

# Hand-Controlled Windows Manager

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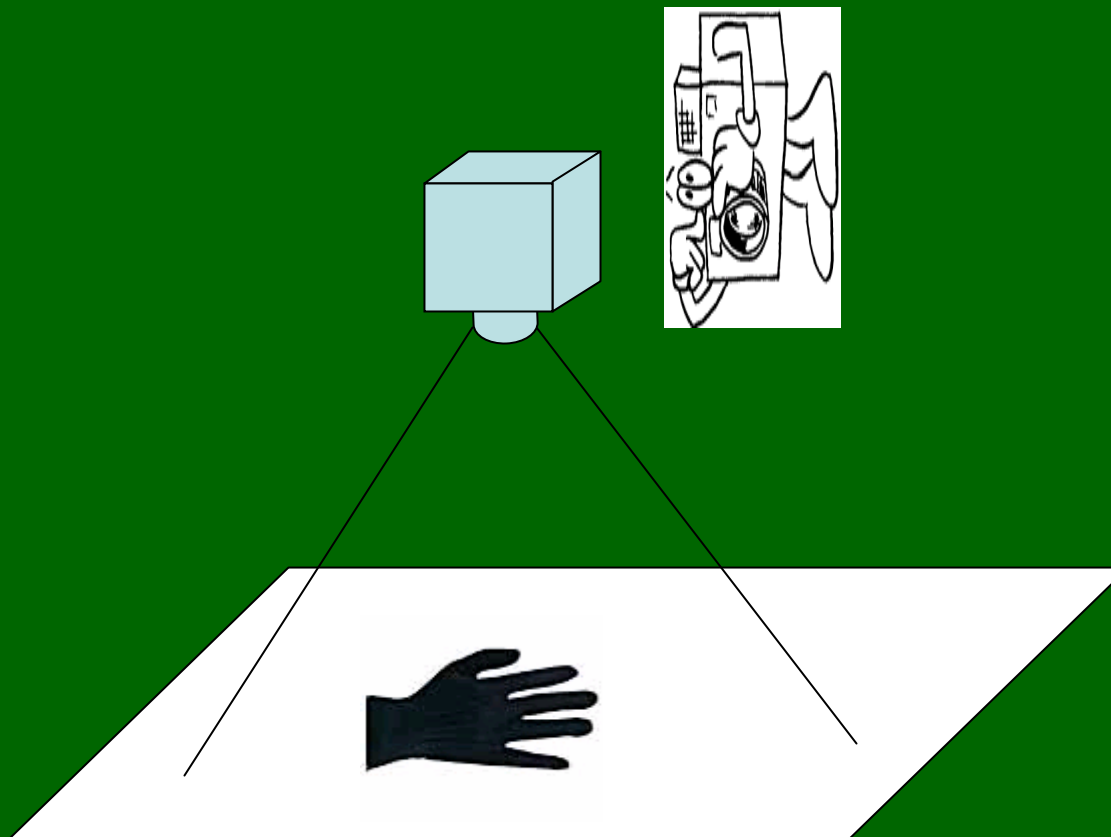
TA: Javier Castros

