



Figure 40 – MyHealth Call Studio VXML Element Configuration

6.4 Deployment

The demo resources have been packaged in several forms to provide easy integration into different contact center system configurations. One of these packages combines all the resources together and provides launchers to choose which one to use. Figure 41 shows the agent desktop loader and Figure 42 shows the website loader. These provide an easy way to demonstrate the versatility of the contact center software across industry verticals.

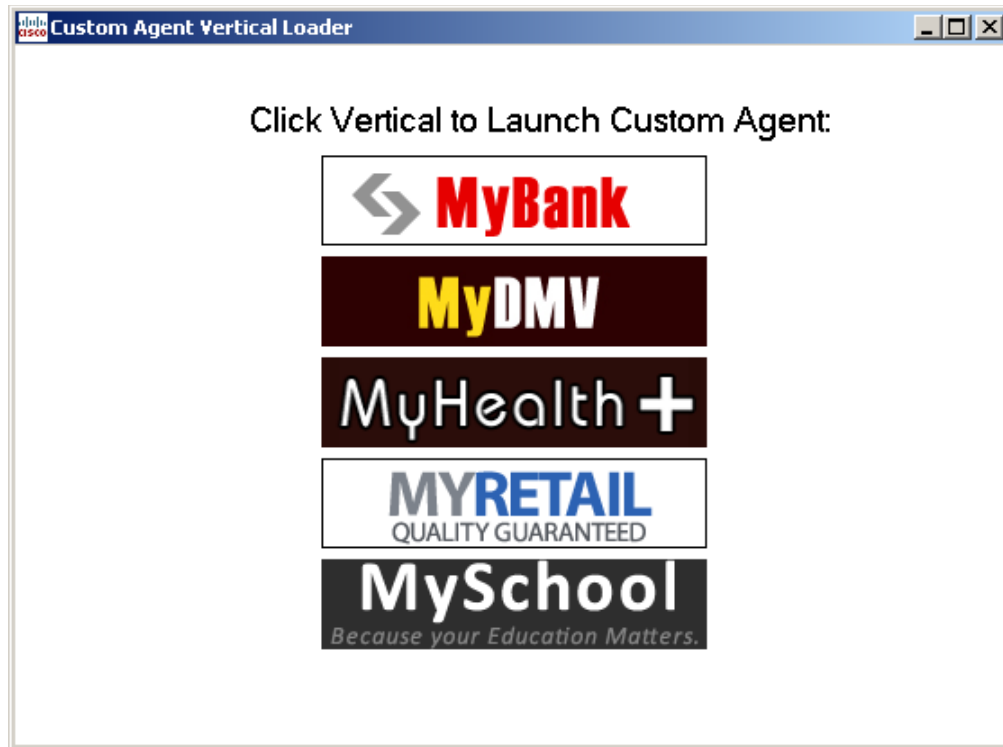


Figure 41 – Custom Agent Vertical Loader

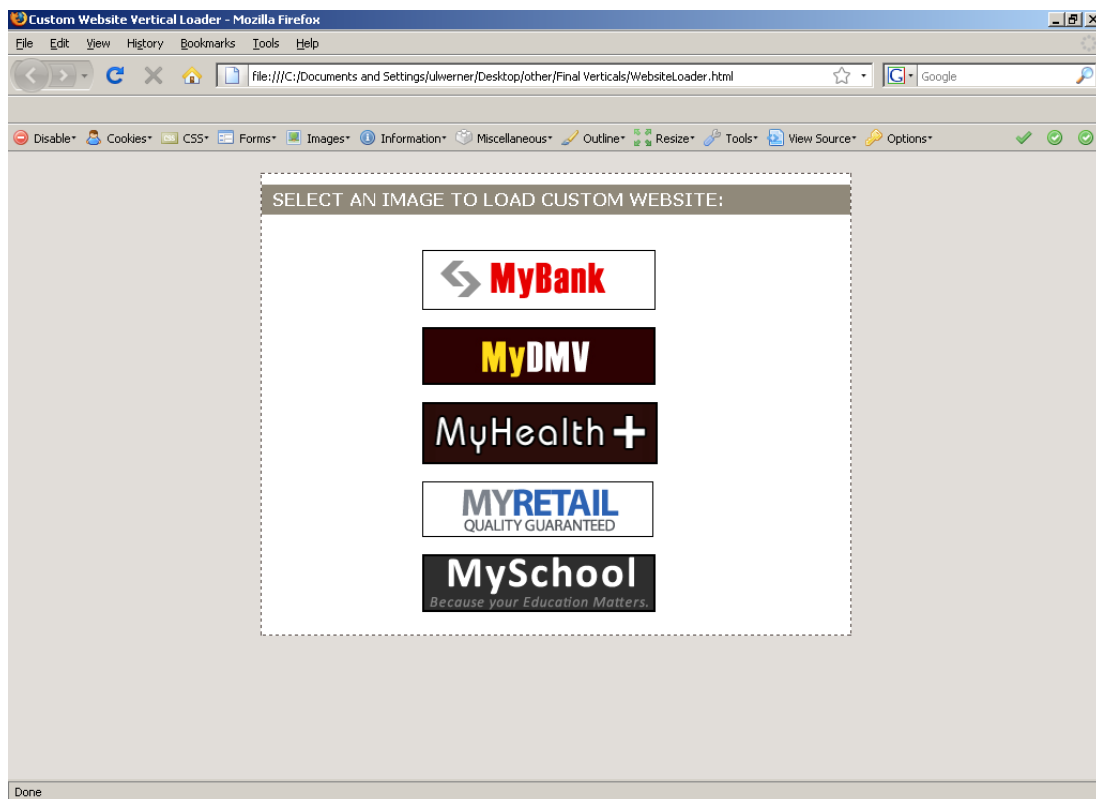


Figure 42 – Custom Website Vertical Loader

The demo packages have been made available through several existing channels within the company, including an internal wiki and file share. Information about the resources has been publicized on the wiki and broadcasted to company mailers to provide maximum exposure.

7. Conclusion

This project was initiated because contact center product demonstrations lacked some flair and were generally not scalable across market verticals and sales theatres. To solve this problem, sales personnel did additional work customizing demonstrations to increase visual appeal and applicability to the audience. Through some analysis, we concluded that a demo system was a viable option for simplifying this customization process and freeing sales personnel time so that they can focus on selling.

After researching the technology involved in the Cisco contact center solution, we developed requirements for the functionality of a demonstration system. We then created a technical plan for how to design and implement the system. Each of the components in the system, including web sites, custom agent desktops, and VoiceXML applications were created for several industry verticals that were identified as popular sales targets. A web frontend component was intended to allow for some customization and distribution of these resources. Functionality of this system was eventually scaled back due to stakeholder feedback. Feedback was gathered from stakeholders to improve the created demo resources. Finally, the completed resources were made available within the company.

