

Programmable Audio Visualizer

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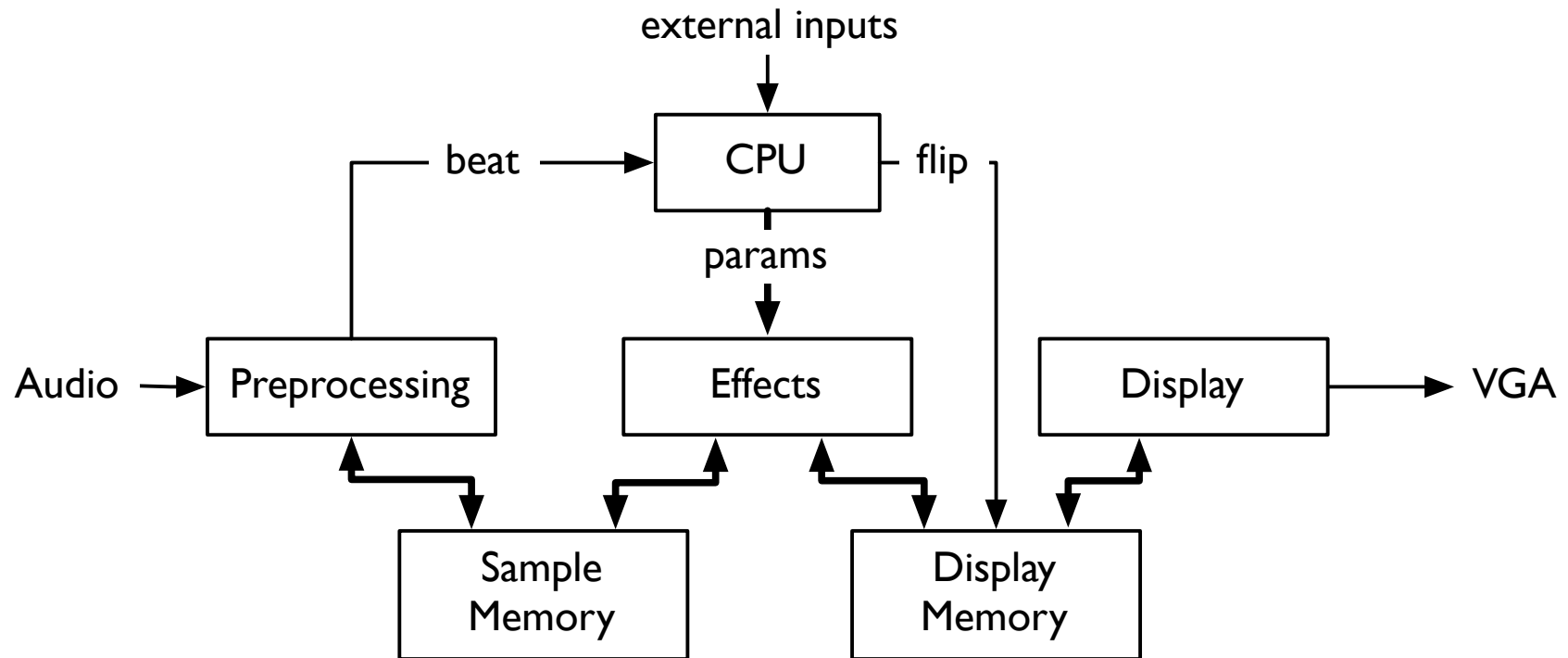
Goals