# Inspiration

- *Minority Report*



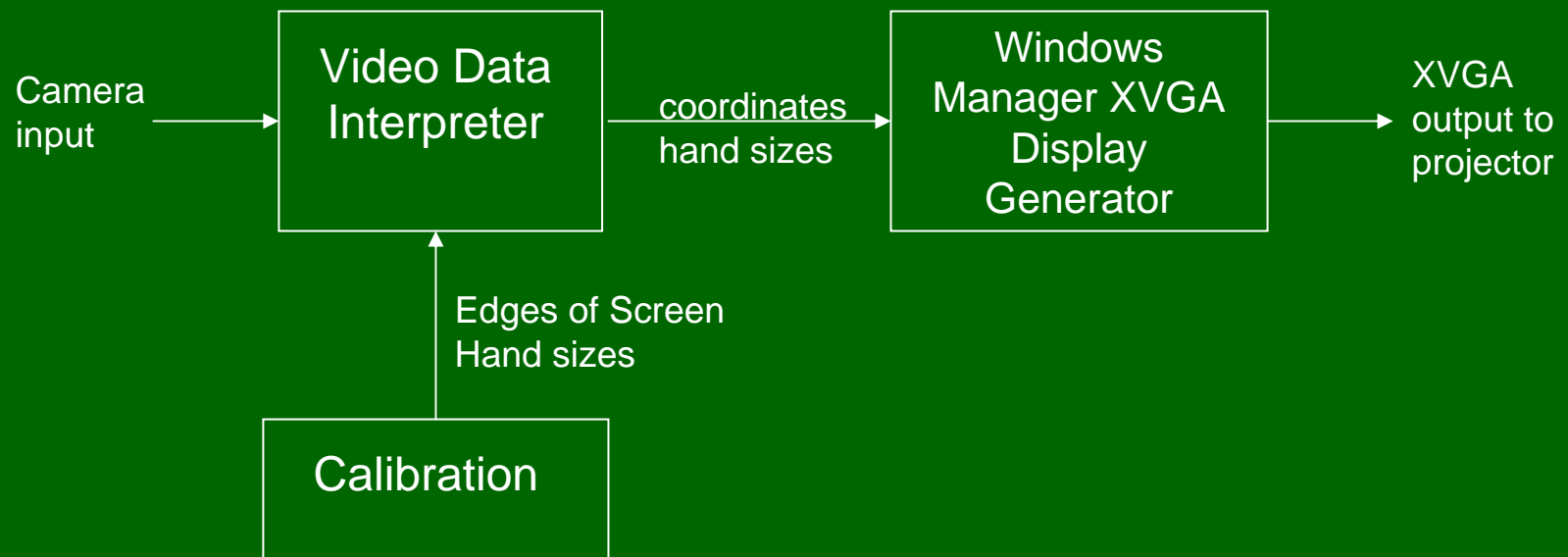
# Setup & Functionality



# Implementation

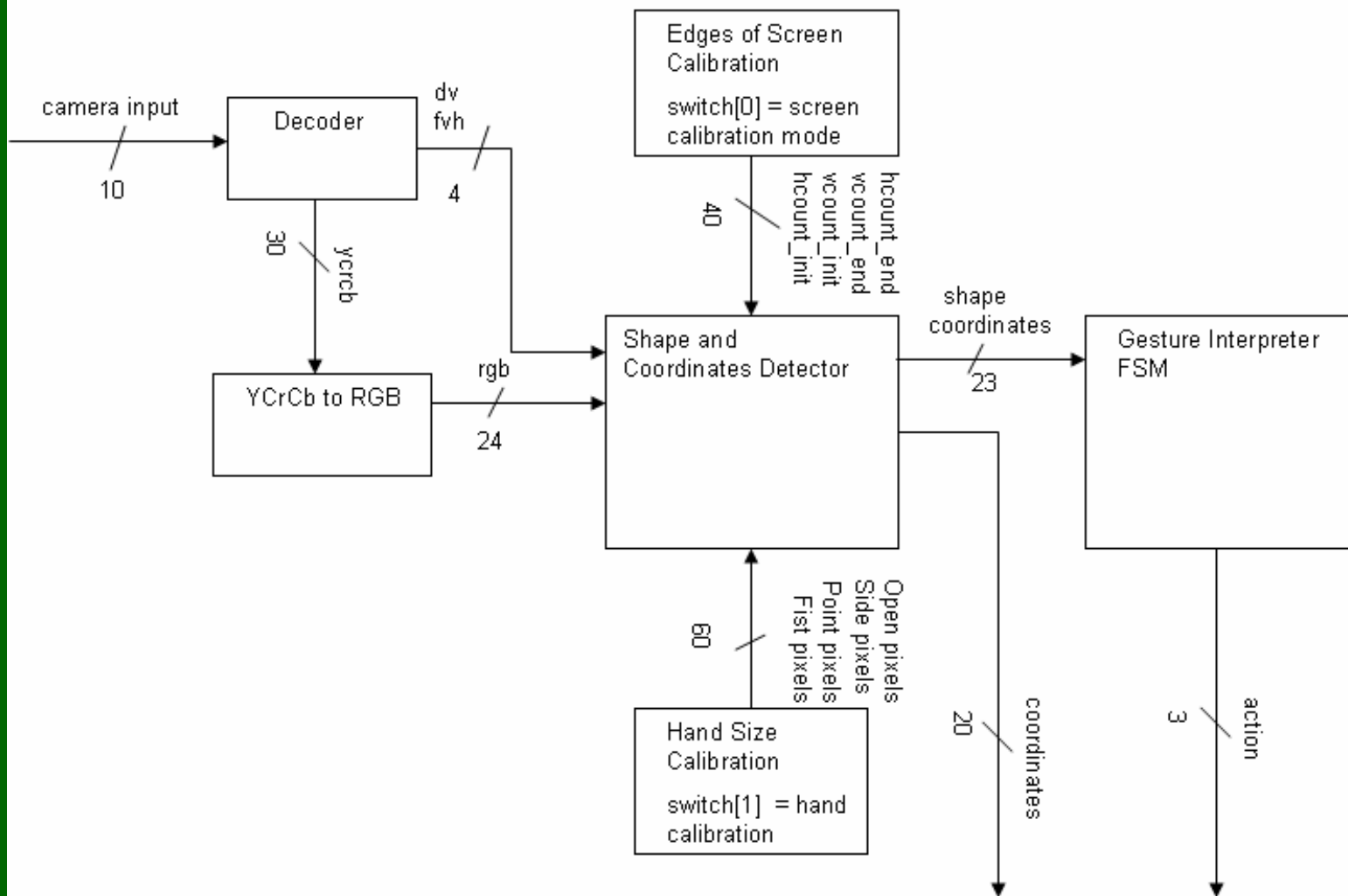
- Division of tasks

Basic Block Diagram

