

The background is a faded screenshot of a Dance Dance Revolution (DDR) game. It features a central playfield with four directional arrows (up, down, left, right) in various colors (blue, red, green, yellow). Above the playfield are two progress bars labeled 'Frame' and 'My Fire'. At the bottom, there are two score indicators: 'MARVELOUS 23x COMBO' on the left and 'PERFECT 46x COMBO' on the right. The overall scene is dimly lit, with the text overlaid in the center.

# Dance Dance Revoution

Jacob Kitzman

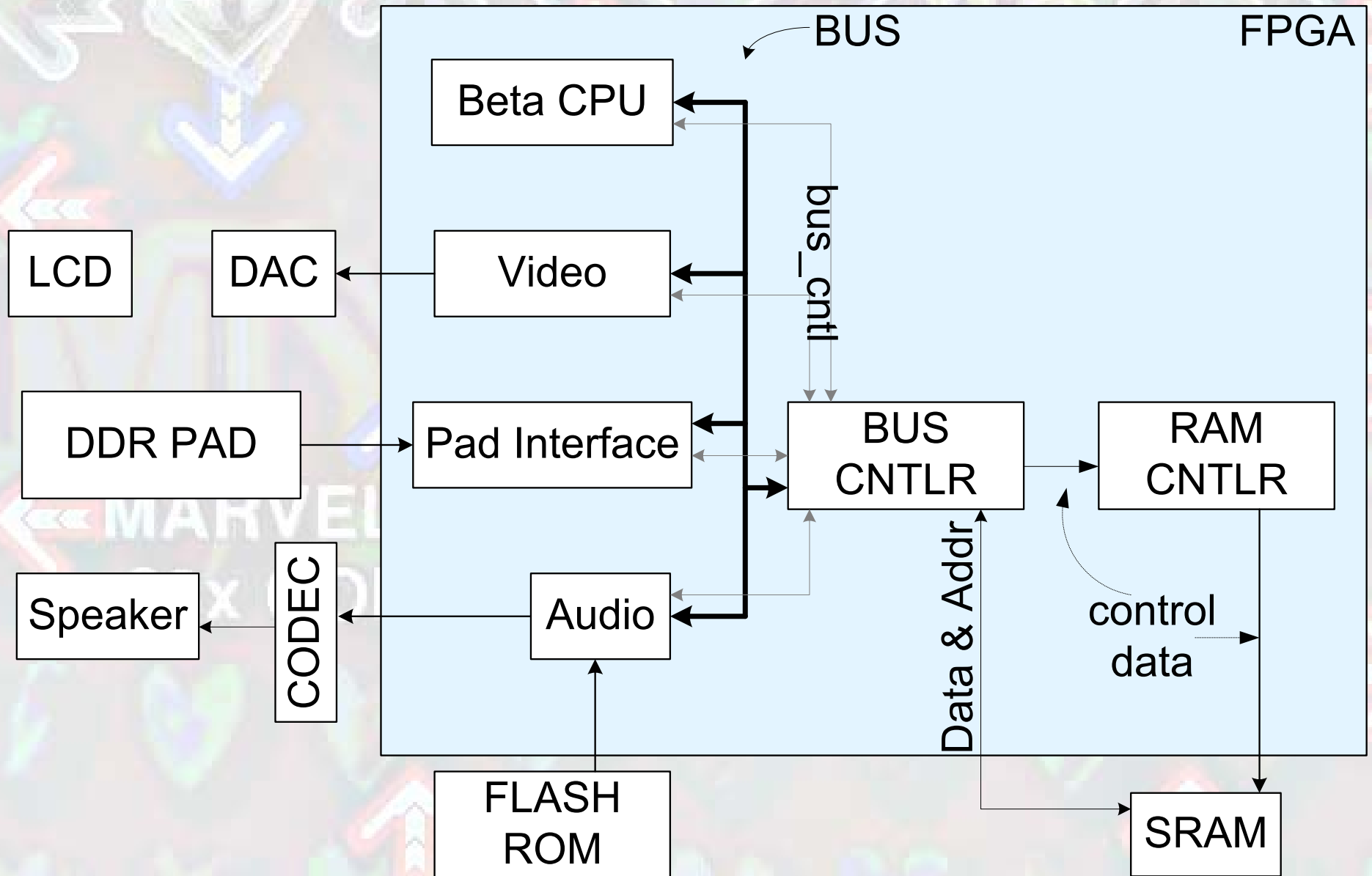
Chris Wurts

Yong-yi Zhu

# Design Overview

- User Interface
- Beta CPU
- Software
- Audio
- Video

# Overall Block Diagram



# User Interface

DDR Pad

10

Synchronizer

10

Control  
FSM

32

bus

2

bus\_cntl

FPGA

Frame

