

AudioBored: a Publicly Accessible Networked Answering Machine

Jonah Brucker-Cohen and Stefan Agamanolis

Human Connectedness group

Media Lab Europe

Sugar House Lane, Bellevue, Dublin 8, Ireland

{jonah, stefan}@medialabeurope.org

ABSTRACT

AudioBored is a publicly accessible networked answering machine with two components: an online audio message board and a physical device used to access voice messages and topics of discussion. The project focuses on adding networking capabilities to the familiar household interface of the answering machine, a widespread device that maintains social ties in an asynchronous manner. The project also incorporates an online voice messaging website that allows for people to post messages with their telephones and listen to the posts online. Usage scenarios for AudioBored include voice-based online forums, situated voice posting from live events, and accumulated public voice message histories.

Keywords

Audio messaging, bulletin board, answering machine, telephone interface, online discussion list, community messaging

INTRODUCTION

AudioBored is a framework for a shared public audio messaging system where anyone can record a message and share it with the world. AudioBored augments the traditional telephone answering machine by adding a networked component to its everyday use and situating it in public space. Since answering machines are devices that have reached ubiquitous penetration in many areas of the world, they are already familiar interfaces to people of varying computer literacy. The project aims to extend the possibilities of public communicative spaces away from pictorial and written interaction and opens them to the potentially richer and more human-centered medium of voice-based messaging. The system allows for dynamic threading of incoming messages by sender and can store messages over time to build a personal or public archive of ongoing communications within an organization, individual relationship, or community. AudioBored adds a voice component to the previously text-only platform of online message boards by integrating network access and flexible architecture into an easily navigable physical device. AudioBored extends on existing voice-based online messaging applications by focusing on being a publicly accessible, always-connected physical answering machine that allows for numerous message threads and archiving of shared conversations collected over time.

RELATED WORK

AudioBored's focus on augmented networked appliances and shared audio messaging systems invokes references to considerable past research. In appliances, projects range from the 3COM's *Kerbang* [1] radio that brought Internet radio streams to a standalone radio, to Tobi Schneider's *RemoteHome* [2] which features a collection of networked household appliances and furniture. *VoiceMonkey* [3] and *AudioBlog* [4] demonstrate uses of live phone-based posting to the internet where people can add messages to their personal websites. Finally, Lakshmi's *TalkBack* [5], describes adding a networked component in the form of a screen that displays pictures of the caller along with their message.



Figure 1. Caller leaving message on AudioBored answering machine

TECHNOLOGY

The AudioBored prototype incorporates a server-side voice-based technology to allow people to call in and record messages and a hardware component for the answering machine. Over the phone, a VoiceXML script prompts users to record a candid message. [Fig.1] Once recorded through a PHP script, their message is saved according to topic and caller in a threaded database and posted online. The answering machine communicates serially with a PC via a microcontroller to access the database for recent messages and updates the device when a new message is available. Users can see a display of topics and total messages on an embedded LCD display. [Fig.2] There are two sliders – one to navigate “topics” of messages and one for selecting individual messages within threads. The slider ranges expand dynamically according to the number of incoming messages available online.



Figure 2. Close up of LCD display and slider

SCENARIOS

Below are a few specific examples of possible applications of the system.

1. **Voice-based Online Forums:** AudioBored allows for people to contribute to a shared online public space without a computer. Since standard telephones (including mobile and fixed lines) are ubiquitous and exist in far greater numbers than computers, they provide an alternative entry point to the Internet. Using VXML as the voice input system, the project opens up the landscape for public contribution to distributed online audio forums where a greater number of people can potentially contribute to the discussion. Since most online bulletin boards exist in text format, identity and authenticity of users can be concealed. Voice message posting can still maintain anonymity, but it potentially adds a more personal touch to messaging applications. For instance, users who communicated on a text-based web board could use AudioBored as a means of “hearing” each other’s voices for the first time, which may ultimately bring their community closer together by adding a more human element to their previous interactions.
2. **Situated Voice Posting:** AudioBored provides a shared public outlet for people to post candid voice messages on the Internet from any phone. This becomes especially interesting in the midst of events where Internet access is not easily available. For example, people in the midst of a crowded protest march could voice their opinions from the center of the action. These candid comments might better reflect the electric atmosphere and excitement of such a live event, adding a sense of immediacy to the collected messages. Each voice message is immediately recorded, stored in a database and made public for people to listen to on the device or online. Since all messages are sorted by topic,

this would allow for an ongoing protest to take place through contributors experiencing the event online.

3. **Public Voice Histories:** With most physical answering machines and voice-mail systems, there is a limited amount of message storage and lack of a way to sort incoming messages into separate storage mailboxes. AudioBored addresses this by storing all threaded messages on a server that can be instantly accessed through the physical interface. The device gains importance in public spaces where PC access to messages might be awkward or prohibitive, and it exists as a shared community resource. Over time, personal voice histories of messages left by community members can accumulate while the hardware architecture can scale to adjust for the new messages. This database of public voice messages could possibly provide an invaluable historical resource for future generations.

FUTURE RESEARCH

Future versions of AudioBored will allow for more customized message information that will be catalogued along with individual clips and made into a directory searchable by contributor and subject matter. We plan additional work on interactive visualizations of information collected by the system, such as the geographic origin of messages. The device could also gain Internet access through public wireless hotspots, allowing for it to be placed in a wider variety of public spaces in order to maximize its user base. A detailed study is also planned on uses of the system along with an analysis of message content to gain inspiration for potential deployment locations and future refinements.

ACKNOWLEDGMENTS

This research has been supported by sponsors and partners of Media Lab Europe.

REFERENCES

(All web references last visited 3/03)

1. Kerbango (discontinued), 3COM Corporation, <http://www.rnw.nl/realradio/features/html/kerbango010322.html>
2. Schneider, T., Remote Home, <http://www.remotehome.org/>
3. VoiceMonkey, <http://www.voicemonkey.com>
4. AudioBlog, <http://www.audblog.com>
5. Lakshmiathy, V., Schmandt, C., & Marmasse, N., “Talkback: a conversational answering machine”, Proc. of *UIST '03*, Vancouver, Canada (to appear).