

# Mobile Networked Music Demonstration: *Sequencer404*

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## Abstract

*This paper describes the demonstration of an application for multi-user control of a musical sequencer through telephony and Voice Over Internet Protocol (VOIP). Participants phone into a central server and through the use of the numeric buttons of their device, control the rhythm and pitch of their selected instruments, collaboratively generating a musical composition.*

## 1 Introduction

*Sequencer404* is a collaborative, networked music system in which users phone in using any type of touchtone telephone device (payphone, cell, landline) and are able to create musical compositions. The heart of the system is the server-side sequencer that is based off of a simple 16-step pattern sequencer of the type commonly found on drum machines from the 1980's (ex: Roland TR-808). Each user is assigned an instrument to control and each receives the audio generated by all users in the group. *Sequencer404* enables networked musical collaboration amongst mobile non-located groups, building upon existing multi-user musical interfaces and networks [1, 2]. Unlike the desktop computer paradigm, our system leverages users' mobility and their local sound environment, exploring issues relating to Weinberg's notion of synchronous centralized networks [3] and musical collaborating using limited input channels.

## 2 Software and Control

The software system we have created for *Sequencer404* utilizes Skype for VOIP connections with the users to perform DTMF recognition for control of the sequencer. It also handles the communication between Skype clients and the server program, currently implemented in MAX/MSP.

We have created four instruments for users to choose from: bass synth, FM lead synth, drum machine, and sampler. Each instrument works in a similarly, with the phone keys '1-9' mapped to a sound or note depending on the instrument. The '0' key is used to erase the pattern and the '#' serves as a tap tempo control that effects the entire system. The sampler is unique in that it allows users to

sample from their physical environment and map the sounds chromatically to their keys, stressing the mobile aspect of *Sequencer404*.

## 3 Aesthetics

*Sequencer404* embraces the low fidelity audio quality of phones in its aural palette. These compositions are intended as expressions that explore these limitations, where too many simultaneous sounds distort into noise. Sharing sound through invisible networks, as participants wander through various physical spaces, investigates collaborative presence and emphasizes the mobile aspects of such a network. As opposed to collocated collaboration, the medium becomes the singular mode for interacting and communicating. This interplays with the physical environment of the participant, which informs their input to the group.

## 4 Future Work

Future improvements and features that we will have implemented for ICMC2006 include building a J2ME client for cell phones that will work with the existing audio system. We are also investigating more musically interesting methods of control, using voice pitch detection for both the pitch control as well as for control of higher level musical features. Novice users can benefit from the simplistic system currently in place, however adding control for rhythmic stability and melodic contour in more advanced user modes will provide a more engaging experience for advanced users and musicians.

## References

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