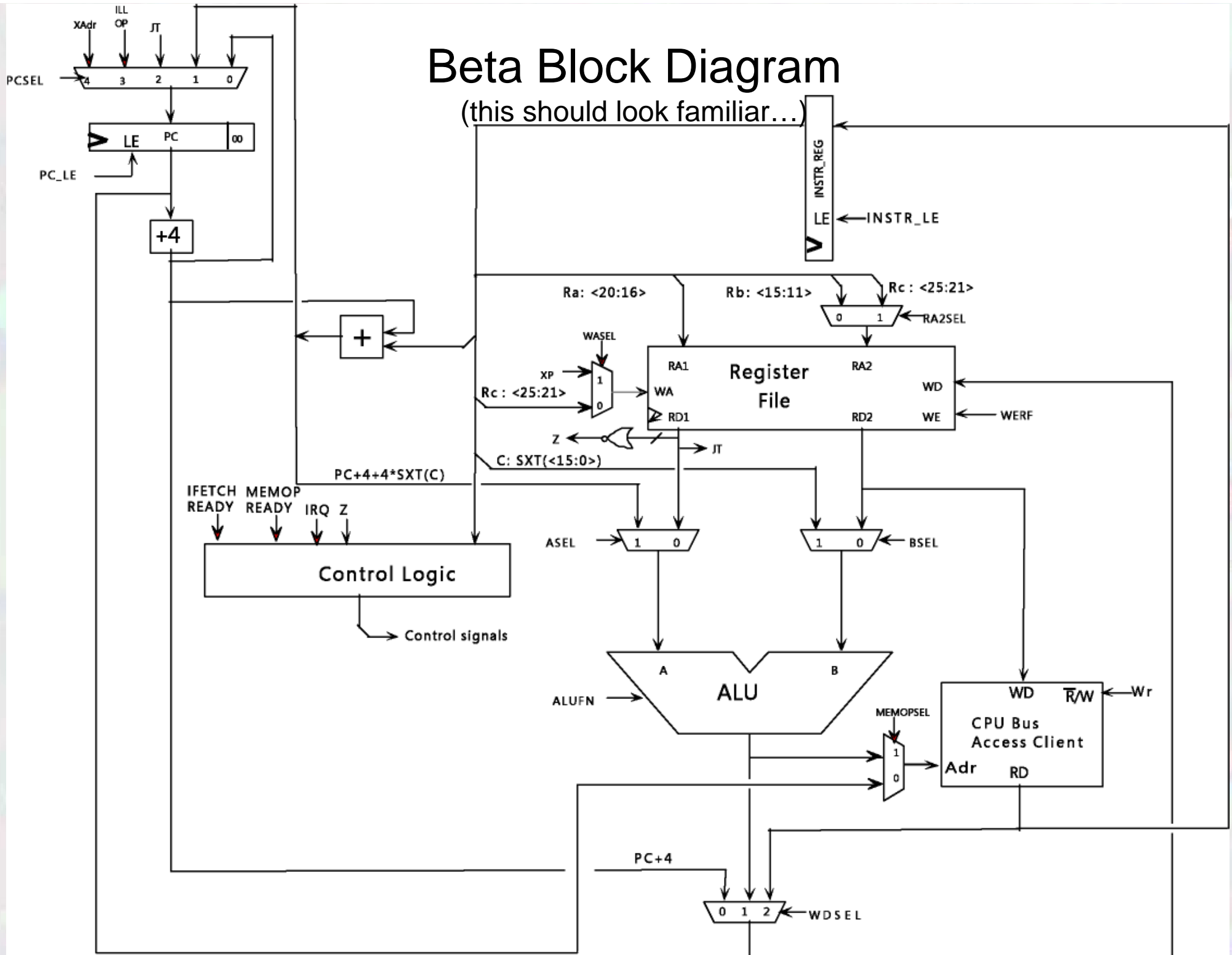
My File

# Beta CPU

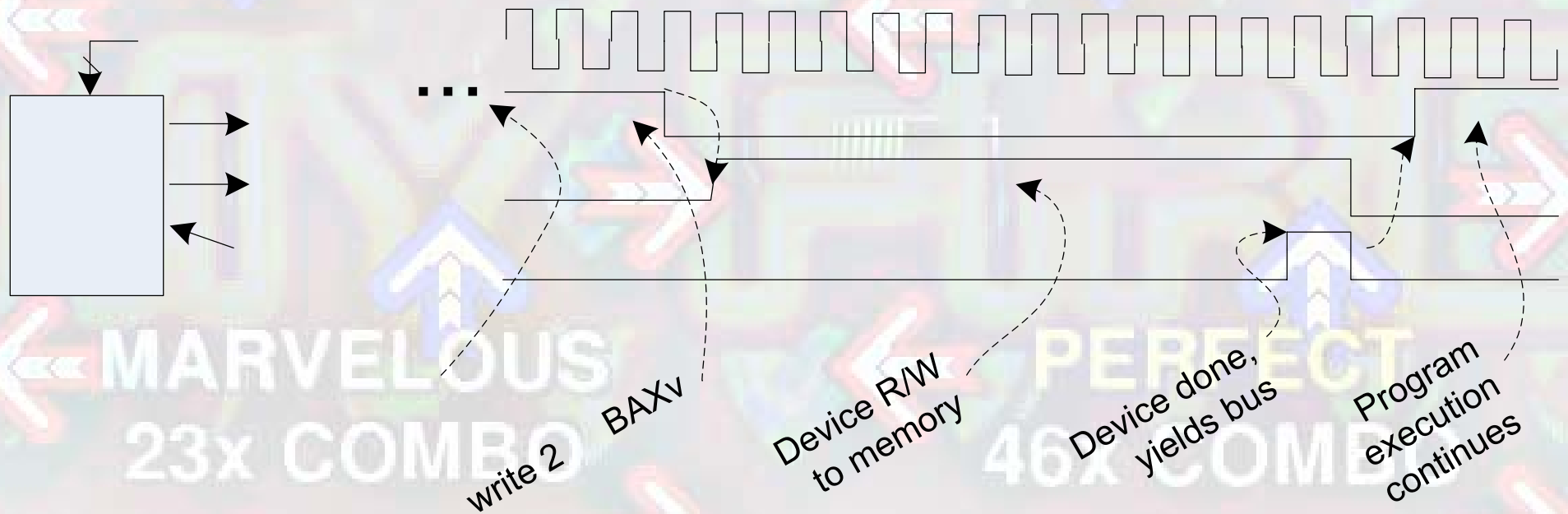
- Non-pipelined, 4.5 MIPS @ 27 MHz  
i386 (1993): 5 MIPS @ 16 MHz
- Full support for beta ISA
  - RISC “Load-Store” Architecture
- Shared memory bus
  - Bus controller arbitrates access to main memory between up to 8 devices.

# Beta Block Diagram

(this should look familiar...)