Feedback from stakeholders involved in this project has been positive. Custom agent desktops have been cited as a feature that is particularly useful. Thus, it seems likely that the resources will be used and ideally lead to greater sales for Cisco.

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9. Appendix

Appendix A: WPI Meeting Minutes

WPI - September 4, 2008

Possible Projects (Develop):

1. Tool for gathering Business Intelligence information
2. Q/A Scripting (TCL) for Virtualization
3. Remote demonstration of products

Contact:

- Bill Lapp

WPI - September 5, 2008

Department: Customer Contact Business Unit

MQP Project Choice: Remote demonstration of products

WPI - September 26, 2008

Agenda

1. Overview/recap of Cisco meeting.
2. How we're collaborating in writing the project proposal.
3. Goals and deadlines.

Cisco Meeting

- Explained the way the WPI MQP works to better align Cisco's and our goals (i.e. A term project proposal/design, B term coding/implementation, C term testing/documentation)
- Revised problem statement with Tom Bucciero and Jay Ward's input:

"This project has been initiated to increase sales of Cisco Contact Center solutions through more effective product demonstrations. A system will be created to enhance scalability across market verticals and sales theaters while improving the visual appeal of the product

to customers. Further, the system should streamline the demo creation process and make it easier for sales personnel to quickly create customized demonstration systems.”

- Whiteboard brainstorming session with Jay Ward to visualize high level design.

Project Proposal

- Collaboration using Google docs to keep all documents centralized.

Goals and Deadlines

- **Tuesday, September 30** - Submit project proposal draft to Jay Ward and Tom Bucciero.
- **Wednesday, October 1** - Weekly meeting at Cisco. Discuss project proposal questions (e.g. iron out any issues with High Level Design, Feasibility Analysis, etc)
- **Wednesday, October 16** – Project Proposal final draft
- **Wednesday, October 29** - Presentation at Cisco
- Throughout the week, we will be in contact with Jay and Tom with questions to move our project proposal forward.
- We also plan to consult with Professor Strong and the WPI Writing Center as non Cisco related writing questions arise.