1. Visualize audio.
2. ???
3. Profit!

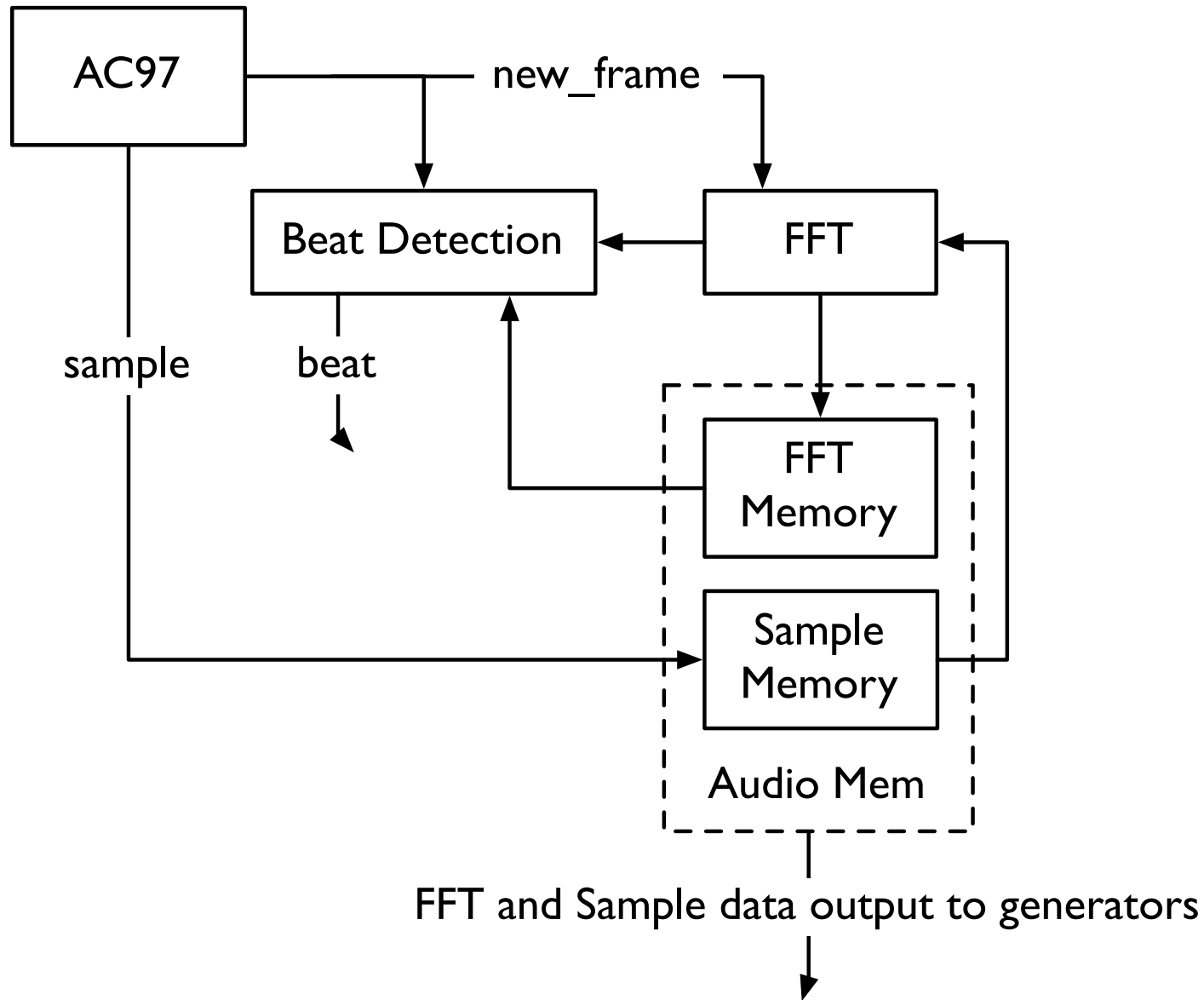
Goals

1. Visualize audio.
2. Make it Programmable!
3. Profit!

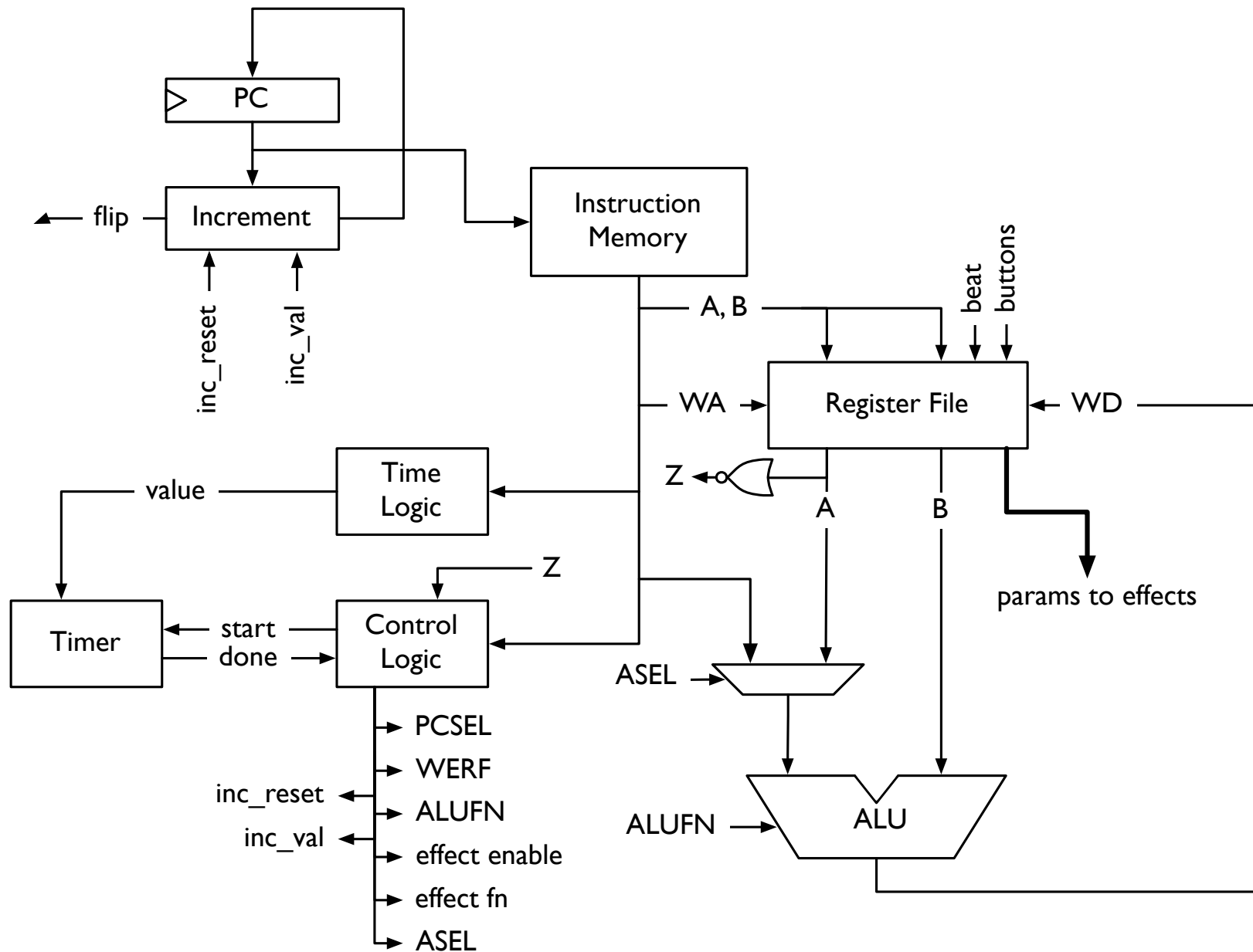
High Level Architecture



Audio Preprocessor



CPU



Programming

```
//initialize r1 on reset button
SKIPIF(rBUTTON0,1) //if rBUTTON0==0, skip 1 instruction
CMOVE(r1,0) //set r1 to 0

