Development and Implementation of a Voice Portal Builder Using Next Generation Networks Technology

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Abstract - **Walk application, which is designed in a dynamic fashion, acts as a platform for users to build their own personal voice portal, much that people can have access to information at anytime and anywhere over a telephone. VTalk application has the space of improvements.**

Keywords - **Voice portal builder, Speech Recognition, Next Generation Network, voice.**

I. INTRODUCTION

Phenomenal growth and standardization in the telephony voice market and speech recognition technologies has driven the need for enriching the existing enterprise applications running on the visual web. Speech Web, which is a combination of voice and data standards woven together with XML and other technologies, has introduced us with new competent choice.

However, integrating speech web with web applications involves a lot more than simply adding a new voice interface to an existing Internet based solution because users have different needs and expectations for voice applications as opposed to visual ones. Voice transactions that are reachable at any time, easy to use, designed specifically for their requirements, robust fault tolerant and prompt in responding are what users want. To satisfy these needs. Voice XML IS one such technology available with capabilities such as automatic speech recognition, touch-tone keypad recognition, text-tc-speech playback, pre-recorded audio playback, telephony features, dialog features, event handling, scripting, platform features and performance features.

These capabilities can be employed to allow callers to access information and transaction services through a telephony device. Web portal - commonly referred to as simply a portal, is a Web site or service that offers a broad array of resources and services, such as e-mail, forums, search engines, on-line shopping malls, etc. A voice portal (sometimes referred to as a "vorral" [11) is a web site or service that a user can reach by telephone for information or can be defined as speech-enabled access to web-based information. A voice portal provides telephone users with a natural language interface or keypad interface to access and retrieve Web content. An Internet browser can provide Web access from a computer but not from a telephone. A voice portal is a way to do that the voice enabled web is an association of such different technologies as XML based mark-up languages, speech

recognition, text to speech (ITS) and web technologies. Latterly, the technology has been applied in "v Commerce" a application which is an emerging term that explains the usage of speech technology over the telephone in commercial applications such as banking, buying cinema tickets or stock trading [2]".

The voice portal market is exploding with enormous opportunities for service providers to grow business and revenues. Voice based Internet access uses rapidly advancing speech recognition technology to give users anytime, anywhere access to Web-based information and also, it uses that most universal form of communication and access - the human voice (natural language) - over an office, wireless, or home phone. A voice portal builder VTalk as presented in this paper, is not just a simple voice portal that provides information to users through voice; instead our application is a "builder" that acts as a platform for users to build their own voice portal. A voice portal builder is a very convenient and appropriate application to meet users. demands in order to build their own voice portals. It is designed for not only individuals but also for organizations to fit in their desired information such as personal or company product services information such that others will be able to access their voice portal via voice command by just dialing to a voice portal number. VTalk is designed in a dynamic fashion where users can customize their voice portal according to their preferences such as what kind of information to be included, who will have access to the voice portal.

how the information is going to organized, etc. Information, that can be accessed by callers is not limited and fixed, but varies depending on users' customizations and preferences. Besides, VTalk offers a two-way-interaction between the subscribers and callers where callers are retrieving information and subscribers are promoting or providing product services information to a defined group of callers or to public. The purpose of developing this voice portal builder is to overcome the set

of drawbacks of current web portals. Voice portal that are built by using VTalk operates on Next Generation Network. In our case, we employed Siemens' Next Generation Network WGN) solution - SURPASS Next Gen Application. The Siemens' SURPASS products that are manipulated into our application are SURPASS hiE9200 Soft switch, SURPASS hiE Open Service Platform and SURPASS hiR200.

