Userradio mixes the new technologies of personal communication with “old” broadcast radio technology. It is a set of tools for collaborative networked audio production, where an unlimited number of individuals can mix multiple channels of audio simultaneously and together from anywhere on-line using a standard flash-capable browser. The audio output of the application is broadcast on terrestrial FM radio and the users are ideally within the broadcast diameter.

Categories and Subject Descriptors
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1. INTRODUCTION

In 1995, there were already intense activities of audio streaming on the net. Drawing from previous communication projects[1], early events initiated by the Kunstradio in Vienna[7, 8], and later those by the Xchange network[16] sought to define strategies for converging available communications technologies. These new forms of “broadcasting” were polymorphic by nature, and in the best cases, aimed to provoke new kinds of participation in the event. Little by little, these events invented new ways to reformulate the monolithic one-to-many form of traditional broadcasting, and were either supplemented or replaced with a many-to-many or many-to-one topologies. Now, many years later, there is more acceptance and availability of streaming applications and technologies, allowing for more intricate mixtures to take place in both the kinds of tools that can be created and employed as well as the way in which “radio” events can be performed.[17, 11, 14, 15, 6]

2. THE USERRADIO APPLICATION

Userradio is a mixture of communication tools for collaborative on-line audio production. With this application, an unlimited number of individuals can mix multiple channels of audio simultaneously and together from anywhere on-line using a standard flash-capable browser.
that, a click on the auto-fade button will incrementally adjust the
volume from its current position to the end position.

2.2 The Server Back-end

The server receives the commands for each audio channel, mixes
the audio signals together and plays the mixed sound on its sound
card output which is then broadcast on terrestrial radio. Ideally,
the “users” are within the broadcast diameter and listen on the ra-
dio.[See figure 2.] Additionally/alternatively, the server uses the
shoutcast external[10] to stream an mp3 encoded signal to an icecast audio server[9]. Because the server and client are only ex-
changing control signals, the actual audio output on the radio is
more or less instantaneous. In the case where audio is streamed on
the net, latency will of course become an issue.

The server software consists of a Pure Data[13, 12] audio engine
and a java communications gateway. The java gateway relays in-
coming messages in either XML or OSC (Open Sound Control)[5]
to the audio application. The audio engine plays and mixes the au-
dio. It includes an external called readanysf[2], that can play
multiple file types from files on disk or streamed from the network.
Because userradio streams its audio output on the internet and it
uses readanysf internally to read streams from the net, multiple
userradio servers can be linked together to form an intricate net-
work of migratory audio.

3. EXAMPLES

Userradio is intended mainly for real-time control of FM radio,
where a mid- to low-grade computer with an audio output device
can serve an analogue audio signal at a single location while simulta-
neously broadcasting a digital audio stream to multiple locations
on a network. An example is the Fundamental Radio[4] show on
Radio FRO in Linz, Austria where an hour of radio has been regu-
larly produced simultaneously by two individuals, each in separate
locations (their own apartments) away from the radio studio.

While userradio is built mostly as a live audio mixer, it could
also be used to control audio via automation. Any kind of client in-
terface could be made that can read/write TCP/IP or UDP sockets.
A simple PHP or Python script could start, stop and fade separate
channels based on a time-line or some other criteria.

Userradio has also been implemented for other means, such as the
Radiotopia project at the Ars Electronica Festival 2002[3] where
the output from the 4 channels of userradio were projected from the
4 separate sets of 160,000 Watt loudspeakers in the OMV Klang-
park for a 4-channel outdoor audio environment. Here, the demo-
cratic nature of userradio was exposed as several users either fought
for control or learned to take turns. Also, as sounds were uploaded
to the database, the most favorable audio pieces were those that
were less polished and could mix well with other sources.

4. CONCLUSIONS

While userradio allows for a considerable amount of online con-
tral without the necessity of having someone in the production stu-
dio to monitor the stream, it is not meant as a drop-in replacement
for the hands-on immediacy of real equipment in the studio. It
should simply allow for a different approach to production, where
the militant regularity of radio schedules can be matched with an
online production entity that is always “on”, waiting to be triggered.
Additionally, it should encourage a needed communal or represen-
tative character to the radio medium, where the space of production
is spread amongst it’s listeners.

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1 An “external” is an extra plug-in for the pure data environment.