WPI - April 2, 2009.

Draft poster for 9th

Continue with agreed upon deliverables.

WPI - October 10, 2008

Project Proposal Draft 1 review

- Include Project Number: MIS-DMS-0802
- Include System request figure (Book pg. 37)
- Move contents from section 2.3 to Overview
- Industry analysis should be high level (cisco vs industry) first, then also specific ind. Analysis (ccc vs industry)
- Add marketing section (transient), cover historic vs current methods as new 2.6 leading to product demo (2.7)
- Chapter 2 should includes detailed description of all used technologies
- In 3.1, include which method we choose (early) and **explain** in detail (later)

- In 3.2, make sure development methodology is consistent (show versions for prototyping)
- Mixed methods of development are fine but need to be justified, planned, and explained
- Gantt chart should include all aspects, include parallel work for WPI and Cisco
- System Requirements is Chapter 4, Feasibility Analysis is the last section in Chapter 4
- Chapter 5: High level design (diagrams, etc)
 - Process Design section (Diag 1), including use cases
 - UI Design section (Diag 2)
 - Database Design
- Chapter 6: Conclusion
- Chapter 7: Literature Cited

Draft 2 by Monday PM, submit via email

WPI - October 23, 2008

For Project Proposal

- Explain 'Template'
- Create more detailed examples
- Make interfaces more consistent
- Create sample of Web interface
- Create sample of Voice interface (transcript and actions in background)
- Focus on the creation of a demo, not the use/functionality of the demo

For next meeting

- If possible, submit next draft of PP by Monday night
- Tuesday, 10/27 - sample presentation for Prof Strong
- Create template to go through during presentation
- Schedule presentation for the following Wednesday

WPI - October 30, 2008

Presentation

- Create next draft of ppt
- Practice presenting over weekend
- Monday for rough rehearsals (1:00 pm, loc: tbd)
- Tuesday for dress rehearsal (10:00 pm, regular meeting room)

WPI - November 3, 2008

Presentation Feedback

- Point out effect of each field in the demo tool interface mockup
- Explain difference with presets in vertical vs. custom voice prompts
- Watch speed of presentation
- Adjust methodology to have a slide for each phase

Appendix B: Cisco Meeting Minutes

Cisco - October 29, 2008

For Presentation

Tone should be like brainstorming session

Target Audience:

- Local Proj Mgmt and Acct Mgmt Teams
- PSS (Product Sales Specialist)
- SE (System Engineers)

Searches:

- Data Monitor
- Gartner
- Current Analysis
- Sattletree Research

Search Terms (Peter Milligan)

- Call Center
- Customer Contact Solutions/Software

Setup

- Laptops
- Access to system environments

Verticals

- Contents

After first prototype is finished, email to Cisco sales reps asking for feedback

Cisco - February 25, 2009

General

Get a customer backend database working.

Agent

show account information related to particular customer.

Callflow

Call up 1-800-MYBANK

VXML menu is read:

“Welcome to MyBank, please enter your account number”

“Welcome ‘account user’:”

“Press 1 to speak with an agent”

“Press 2 to hear your account details.”

Call up 1-800-MYTRAVEL

VXML menu is read:

“Welcome to MyTourism, please enter your account number”

“Welcome ‘account user’:”

“Press 1 to speak with an agent”

“Press 2 to hear your flight details”.

Call up 1-800-MYSCHOOL

VXML menu is read:

“Welcome to MySchool, please enter your account number”

“Welcome ‘account user’:”

“Press 1 to speak with an administrator”

“Press 2 to hear your class details.”

“Call up 1-800-MYRETAIL”

“VXML menu is read:”

“Welcome to MyRetail, please enter your account number”

“Welcome ‘account user’:”

“Press 1 to speak with an agent”

“Press 2 to hear your order info.”

“Call up 1-800-MYGOVERNMENT”

“VXML menu is read:”

“Welcome to MyGovernment, please enter your account number”

“Welcome ‘account user’:”

“Press 1 to speak with a live agent”

“Press 2 to hear your social security information.”

Deliverable

For Wednesday, March 4, 2009.

All five website templates.

All five agent templates with sample data.

Cisco - March 19, 2009

Notes from meeting with Tom Bucciero & Jay Ward

- Remainder of project we need to give clear deliverable dates and timeline.
- 22nd of April as tentative wrap-up meeting/presentation at Cisco.

