Employment Security Commission of North Carolina

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Governor

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2009 Recognition Awards for Outstanding Achievement in the Field of Information Technology

Project Title: Integrated Voice Recognition System for Unemployment Insurance Initial and Continued Claims

Category: Digital Government: Government to Citizen (G to C)

Nominee: State of North Carolina - Employment Security Commission and Information Technology Services

B. Executive Summary

The Employment Security Commission of North Carolina (ESC) is proud to present a nomination of the Integrated Voice Recognition System for Unemployment Insurance Initial and Continued Claims Taking. This system was developed in partnership with North Carolina's Information Technology Services agency (ITS) and third-party vendors. This is the first such system that utilizes natural language recognition for the purpose of UI claims taking in the United States. Natural language combines advanced speech recognition and voice response technologies to create sophisticated, voice-enabled applications. The ESC applications understand conversational words or phrases, making it possible for our customers to talk to the automated system as naturally as they would a customer service representative.

The Unemployment Insurance (UI) program is a state and federal partnership between ESC and the United States Department of Labor. One of the paramount responsibilities of this partnership is to provide unemployment insurance benefits to covered workers who lose their jobs through no fault of their own.

This decade has presented overwhelming workforce challenges with its two severe recessions. The 2001 recession lingered in NC, with unemployment continuing rising from a low of 5% in early 2001 to a high of 7% in 2002-03. The recession and its continued impact accelerated North Carolina's economic shift from its traditional agricultural and manufacturing bases to the rapidly expanding financial services and emerging biotechnology industries and created an expanding need for job counseling, re-training and unemployment insurance payments. It also became apparent that a growing portion of our customer base was becoming more sophisticated and demanding self-service options. Reduced federal funding for administration of the UI program further accentuated the need for cost savings through the use of automated self-service systems.

The state, too, was shifting course with regard to the management of information technology (IT) resources, assets, and services. Legislation was enacted to promote IT consolidation, deploy enterprise service offerings that can be leveraged across state agencies, implement structured project management and expand the responsibilities of the state CIO. This shift provided the framework for the state-agency partnership that culminated from this project.

These demands prompted ESC management to closely examine its service delivery systems in the wake of reduced federal funding and a transformed labor market. A value-added services workgroup was chartered to identify improvements and increase the number of self-service offerings. During the brief period of economic recovery mid-decade, ESC undertook the changes that now allow the Commission to provide unemployment insurance services in a significantly different manner. ESC centralized the majority of UI staff, and created a customer contact center. In addition, ESC recognized the need for a better system to support the new service delivery model. These events resulted in the development of the Integrated Voice Recognition (IVR) System for Unemployment Insurance Initial and Continued Claims Taking.

C. Description

Unemployment Insurance claims taking has two distinct components: Initial Claims and Continued Claims. The initial claims process collects the information needed to determine an individual's eligibility for benefits. Once initial eligibility is established, an individual must file a continued claim for each eligible week to receive payment. These processes have been served by mainframe applications for more than twenty years. Originally, in-person visits to an ESC office were required for both the initial claim and all continued claims. In 1992, ESC deployed an automated Voice Response Unit (VRU) telephone system for continued claims. In 2001, Internet applications were implemented for initial and continued claims taking. Though these systems provided enhanced self-service for some customers, others failed to benefit due to lack of computer literacy and PC ownership issues as well as limited high speed Internet access. As a result, ESC career centers were filled by claimants using the available PCs for UI applications, thus limiting access for individuals engaged in resume writing, career exploration and job searches.

It became readily apparent to ESC management that a telephone initial claims taking system would be critical to meeting peak demand and providing multiple customer access pathways during economic downturns. The VRUs had made the unprecedented level of continued claims taking possible; however, more could be done with new technology. Advances in natural language recognition systems made feasible the collection of the complex information necessary for initial claims taking while the current mainframe backend could support integration with a natural language recognition system front end.

This became the seminal period for the initiative. The project gained momentum and urgency from 2005 to mid-2008, as the federal funding supporting ESC local offices continued to be reduced. After intense review, ESC's Project Management Office (PMO) and the management of the Unemployment Insurance and Information Systems divisions identified key objectives for a new system design.

The design objectives were:

1. Accommodate a growing number of potential claimants.
2. Create a high availability system for initial and continued claims taking.
3. Reduce the number of non value-added UI visits to ESC local offices.
4. Align with management's directive of value-added services.
5. Increase access to on-demand systems that are truly self-service.
6. Develop a scalable, cost effective UI delivery system.
7. Maximize the benefits of existing mainframe systems.
8. Centralize UI functions to lower the fixed costs associated with the provision of UI services.