# Bus Access Mechanism

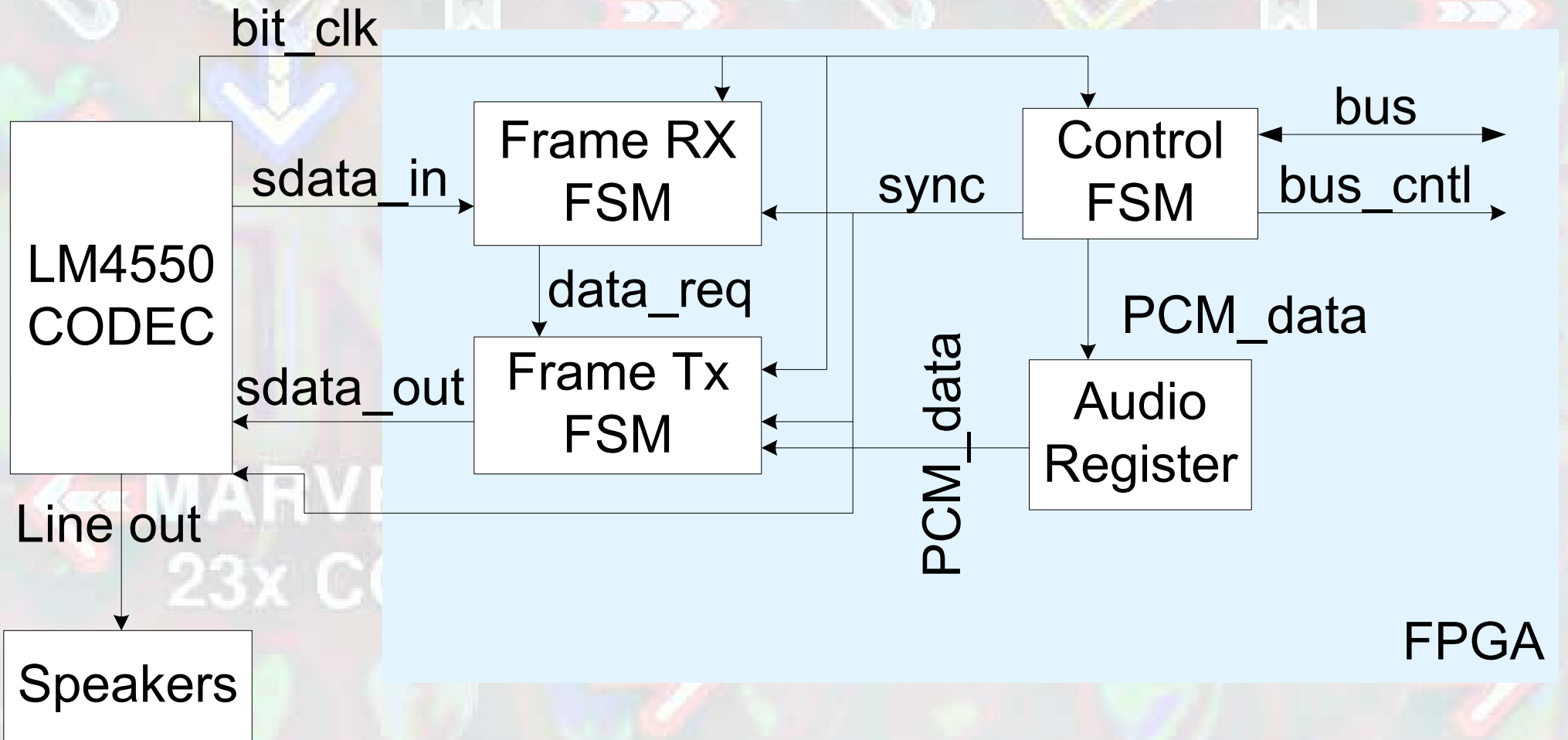


# DDR Software

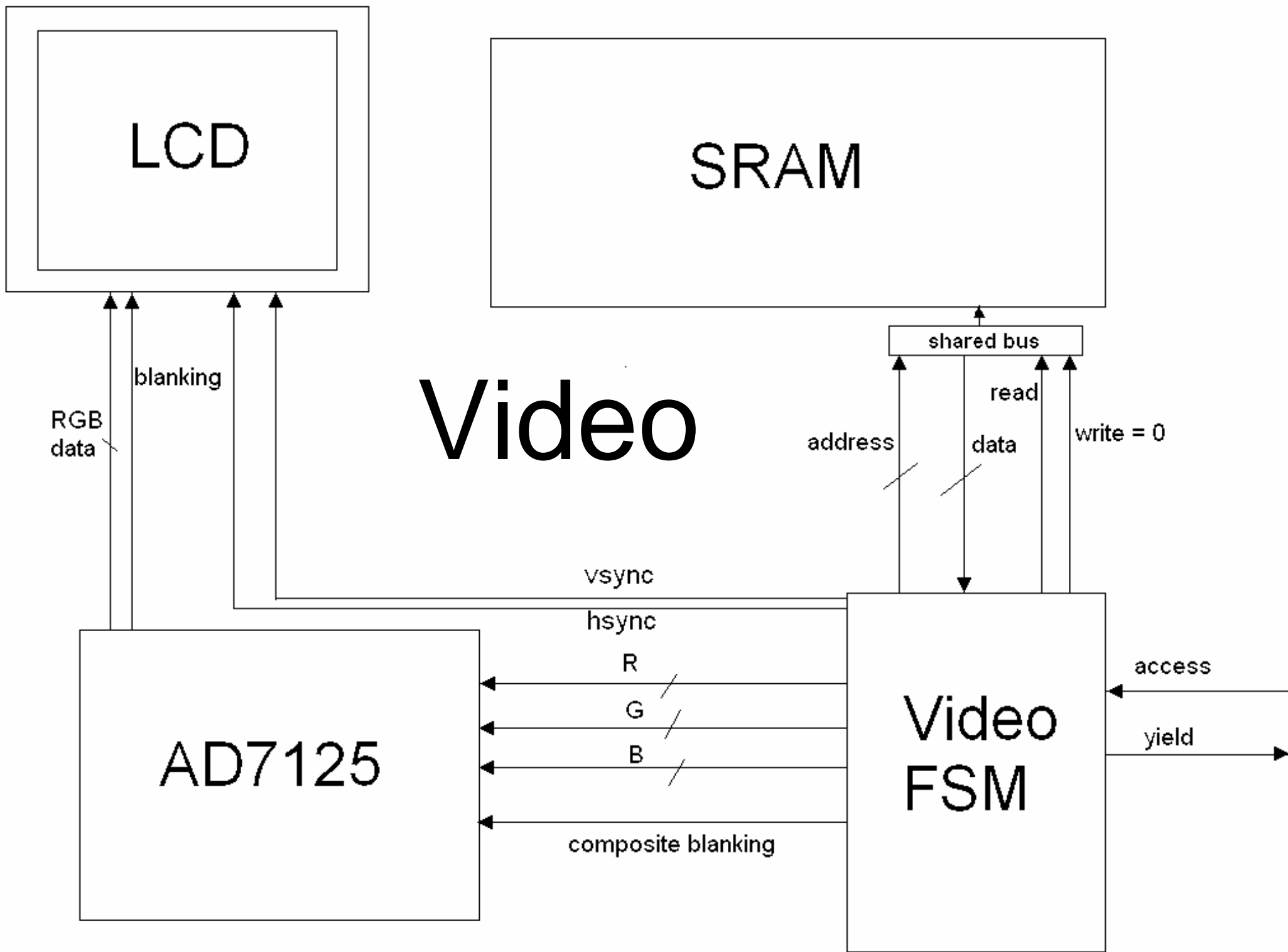
- Determine current time.
- Look at list of “correct” steps.
  - Any past by  $> \frac{3}{4}$  sec? No points! Advance ptr.
  - Any recently ( $< \frac{3}{4}$  sec) past? If matches user input, award points =  $f(\text{user\_time} - \text{correct\_time})$ . Dequeue input & advance correct step ptr.
- Any more user input?
  - Steps are early! If  $< \frac{3}{4}$  sec early, award points on same function as before. Dequeue input & advance correct step ptr.
- Rebuild display with upcoming steps & score
  - Gradient background + bilblt'd glyphs (text, arrows, etc.)



# Audio



FPGA



Frame

My Fire



# Q & A

**MARVELOUS**  
23x COMBO

**PERFECT**  
46x COMBO