

Mini-Project Presentation

Mini-Project
Soundgates – Interactive Music Synthesis on FPGAs



Outline

- Objectives
- Ideas
- Overview
- Live demo
- Prospect



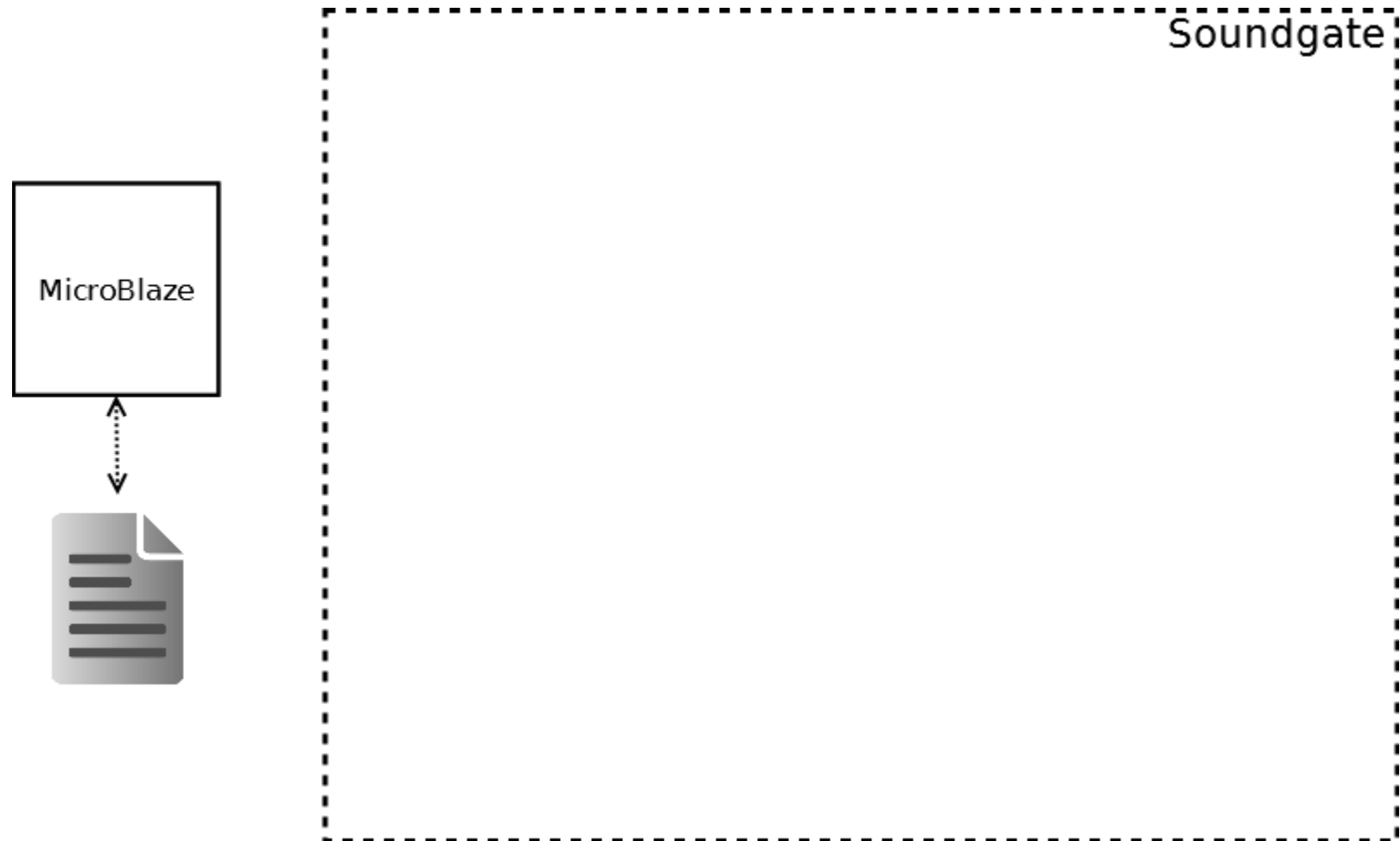
Objectives

- Objective of supervisors:
Get sound of out the PmodAMP3 Sound Module
- Group objectives:
 - Possibility to play different sounds (controlled with hardware buttons)
 - Possibility to play well known sounds