Notes from meeting with WCDT (world class demo team), via Cisco Meetingplace. In

attendance: Ulrich Werner, Kyle Boran, Jay Ward, Chris Chandler

- Chris was impressed with the designs, both website and agent, thinks it’s a perfect fit.
- We can assume CTIOS is installed on client and accessed with remote desktop.
- Two setups: Premade setup + setup for customization

- Egain – create entry point in CIM and it generates HTML. Different for each install. Chris could handle that just package up the site.
- Note: Jay away in 2 weeks, starting week of 29th

Expected deliverables as we move forward.

- March 25:
 - Websites ready for deployment to Chris Chandler
 - Agent executables fully designed
 - VXML prompts fully written for actual implementation.

Cisco Meeting 3/25/09

Conference Room White Board

- Deployment?
- What features at this point are necessary/core to the web tool?
- Who can we talk to while Jay is at VoiceCon?
- Whats the best way to notify people that we updated the Wiki page for demo of Agent / Website demos to sales people?

CVPdemo.com

“welcome, please enter you account number”

“you do not have a valid account number, please” vs “hello uli, welcome to myschool”

- “for x press 1”
- For y press 2
- For z press 3
- For agent press 0

--→>>> agent

Put screenshots of website and agent in a powerpoint then post to Wiki.

Ask leading questions on the wiki like:

What do you like?

What don't you like?

What would you add?

Etc.

Frontend Tool Possibilities:

- String manipulation of websites
 - Name
 - Tagline
 - Uploadeable logo
- Agent
 - Logo manipulation.
- VXML
 - Changing TTS prompts

Cisco - April 1, 2009

Key card expiration issues

Got temp badge

Talked to Justin Odom for Wiki access

Meeting with Tom

He'll email us the our passwords for Wiki access

Contact Jay to ask which alias to send the presentation to

Cisco - April 8, 2009

- Talked to Jay about a few things to add more depth to each agent desktop
- Talked to David about adding more depth to each agent desktop
 - Add website into Agent desktop.
- Talked about our presentation at WPI

- Bring router to WPI (1811). Plug laptop and phone into the router so it can VPN into Internal Network.
- This allows us to show actual screen pops when we call in to Contact Center Enterprise (CCE) during presentation.

Meeting with Tom

Deadline discussions – we're on track.

E-mail Jay Thursday, April 9 to ask if router is ready.

Cisco - April 20, 2009

What We Did

Agent Desktop

- Connected Agents to Phones (4100, 4003)
- Altered VB to fill forms when user calls / clear forms when call is hung up.

VXML

- Deployed VXML to server

To Do

- Create an executable for selecting agent verticals.
- Clean up the agent verticals folders / files
- Rename each .exe per vertical
- Create a homepage for the web verticals.
- Clean up the website folders / files
- Clean up vxml (delete unneeded pages), trim down to only prompts we need
- Record voice prompts for deployed VXML (since the TTS isn't working)

Presentation

- Intro / who we are refresher...(Jay)
- Summary of what the project was
- Challenges we faced
- Take a look at what we have...
- VXML, Agent, Customer Facing Websites...
- Examples of each.
- Distribution package (these will all be on wiki)
- Feedback

Appendix C: Cisco Brainstorming Presentation

Cisco Unified Software Tool for Optimal Marketing (CUSTOM)

Martin Boeker
Kyle Boran
Ulrich Werner



Contents

- Business Problem
- Proposed Solution
- Example
- Proposed Methodology
- Business Value



Cisco Unified
Contact Center
Products

"How do I show that Contact Center fits
MY customer?"



Demos need to have...

FLAIR



Demos need to be...

VERTICAL SPECIFIC



Demo customization needs to be...

LESS TIME CONSUMING



Proposed solution

- One tool to create custom agent, voice, and web interfaces
- Ability to pick and choose from existing designs for various verticals and languages
- Simple and practical design to quickly create new demos

High Level Design



Demo Tool

Cisco Unified Software Tool for Optimal Marketing

General Information

Company Name
Customer First Name
Select your industry vertical
Select locale
Upload your logo
Website
Prompt 1
Prompt 2
Agent Interface
Voice CVP
Custom prompts
Welcome to Customer First Air Press 1 for information etc...

Agent

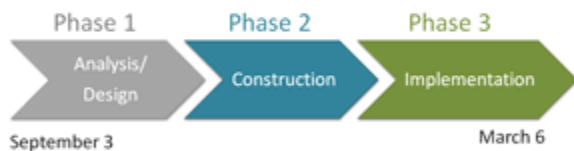




Voice

Company	Customer
▪ Thank you for calling CFA. Press 1 if you have a CFA Account.	▪ 1
▪ Enter your account number followed by the pound key.	▪ 0012301#
▪ Press 1 if you would like to make travel arrangements.	▪ 1
▪ Please wait while we forward you to an agent to help you book a flight.	