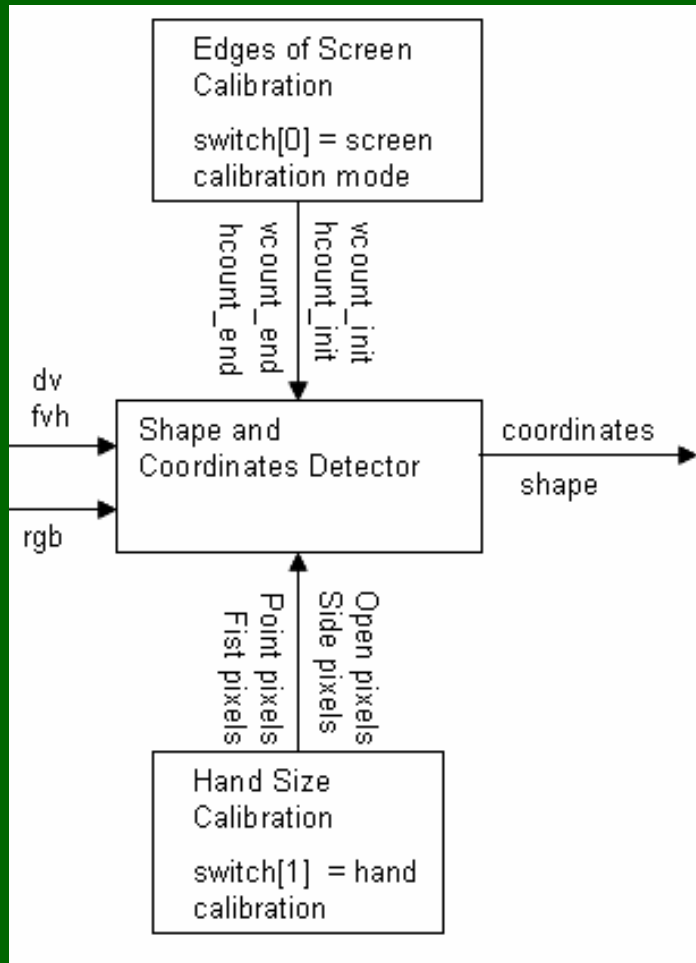


# Video Input Interpretation

## Block Diagram of Video Component



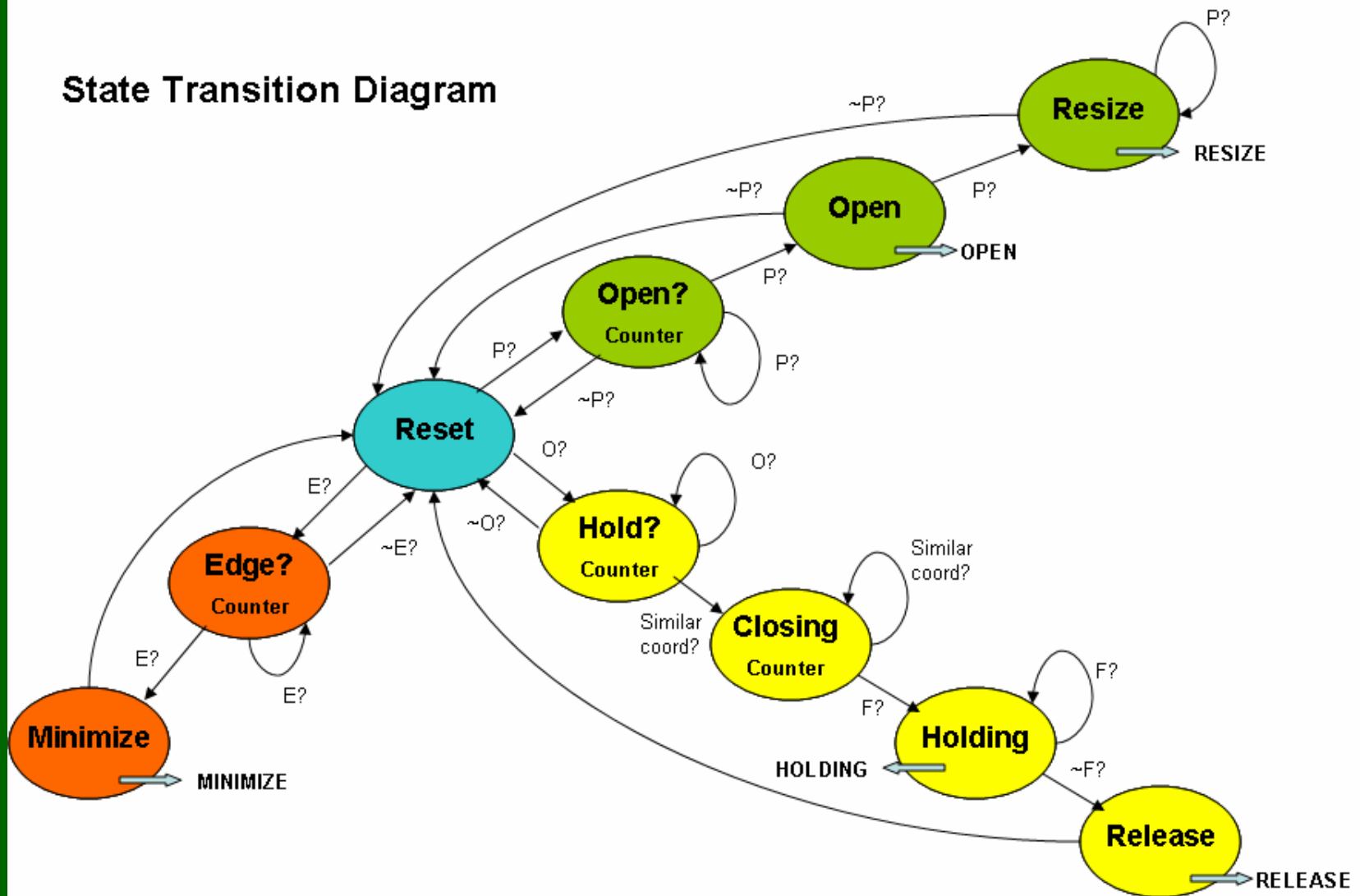
# Shape/Coordinate Detector Module



- Counts number of black pixels in each frame
- Based on calibration, determines shape of hand
- Hand shapes:
  - Open, fist, pointer, edge
- Averages hcount, vcount of black pixels to find coordinate of hand