9. Integrate with the existing Automated Call Distribution (ACD) system call center support staff to assist callers who are unable to complete an automated initial claim.
10. Retain information for incomplete initial claims and allow the caller to resume filing within a set period of time.

ESC partnered with ITS to design an enterprise service offering for a new integrated voice response/natural language system. Natural Language combines advanced speech recognition and voice response technologies to create sophisticated, voice-enabled applications. As a part of that service, ITS agreed to provide the enhanced IVR platform. ESC, in turn, agreed to pay for the UI application development and a monthly service fee for use of the enterprise infrastructure. ESC and ITS partnered in the development of the associated RFP and the evaluation of the RFP responses. The RFP was awarded in March 2006 to Siemens as the integrator on the project. ITS managed the contract with Siemens. Nuance and Genesys were subcontractors to Siemens. SimpliCTI and Avaya were subcontractors to ITS. The resultant system was implemented in two phases: Continued Claims in June 2008 and Initial Claims in November 2008.

The system is a co-located, multi-platform, multi-technology design. Claimants call the initial or continued claims taking toll-free numbers and, through guided interaction with the natural language recognition system, provide the information needed for the specific type of claim they are filing. During initial claims taking, the caller provides, through voice or touch tone response, personal information and details about prior employment, wages, occupation, and the reason for unemployment. The ESC applications understand conversational words or phrases, making it possible for customers to talk to the automated system as naturally as they would a customer service representative. Unassisted, this process requires an average of 23 minutes. The system flags responses requiring assistance, and during business hours, routes such calls via the ACD to staff who assist in completing the initial claim. Calls routed to staff are accompanied by a screen pop containing historical data from the mainframe and data collected during the call. The screen pop loads the information into an ESC-developed, browser-based application called the Integrated Benefit Intake System (IBIS). After business hours, flagged calls are routed to an application that schedules a call back when staff is next available.

The continued claims taking process requires the callers to answer a short series of questions, is completed in an average of 3 minutes, and requires no staff intervention. The information is stored in an Oracle database on-site at ESC. Completed claims are uploaded nightly to the mainframe. Continued claims are then processed for payment and completed initial claims are processed for benefit eligibility. Initial claims that are not completed during the first call can be resumed within 7 days. This allows the caller to gather the information needed to complete the claim, such as previous employer contact information.

A high-level breakdown of the system architecture is comprised of three distinct components attributed to the **partner** responsible for their implementation.

ESC, as project owner, submitted the project plan and was responsible for maintaining the consolidated plan for ESC, ITS and Siemens. The ESC PMO served as the pivotal communication point for ESC divisions, ITS, and vendors throughout the project lifecycle and provided a project manager to coordinate development and network resources, establish inter- and intra-agency communications plans, establish project milestones, track progress, and route invoices through the approval and payment process. In addition to intense participation in all phases of the joint effort, ESC designed, built, and configured the Oracle 10g database on a Solaris platform that stores the information gathered from callers filing initial and continued claims. Windows application servers were built to house the IBIS application used by contact-center staff to complete initial claims for calls routed to staff or scheduled for assistance. Data exchange functions among the server and mainframe components were developed by ESC.

ITS constructed the core IVR infrastructure according to the specifications developed for each component. This required the acquisition, installation and configuration of the IVR application, load balancing, and IP Communication servers hosted at the state's datacenter. This effort included integration of ESC's VoIP ACD functions into the state VoIP and IVR infrastructure. ITS also assigned a dedicated project manager from its Enterprise Project Management Office to work with the ESC PMO to coordinate resources, establish communication plans, establish project milestones, track progress and phase gate approvals for payments.

The vendors were responsible for the integration of the previously installed Voice over IP (VoIP) networks and ACD systems at ESC with the new application. The established network consists of 548 ports that are dynamically assigned to meet the demand of both initial and continued claims taking functions. Another vendor, **SimpliCTI** developed the screen pop capability that loads a data frame with call information and the IBIS window with available mainframe information and all the data collected during the call.

Siemens worked with its subcontractors to develop the claims taking integrated voice response system. The foundation of the system is the **Genesys Voice Platform: Network Edition** with several integrated components. The configuration of this system was refined to ensure that it could be managed by ITS while providing applications to service multiple agencies, including ESC. **Nuance** customized its speech recognition software in support of the voice user interface, provided the spoken language system components, language dictionaries, and performed system performance tuning of the natural language recognition functions.