Proposed Methodology



Phase 2 - Construction



Business Value

- Shorter demo creation time
- Fewer non-customized demos
- Greater impact on demo viewer
- More sales

We need **your**
feedback and ideas!

- Does this meet your needs?
- Would you use the tool?
- Any parts to add or remove?
- Additional input/feedback?



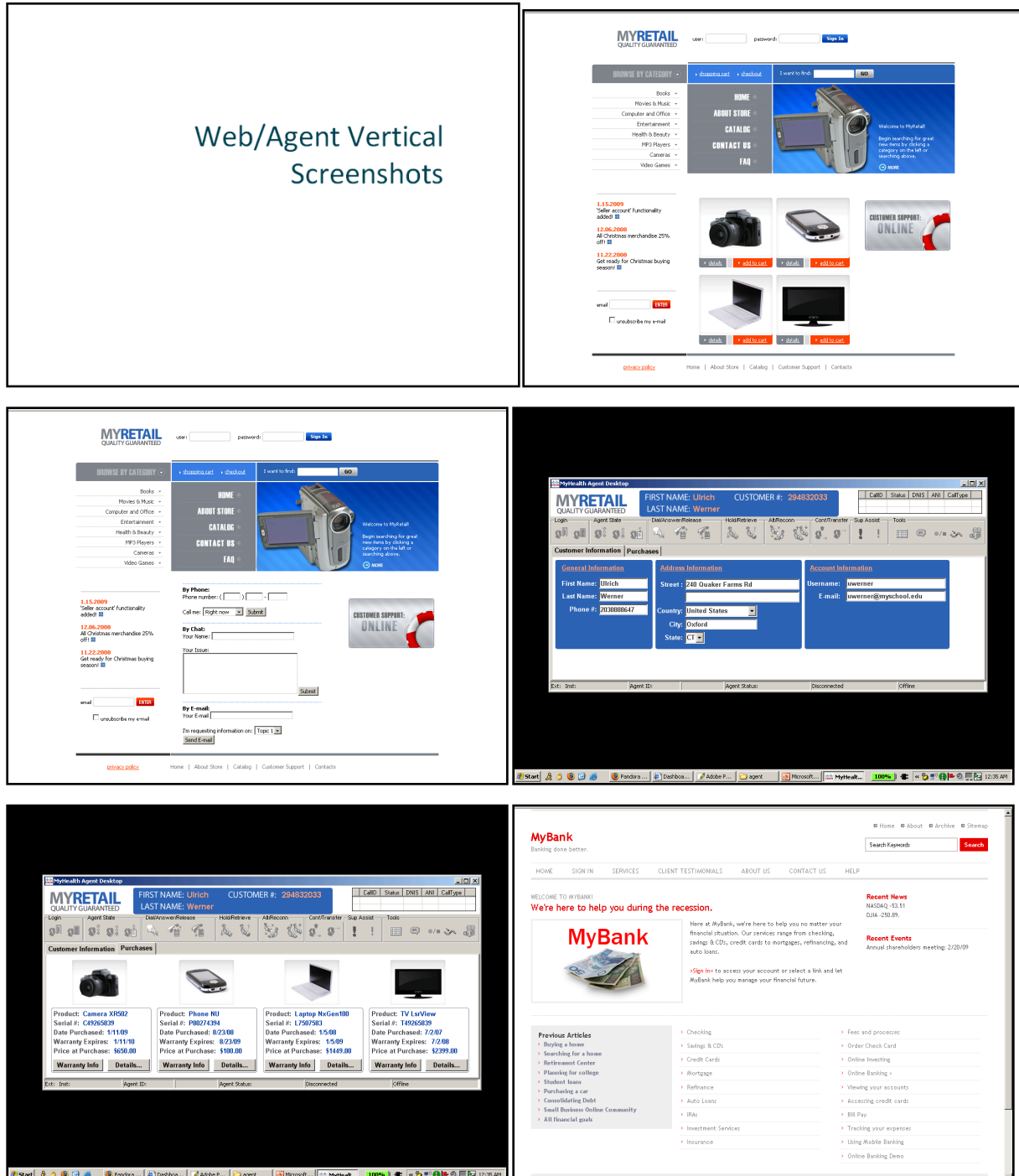
Thank you!