CMOVE(rDPARAM0,2)
MOVE(rDPARAM1,r1)
... //configure distortion registers

CMOVE(rGPARAM0,1)
MOVE(rGPARAM1,r1)
... //configure generators

GENERATE //run distortion/generators on buffer

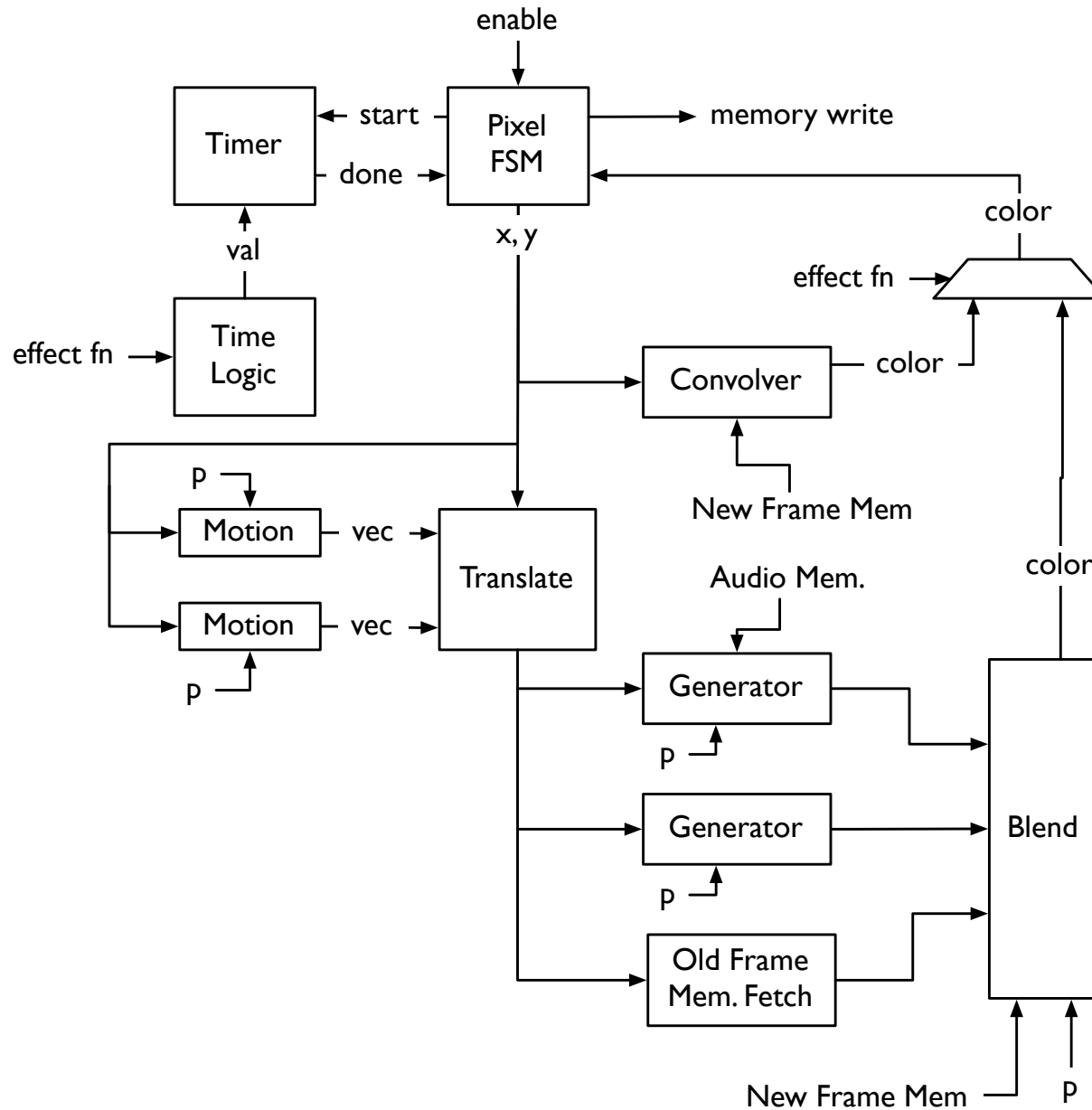
... //reconfigure distortion/generators
GENERATE

CMOVE(rC00,-1)
CMOVE(rC01,1)
...
CMOVE(rC22,-1) //specify 2D convolution (3x3)