D. Significance

The significance of this project is its innovative technology; the inter-agency, public/private partnership that evolved among ESC, ITS, and Siemens; the improvement in service delivery to claimants; and the reduced travel cost for customers. It is the first and only state UI system that utilizes natural language recognition technologies for the purpose of unemployment insurance claims taking.

The timing of this project's rollout is also very significant. When the continued claims application was put into pilot in March 2008, the state's unemployment rate had just started to rise and national economic concerns were becoming increasingly dire. On June 30, the President signed the Supplemental Appropriations Act of 2008, which provided an extension of benefits to individuals who remained unemployed beyond the exhaustion of their regular benefits. The initial claims application went into pilot in July 2008 just as the benefits extensions were taking effect. Unemployed residents who had stopped filing continued claims returned in droves to file for extended benefits and were joined by a historically high number of people filing initial claims. Other extended benefits programs went live in September 2008 and March 2009, adding weeks to claimants' filing periods. Not only was the system serving more claimants than ever in North Carolina, it was serving them longer. Claims that would normally exhaust in no more than 26 weeks could now be extended to an unprecedented potential total of 79 weeks.

The continued claims system handled the load exceptionally well. The initial claims pilot was extended for additional load testing and was cleared for full production in November 2008.

E. Benefit of the Project

The system allows individuals without access to computers and high speed connections to file for and receive benefits at no added cost to them and without visiting a local office. The system is available to citizens almost 24x7—with a limited number of hours reserved for maintenance. The reduction in the level of staff-assisted claims taking has allowed staff to focus on stimulus and reemployment efforts, which are vital to economic recovery. The system has performed without significant failure during a period of historically high demand.

The continued claims application was readily accepted by claimants. In its first month of production, June 2008, the continued claims system successfully filed 159,068 weekly certifications. To date, the continued claims system has processed 4,481,019 weekly certifications. The initial claims application experienced a slower adoption rate, but in its first month of production it was used to file 10,220 claims. Since its release, 59,262 initial claims have been filed and **55%** of these were filed without any staff assistance.

The system cost ESC $4,885,695 in one-time costs for the Avaya VoIP system and port network infrastructure, Oracle software and database design, Solaris servers, IBIS and

voice application development, and staff time. ESC pays a monthly subscription rate of $135,000 to ITS for the IVR services and support. Ongoing monthly ESC support costs are approximately $19,000. However, the attribution of these support costs does not represent an increase in ESC resources but a reassignment of existing support resources to the new system.

Financial return on investment is derived in two ways: first, the staff savings realized through the reduction of claims taking assistance provided and second, the savings to citizens through elimination of required visits to local offices. The average staff savings per initial claim filed without assistance is 23.084 minutes or $7.28. Staff assistance on claims that require help averages only 14.4 minutes, an average savings of 8.68 minutes or $2.74 per claim. Since implementation, staff savings have totaled $296,717 (32,611 claims filed without assistance resulted in staff savings of $223,731 and total claims filed with staff assistance—26,651—resulted in staff savings of $72,986.)

ESC has 89 offices located across the state and its 100 counties. The average distance from a claimants' known address to a local office is 11.75 miles. Using the IRS mileage rate, the average round trip savings for each initial claim filed by phone is $12.93 (11.75*2*$.55). Total savings to date to claimants is $765,964. The continued claims system includes the work search verification (Eligibility Review Interviews or ERI) that must be completed by the claimant at regular intervals throughout the life of the claim. Since implementation, the system has captured 446,408 ERIs for a savings of $5.77 million. (No trip savings are realized for filing weekly certifications since this system replaced similar functionality provided by the VRUs.)

In addition to the financial benefits listed above, there are several non-quantifiable benefits that have accrued to the citizens of North Carolina. First, the system is available in the evenings and weekends, when normal ESC offices are closed. Arranging for child care or waiting in line to be seen by staff is no longer a problem. Given the current unemployment rate in North Carolina of more than 10%, removing more of the claims duty from ESC staff allows them to focus on helping individuals find jobs and educational opportunities.

The success of this project demonstrates that thoughtful development of technology solutions can impact citizens in very positive ways. The partnership that evolved between ESC and ITS has strengthened both agencies' ability to provide appropriate and accessible technologies to its constituents. The vendors were integral to the project's success, and their established relationship with ESC and ITS will continue to prove beneficial to North Carolina.