Jay Ward, jaward@cisco.com
Tom Bucciero, tbuccier@cisco.com
Bill Lapp, blapp@cisco.com

To contact us:
ciscomqp@wpi.edu

Appendix D: Vertical Designs submitted for critique

Web/Agent Vertical Screenshots



MyBank

Banking done better.

[Home](#)
[About](#)
[Archive](#)
[Sitemap](#)

[HOME](#)
[SIGN IN](#)
[SERVICES](#)
[CLIENT TESTIMONIALS](#)
[ABOUT US](#)
[CONTACT US](#)
[HELP](#)

Search Keywords

Search

Contact Us

By Phone:

Phone number: () - -

Call me: [Right now](#) [Submit](#)

By Chat:

Your Name:

Your Issue:

Submit

By E-mail:

Your E-mail:

I'm requesting information on: [Topic 1](#)

[Send E-mail](#)

Recent News

NASDAQ: 43.51

DJIA: 250.89

Recent Events

Annual shareholders meeting: 2/20/09

[Home](#)
[About](#)
[Archive](#)
[Sitemap](#)

Investing in securities involves risks, and there is always the potential of losing money when you invest in securities.

MyBank is a registered broker-dealer and member FINRA (The Financial Industry Regulatory Authority) and SIPC (Securities Investor Protective Corporation).

MyBank Agent Desktop

First Name: Ulrich

Primary

Last Name: Werner

Account #: 294832033

Call ID

Status

DNIS

ANI

Call2

Log In

Agent Data

Data/Answer Release

Hold/Retrieve

Alt/Access

Conf/Transfer

Sup Asst

Tools

Customer Info

Accounts

General

First Name: Ulrich

Last Name: Werner

Phone #: 203888647

Address

Street: 240 Quaker Farms Rd

Country: United States

City: Oxford

State: CT

Ext: Int:

Agent ID:

Agent Status:

Disconnected

Offline

Start

End

Pause

2 Windows

Microsoft

MyBank

100%

8:51 PM

MyBank Agent Desktop

First Name: Ulrich

Primary

Last Name: Werner

Account #: 294832033

Call ID

Status

DNIS

ANI

Call2

Log In

Agent Data

Data/Answer Release

Hold/Retrieve

Alt/Access

Conf/Transfer

Sup Asst

Tools

Customer Info

Accounts

Open new account...

Checking

Account #: 2349403493

Balance: \$1225.00

Date

Description

Amnt.

Balance

1/17/09

Foodstore

-5.89

\$1225.00

1/17/09

Gas

-18.88

\$1206.12

1/17/09

Miscellaneous

-28.88

\$1177.24

1/15/09

Online pay...

18.88

\$1196.12

View Details

Savings

Account #: 463353239

Balance: \$20,345.00

Date

Type

Amnt.

Balance

1/22/09

Deposit

\$150.00

\$20,495.00

1/15/09

Deposit

\$150.00

\$20,345.00

View Details

Credit

Account #: 186980009

Balance: \$-1225.00

Date

Description

Amnt.

Balance

1/17/09

Textbook

\$150.00

\$-1075.00

1/17/09

Cell Phone

\$-150.00

\$-1225.00

View Details

Promos

Ext: Int:

Agent ID:

Agent Status:

Disconnected

Offline

Start

End

Pause

2 Windows

Microsoft

MyBank

100%

8:51 PM

MyHealth+

Search MyHealth:

Search

Home

Contact Us

Events

Careers

Physicians

[Hospital Services](#)
[Online Services](#)
[About Us](#)
[Patient Information](#)
[Hospital News](#)
[Library](#)

Welcome to MyHealth!

Questions about MyHealth?

Visit our Contact Us page to find out more information by email or phone.

Recent News:

MyHealth named Hospital of the Year in 2008.

March issue of MyHealth Healthy Living is out.

MyHealth to launch its Patient Information in April.

Important Events

Cancer Cancer Awareness Month Celebration

Friday, March 6 9:00 AM - 1:00 PM

Read our articles on:

Cancer Center

Oncologists

Heart Health

Healthy Eating

MYHEALTH 2009

We Have For This year:

We have to raise awareness about cancer and obesity.

View more

Future Plans

MyHealth is always on the cutting edge of healthcare.

At MyHealth, we have the most qualified doctors in the field and the most up to date equipment to help you when you are in need.

We aim continue our trend of quality into 2009!