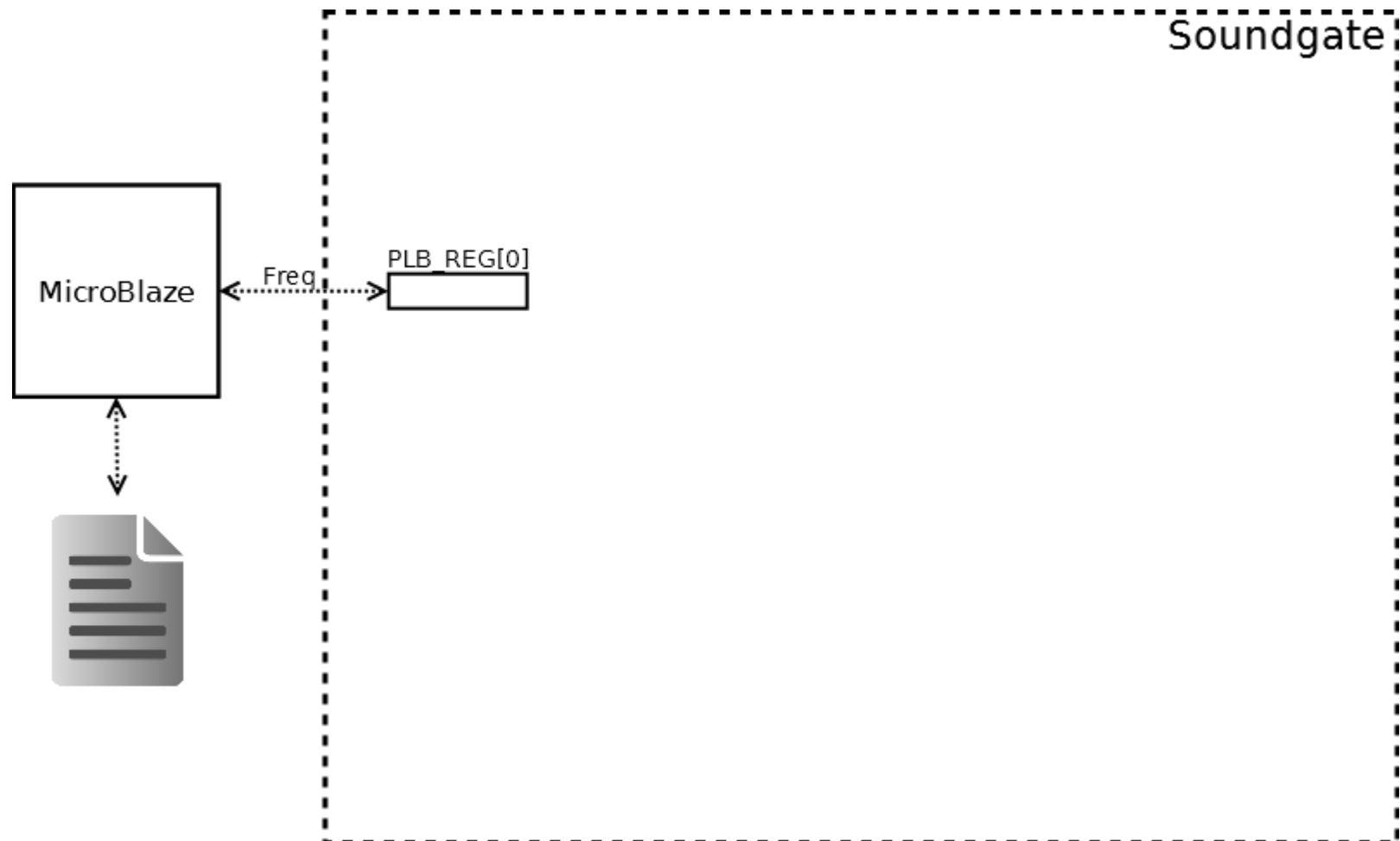
Ideas for the implementation

- Convert WAVE files to a ROM
- Usage of the CORDIC algorithm to play sine and cosine waveforms
- MIDI controlling of the CORDIC

