

Case Study: Developing an IDE for VoiceXML scripts to simplify a call-center application.

Belatrix Software Factory is a leading Software Services Outsourcing company with its main offices and delivery centers based in Mendoza, Argentina and Donghai, China. We provide Software Development, Quality Assurance, Localization and Graphics Design Services using the “Agile Blended-Shore Model” which combines the best of near-shore and offshore by leveraging the advantages of Argentina and China.

The Client. Brookline Technologies, Inc. (www.brooklinetechnologies.com) is a leading provider of Direct Sales software. With headquarters located in Salt Lake City, Utah, Brookline provides services and software solutions to some of the largest Direct Sales companies in the world and has effectively leveraged Belatrix’s Nearshore Agile Outsourcing Services for many years.

The Products. Brookline provides seamlessly integrated enterprise order and customer management call center applications as well as e-business web-based platforms that support the operations of Direct Sales companies ranging in size from \$5 million to over \$500 million in annual revenues. Brookline has emerged as the premiere software provider in the Direct Sales industry. A few of Brookline’s key customers include Morinda Corporation, Neways International, Nature’s Sunshine Products, Close To My Heart, and Sylmark Corporation.

Brookline’s product suite includes a Call Center application, a set of Web e-business solutions as well as back-end Resource Planning and Compensation Management solutions.

The Challenge. A key component of Brookline’s suite is the Call Center Application called Connexion which allows call center personnel to manage orders, customer enrollment and issue tracking. Due to the high turn-over rates found in most call centers Brookline’s clients required a solution that would allow them to reduce the training time required for customer service representatives to be able to effectively operate Connexion for typical tasks like enrollment order entry or customer enrollments using a “wizard”-based approach.

As an additional consideration, many clients explained their wish to integrate their IVR (phone interactive voice response) systems with the back-end Brookline system so that they could in many cases reserve the customer service agents for more involved transactions.

The Solution. Brookline engaged us to develop a solution that would solve all of these challenges by providing an environment where advanced administrative users could set up scripts (or “wizards”) that either the Connexion application could execute to guide the user through the process in question and furthermore that this platform could be leveraged by the IVR system and execute these scripts on the phone for the customers to get the option of self-help.

We designed a set of applications leveraging the power of VoiceXML (VXML) to be used as the scripting language, some of these applications included:

- ✓ **A Script Builder IDE:** with an easy to use and intelligent drag-and-drop User Interface it allows the users to build custom scripts very easily. It is smart enough to know which VXML tags attributes may or

may not be used in a particular context. Figure 1 shows Script Builder while building a VXML script and importing the type library of a COM+ object.

- ✓ **A Connexion add-on:** we developed a dll that Connexion may load at run-time in order to execute the appropriate VXML scripts through a set of wizard-like windows. The screenshot on Figure 2 below shows the wizard executing a VXML script on Connexion.
- ✓ **A prototype VoiceXML IVR engine:** since at the time of developing this solution Brookline had not yet chosen the specific IVR platforms it would support, we developed a prototype application in order to execute basic VoiceXML that was generated with the Script Builder. The diagram in Figure 3 depicts the general architecture of the IVR prototype.

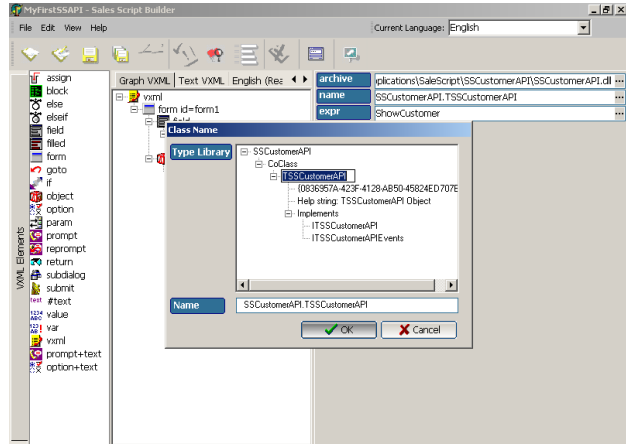


Figure 1 - The VoiceXML Script Builder IDE

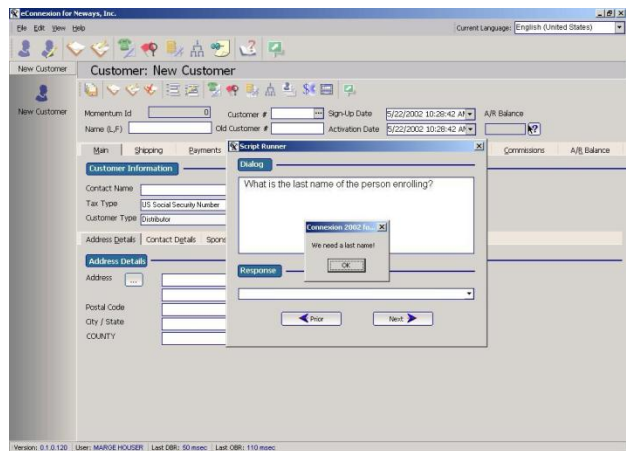


Figure 2 - A VoiceXML Script executing

The Technologies.

- ✓ **Architecture:**
 - N-Tier applications using DCOM and COM+.
- ✓ **Languages:**
 - Delphi and C++

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businessdevelopment@belatrixsf.com

Phone Number: +1 (617) 608-1413 x2001

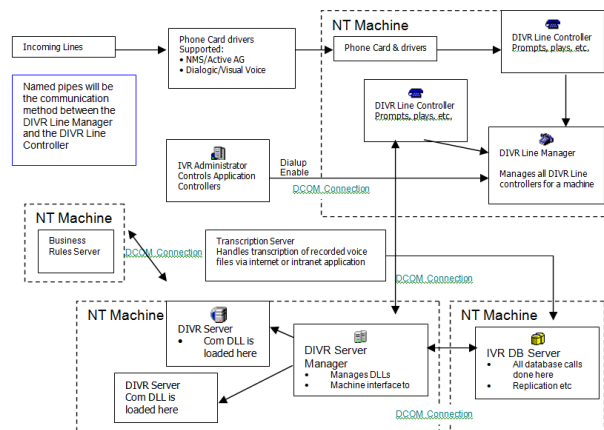


Figure 3 - The architecture of the IVR prototype