MyHealth+

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Home

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Events

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Physicians

Contact Us

Contact MyHealth

By phone:

Phone number: () - -

Call me: [Right now](#) [Submit](#)

By Chat:

Your Name:

Your Issue:

Submit

By E-mail:

Your E-mail:

I'm requesting information on: [Topic 1](#)

[Send E-mail](#)

MYHEALTH 2009

We Have For This year:

We have to raise awareness about cancer and obesity.

View more

Future Plans

MyHealth is always on the cutting edge of healthcare.

At MyHealth, we have the most qualified doctors in the field and the most up to date equipment to help you when you are in need.

MyHealth+

Search MyHealth:

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Careers

Physicians

Log In

Agent Data

Data/Answer Release

Hold/Retrieve

Alt/Access

Conf/Transfer

Sup Asst

Tools

Patient Info

Appointments

Physician Referrals

General

First Name: Ulrich

Last Name: Werner

Phone #: 203888647

Primary Physician: Dr. Stevenson

Age: 21

Weight: 170

Address

Street: 240 Quaker Farms Rd

Country: United States

City: Oxford

State: CT

ZIP: 06478

Insurance Provider

Name: Best Healthcare

Plan Type: Safety First Coverage

Member #: 234324

Ext: Int:

Agent ID:

Agent Status:

Disconnected

Offline

Start

End

Pause

2 Windows

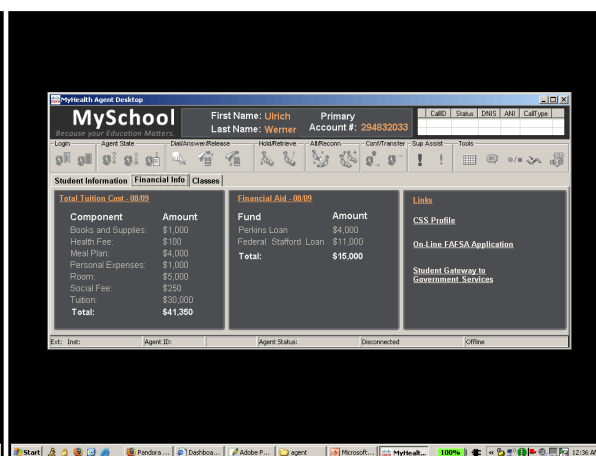
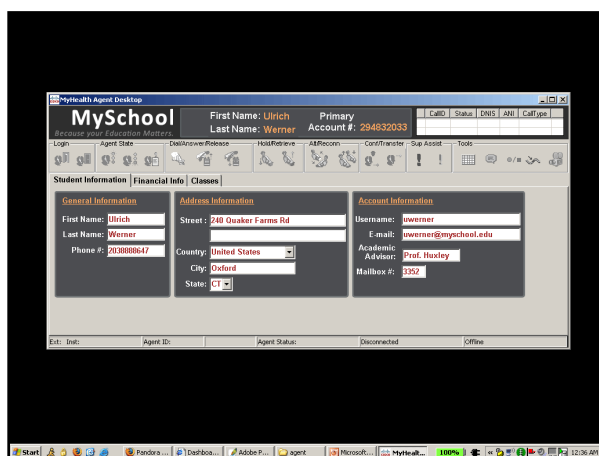
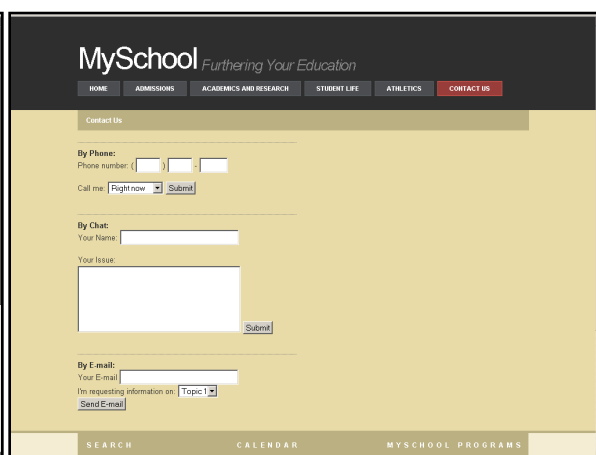
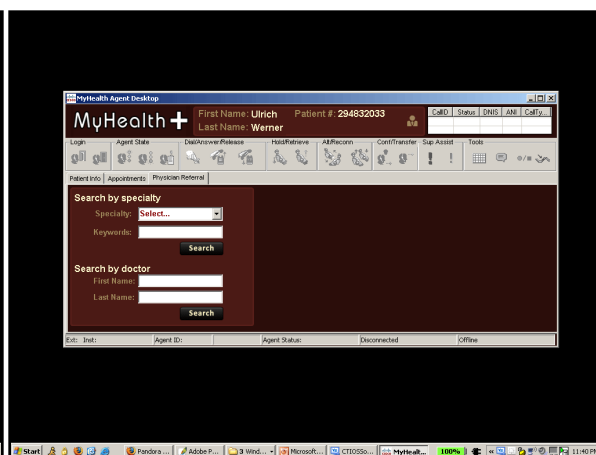
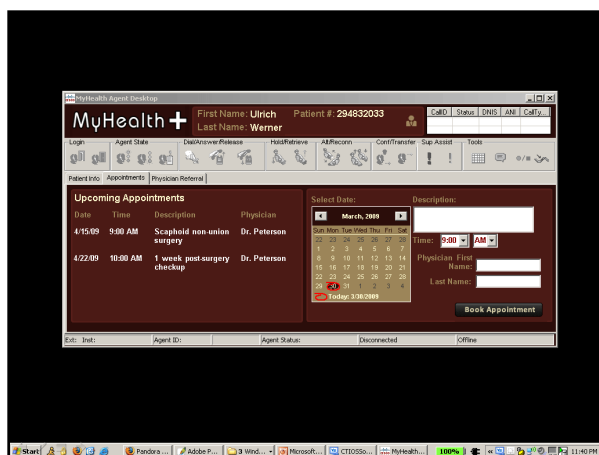
Microsoft