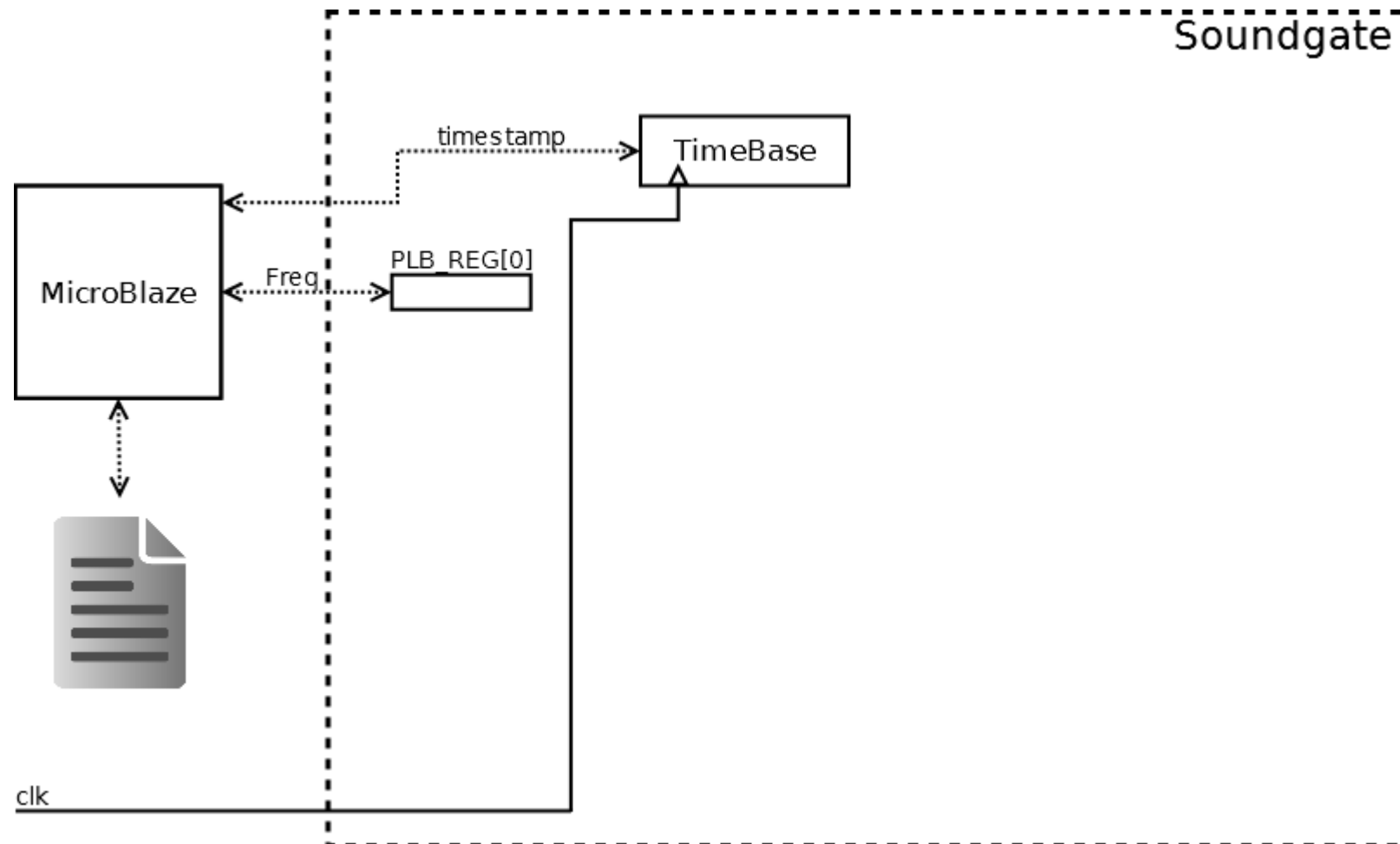
Circuit overview



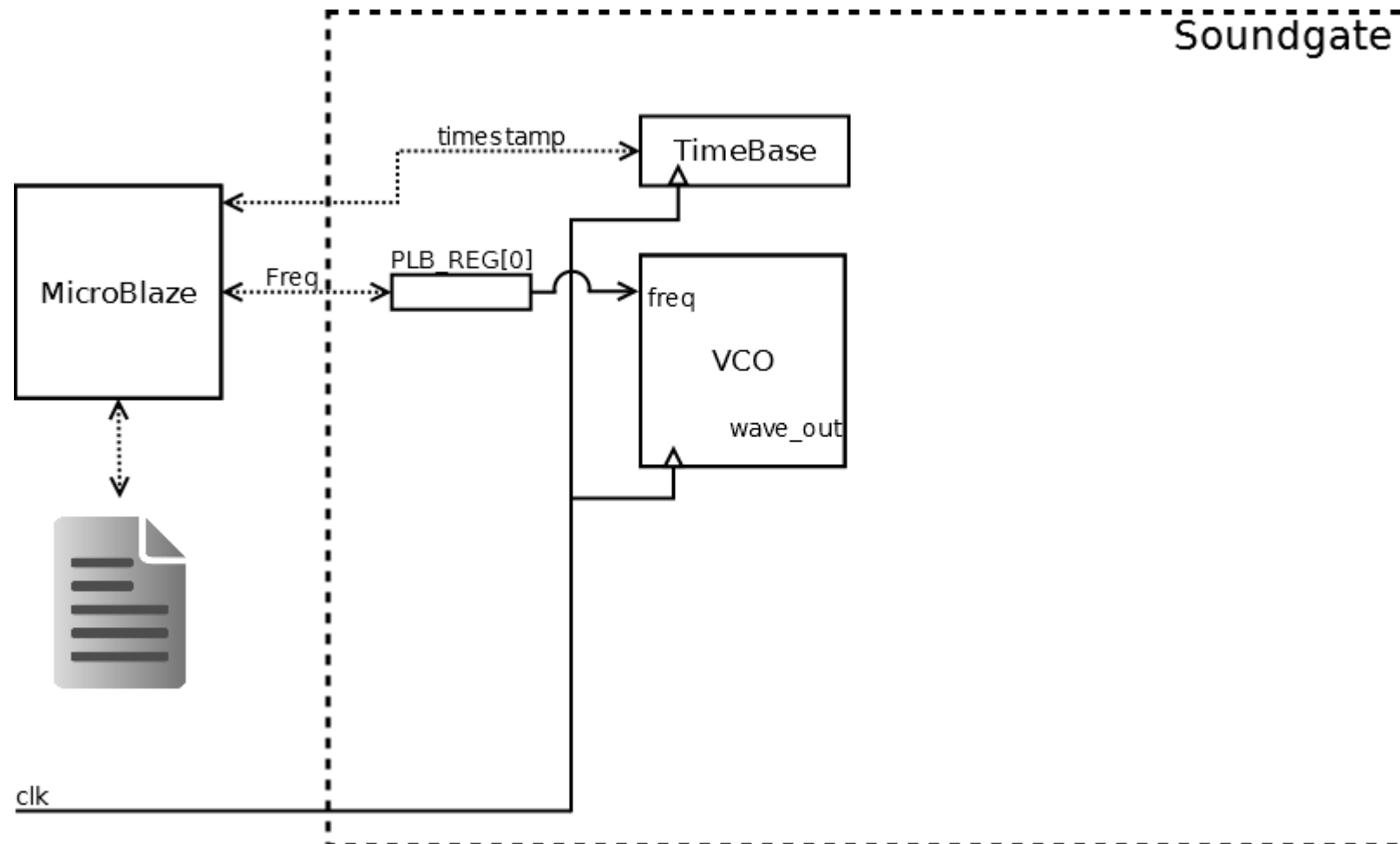
Circuit overview



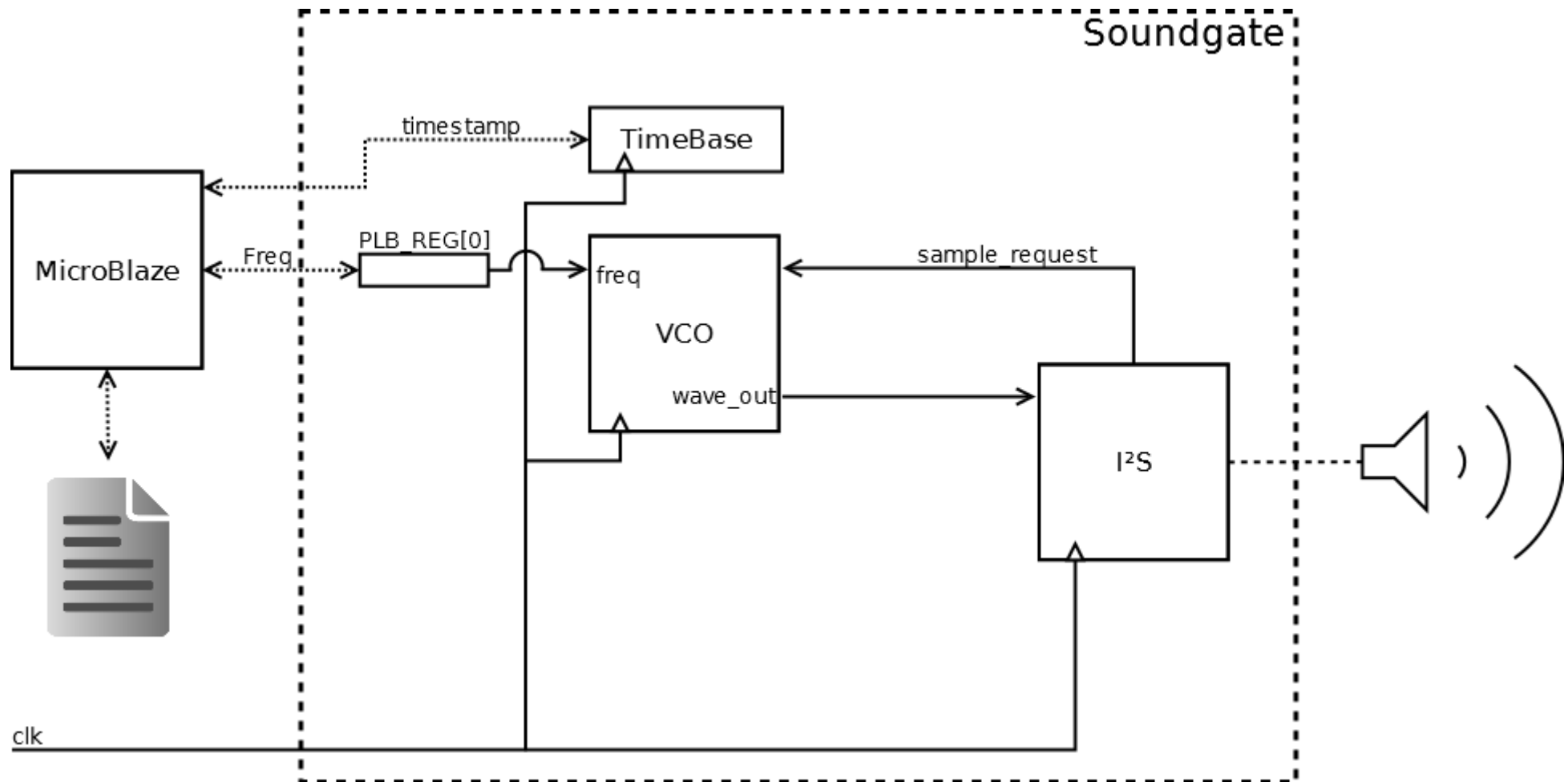