# Gesture Interpreter Module

State Transition Diagram

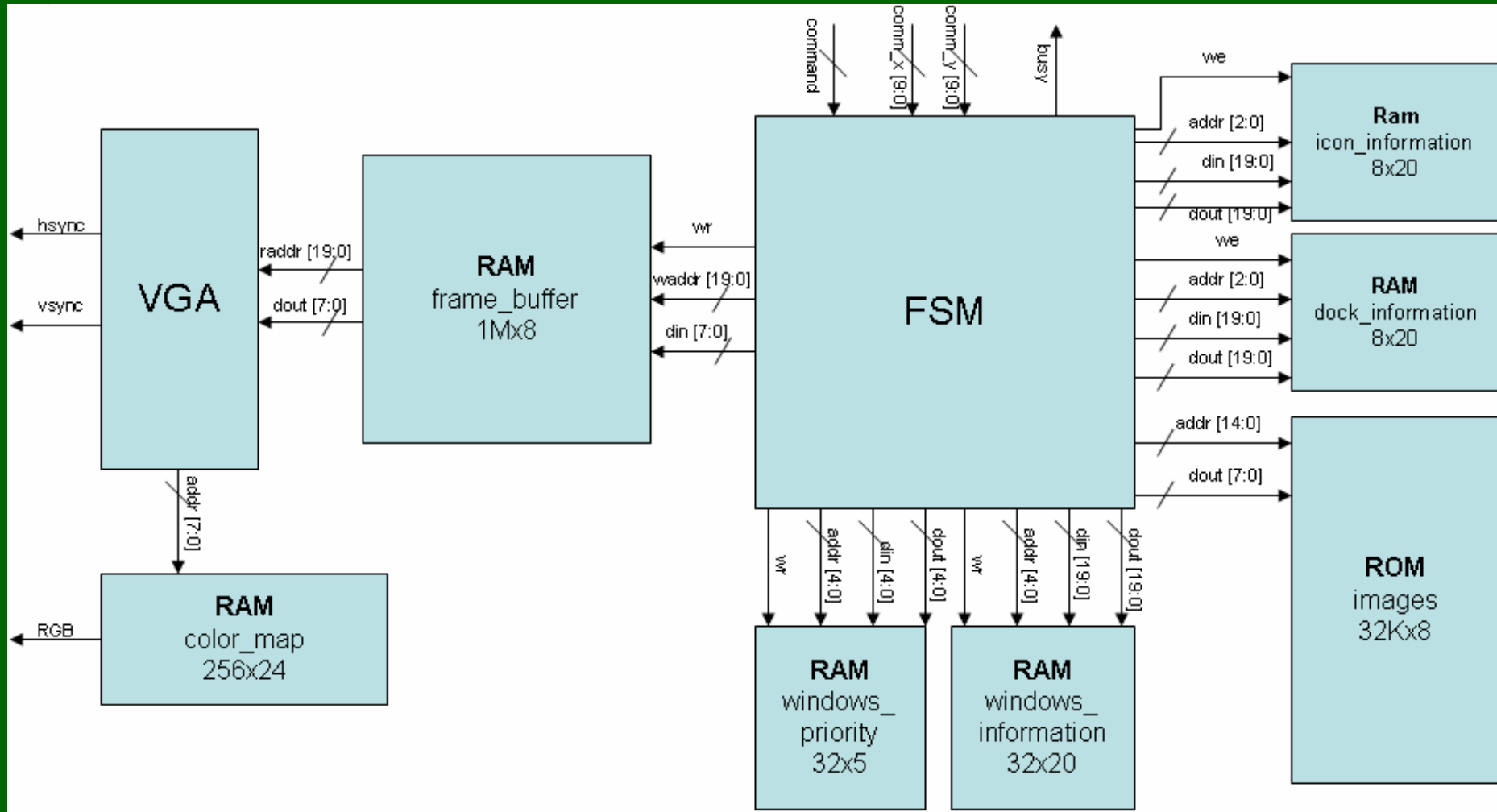


# Windows Manager

- A FSM takes in commands and updates a frame buffer.
- Information about the windows, icons, and dock objects are stored in RAM and ROM
- Screen size: 1024x768 pixels
- 8-bit color: requires a color map
  - Use Matlab to convert Bitmaps to .coe files



# Block Diagram



# FSM – modularity

- Divided into smaller modules that communicate with the RAMs and ROMs
- Use mux to between the module and memories
  - find\_windows, find\_icons, find\_dock
  - update\_priority
  - add\_window
  - update\_area