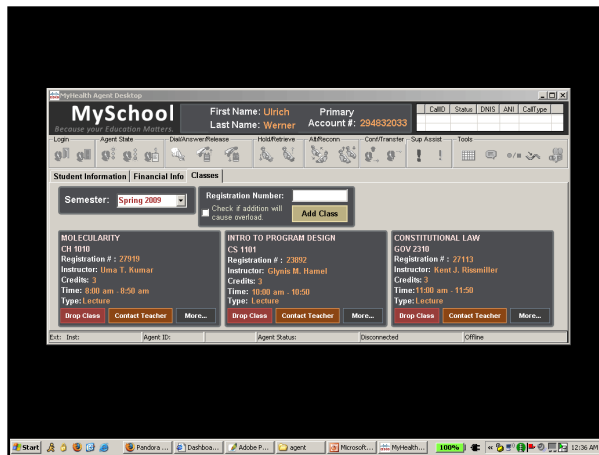
MyHealth

100%

8:46 PM

76





We need **your** feedback and ideas!

- Does this meet your needs?
- Would you use the tool?
- Any parts to add or remove?
- Additional input/feedback?



Appendix E: Final Presentation at Cisco

Contact Center Custom Demo Project

Kyle Boran
Ulrich Werner

Introductions

Senior 'Project' for local University. Use skills and technology to solve business problems.

Students :



Kyle Boran
Software Engineer accepted as part of Cisco Choice. Will be here in September as part of CCBU.



Uli Werner
Software Engineer with many employment options. Can do a switch 540 on ski's. (ive seen the video)

Contents

- Background
- Goals
- Development
- Distribution
- Conclusion
- Feedback

"How do I show that Contact Center fits
MY customer?"



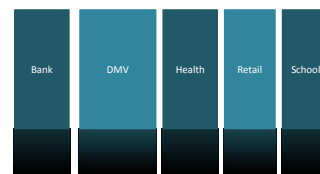
Demos need to have...

FLAIR



Demos need to be...

**VERTICAL
SPECIFIC**



Demo customization needs to be...



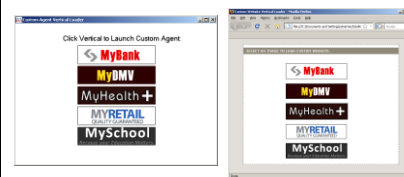
Goal

- Create customized agent, web, and voice components for key verticals

Business Value

- Shorter demo creation time
- Fewer non-customized demos
- Greater impact on demo viewer
- More sales

Development Results



Distribution

- Vertical Packages
 - Wiki
 - Shares

Conclusion

- Outcomes

Further Development

- Customization tool possibilities

Questions and Comments?



Thank you!

Jay Ward, jaward@cisco.com
Tom Bucciero, tbuccier@cisco.com
Bill Lapp, blapp@cisco.com

To contact us:
ciscmqp@wpi.edu