Circuit overview



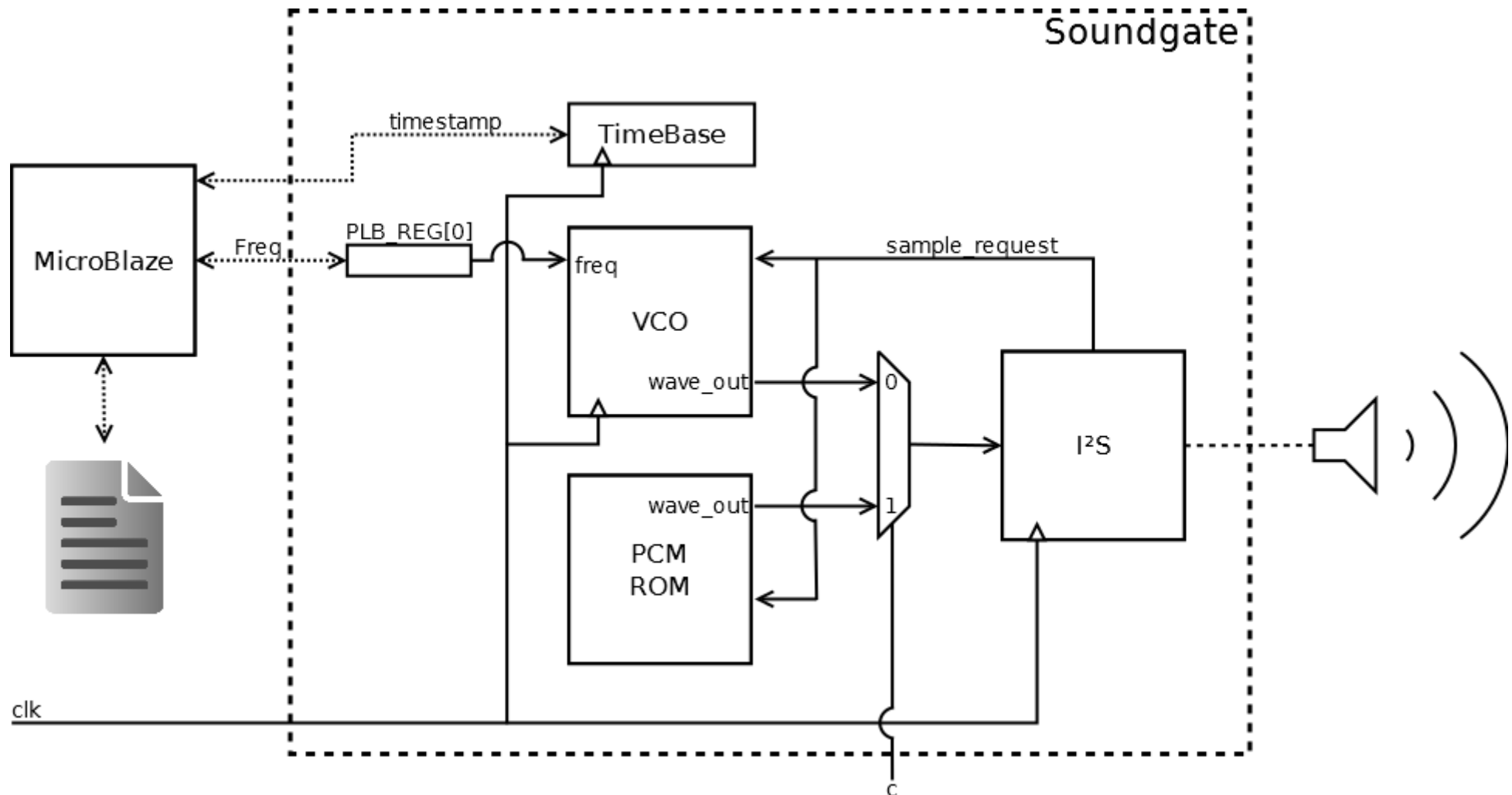
Circuit overview



Circuit overview



Circuit overview



Live demo



Prospect

- Use different DAC (replace PmodAMP3 with FMC-CE)
- Capability to stream MIDI files
- Add Filter
- Add more Waveforms (Square, Triangle, Sawtooth,...)
- Use one or more ROMs as background sound
 - e.g.: Drum loop
- MIDI support
 - Integration in existing creative audio environments
 - Control by standardized hardware (keyboards, ...)