II. SIEMENS' WESWASS

The traditional voice transmission technique Public Switched Telephone Network (PSTN) encompasses large, expensive, centralized and proprietary Class-5 switches with remote switching modules (RSM) and digital loop carriers (DLCs). It is in charge of real time services and it did not change much over the decades. Another traditional voice transmission technology, Packet-Switched Data Network (PSDN)' includes network points of presence (POPS) and remote access devices. It is responsible for data services such as email and file transfer over World Wide Web It is substantially smaller compared with PSTN and it has been -growing in great rates, which are driven by Internet, Intranet and Virtual Private Network (VPN) and remote access. However, the PSTN continues to be the principal means of delivering data services. The Next Generation Network (NGN) blends the PSTN and the PSDN by providing a link between them, and creating multiservice network. It pushes central-office (CO) functionality to the edge of the network. It results on a distributed network infrastructure that leverages new, open technologies to reduce the cost of market entry dramatically, increase flexibility, and accommodate both circuit-switched voice and packet switched data.

With NGN, a robust switching functionality can be delivered at lower cost compared to Class-5 switches. It reduces the number of network elements by combining a range of telephony, application and service-delivery functions from PSTN and PSDN. NGN supports analog and digital network to protect current customers' investments. At the same time it enables new service, value and feature creation using open, flexible, standards-based application programming interface (API), which prevent developer to start from the scratch. The NGN begins with media sewers, which provide advanced media processing capabilities.

The value of a media server is its flexibility for supporting advanced media processing services like basic voice announcements, interactive voice response (IVR); conferencing, messaging, text-to-speech ('ITS), and speech recognition. Built with open, standard computing and voice processing boards, media servers can be deployed many ways .For example, a voice portal platform is a media server that provides a speech driven user interface with simple speech recognition and TTS capable voice-client access to Internet content, messages, or both. SURPASS provides a complete set of modular voice data solutions for building the NGN for a clear competitive advantage. These solutions capitalize on the economies of scale of an all-1P infrastructure while preserving all the voice intelligence of real-time networks. They come equipped with a powerful NGN management system as well. VoIP is an ideal start for the evolution towards the revenue-ready NGN addressing the CLASS 4 network level only. With SURPASS Virtual Trunking network complexity and operating costs can be reduced by turning the tandem layers of the TDM network into a dynamic, self-routing, self provisioning and self-reengineering 1P network.

The next stage is SURPASS Next Generation Local Switch, which introduces NGN architecture and applications to the Class 5 domain: the local switch. Thus it extends the NGN right to the user. Next Generation Local Switch in combination with Virtual Trunking is a carrier-class end-to-end Voice over IP solution. Signaling is the heart of successful since provisioning and control within a network. It acts as the nervous system spanning several networks and ensures end-to-end services is especially true for SS7 signaling information, as it is the key to high running applications like roaming, SMS and Number Portability in mobile and fixed-line networks.

SURPASS Signaling Overlay Network lets us extend the convergence approach of the NGN to the signaling network It immediately bridges heterogeneous networks and let us determines our 3 migration speed towards the NGN. SURPASS Signaling Overlay Network can transport SS7 information over TDM, ATM and IP, making it the solution of choice when signaling in the NGN is at stake. The IP revolution is a considerable business challenge that requires skill and stamina .Especially in the telecommunication applications and service industry. New revenue streams have to be developed quickly and efficiently, operators must differentiate themselves from competitors and cope with a continuously segmenting market that is shifting attention to smaller and similar use groups. Flexibility and speed is the key to success in such an environment. SURPASS Multimedia Applications offer a comprehensive solution for the next generation of high-revenue applications. SURPASS' open application provisioning platform and Application Programming Interface (API) provides the quality we expect from Siemens: stability and reliability in hardware and software. We gain the necessary freedom and flexibility to focus on new differentiating high-revenue services. SURPASS open blocs approach, which is based on CORBA and Parlay 2.1. Significantly reduces time-to-market for innovative new applications and let us customize our service portfolio rapidly. SURPASS

Multimedia Applications are powerful tools that will maximize returns on our network investment.