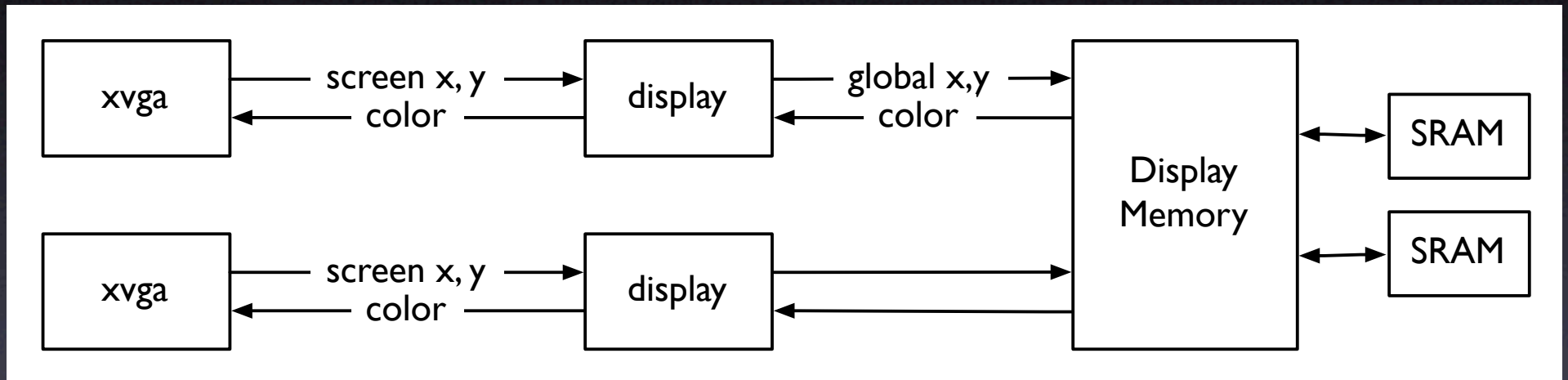
CONVOLVE //run convolution on buffer

ADDC(r1,1,r1) //vary parameters
```

Effects



Display



Timeline

Mike Spindel	Dany Qumsiyeh	Date
AC97 → Sample Mem, Pixel FSM	VGA, simple Display, SRAM	11/21
Generator, Blending	Display Memory, CPU substitute	11/28
Translate, Convolve	Full CPU	12/05
FFT, Beat Detection	Display scaling, motion/generators	12/12