SURPASS provides carriers and service providers exactly the modular building blocks they need when they want to build a new network or expand the current network so that they can optimize network operation perfectly. Besides that, SURPASS allow new services to be generated quickly by providing an open platform for third-party service development. With the open Interfaces and standards, SURPASS is adaptable to any existing infrastructure and enable cost-efficient provisioning of innovative services. Finally, SURPASS'S modular design and open interfaces allow for limited upfront investment and pay-as-yougrow strategies, secure business now and open attractive opportunities for the future.

III. VOICE PORTAL BUILDER SYSTEM

The present Voice Portal Builder System divided into 2 parts. Web-based application - a voice portal builder that enables subscribers to build and publish their own personal voice portal, which operates on Next Generation Networks. Voice application - enables caller to call into NGN network for getting their desired information from voice portal. The voice portal that is built acts as an information provider that resembles the existing common web information providers, but with the enhancement of voice features that could be accessed or retrieved by phone calls and does the intelligent routing to present the callers information depending on their identity (valid or anonymous callers) and the date interval at which the templates are available to be accessed. To develop this current voice portal builder, Siemens' Next Generation Networks solutions - SURPASS such as hiE Open Service Platform, hiE9200 and hiRZOO were employed, to support the implementation of our voice application. In addition to Siemens' Next Generation Networks solutions, other technologies such as JSP, servlets, EJB, Java, HSQL el are also used in producing our application.

Figure l System Architecture of Voice Portal Builder System.

The SURPASS hiQ 9200 soft switch implements control of access equipment, media gateways and resource service. The SURPASS hiR2OO is a fully IP-based resource server. The functions provided by it are announcements and user interactive dialogues. Its action is controlled by SURPASS hiQ soft switch. HSQL Database Engine (HSQLDB) is used to store all the related data in own application. The server is responsible in storing all the JSP pages, servlets, Java classes, and Voice XML documents which handle the logic of the web application and voice portal.

Discussion Enterprises are constantly looking for ways to differentiate themselves from traditional and non-traditional competitors. Voice-based applications 4 and services provide another channel to connect with customers, partners and employees. By offering these services early in the life cycle of a technology, enterprises can attract early adopters and can learn from and adapt to use behavior before competitors dws. In the past several years, there has been a tremendous amount of activity in the area of voice access of Net information in Western countries Voice portals are an important development because they bring various benefits of voice-based access to the Internet. For one thing rapid retrieval of information can be much easier via voice because a user can simply state an item stored in a list or directory, without having to remember a number.

Scroll through a menu, or listen to each option. Hence, it is an appropriate approach to develop a voice portal builder application for users to create their own voice portal without the need for users having to posses any knowledge about the underlying architecture of voice portal. This indeed is advantageous to users in building their own voice portal in terms of time and effort as they are just required to make use of our pre-defined template and also, it is possible for the users to customize their voice portal according to their needs and preferences.

IV.CONCLUSION

This paper presents a Voice Portal Builder application entitled Walk which was build an Siemens' state-of-the-art SURPASS, the Next Generation Network Technology. VTalk is designed in a dynamic fashion, acts as a platform for users to build their own personal voice portal such that people can have access to information at anytime and anywhere over a telephone. Walk application definitely has the space of improvements. At present, VTalk voice portal builder is developed only for Iwo groups of users - subscribers and callers. So to further enhance own application, we may magnify the application so that system administrator or service provider can employ it too.
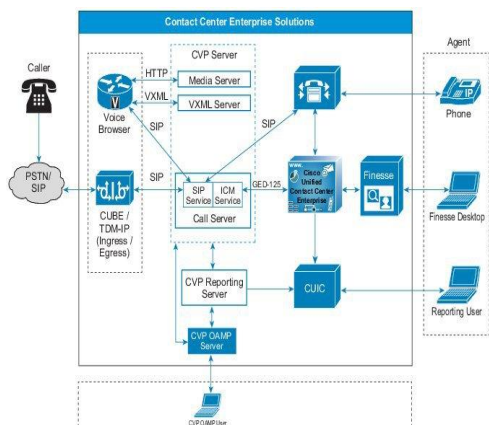
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