Edge Detection using Sobel method on FPGA

by

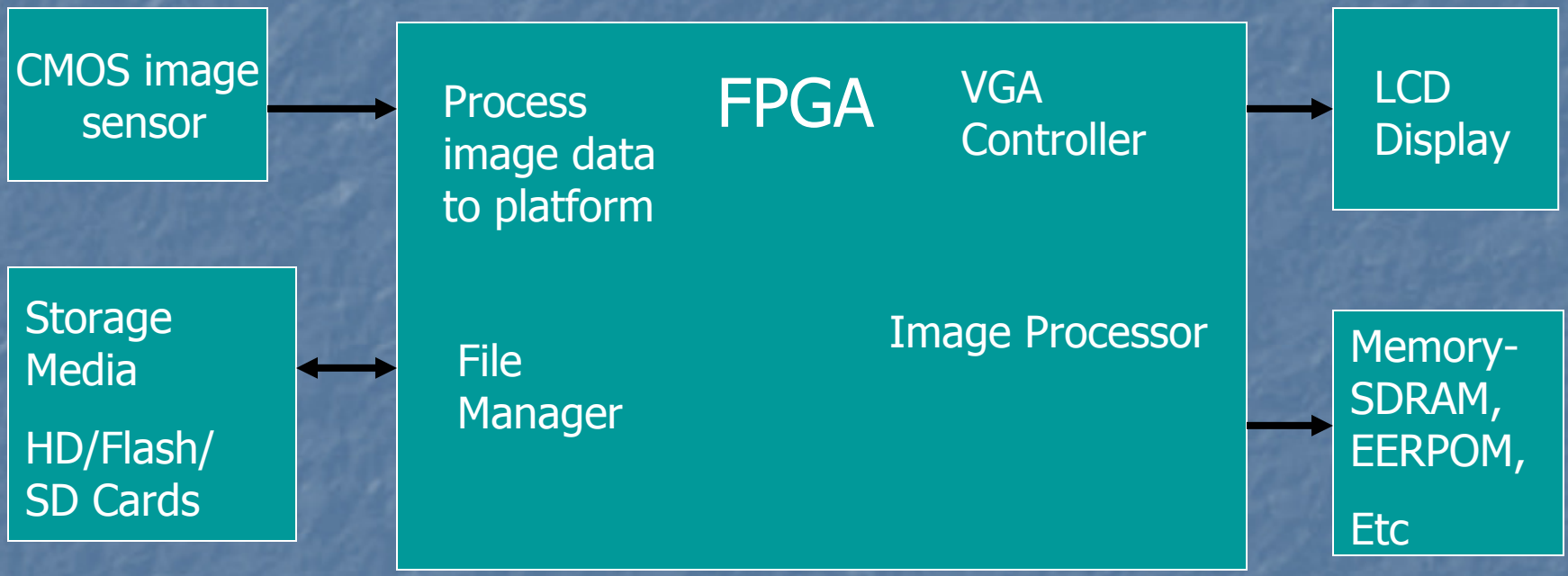
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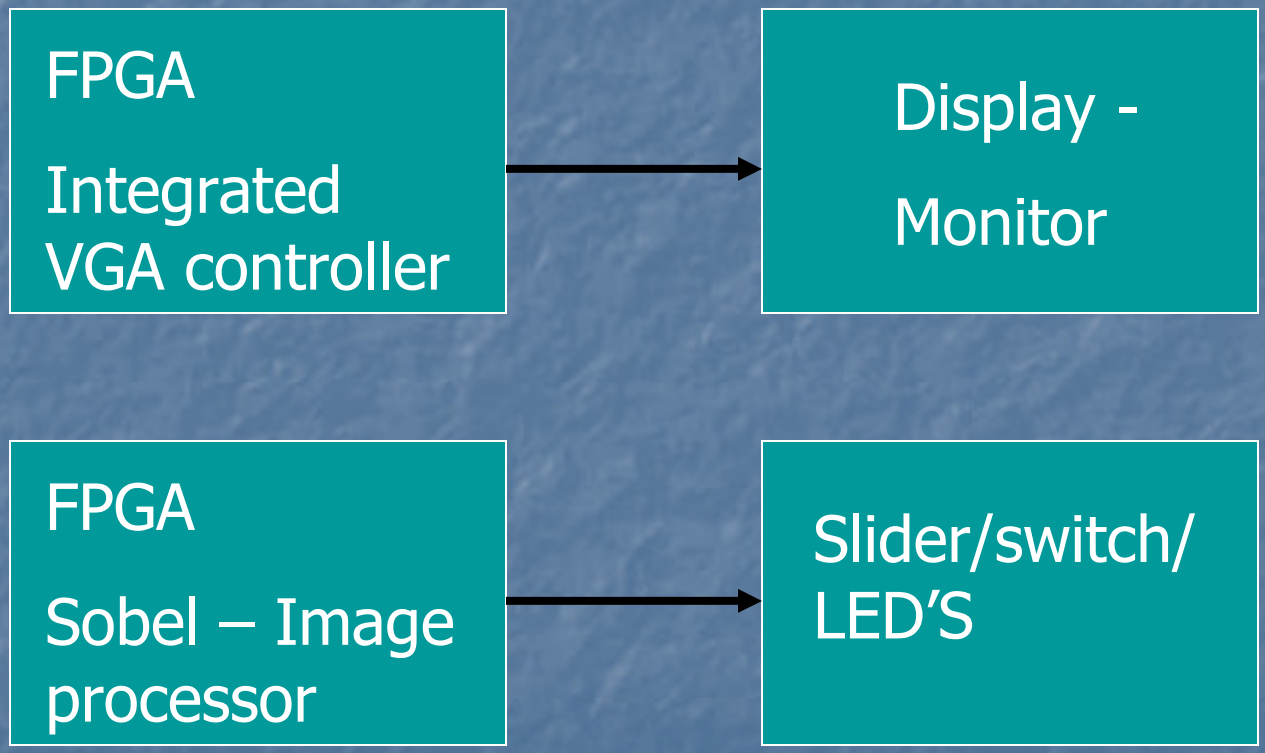
Problem / Engineering Application

- Develop a framework for handheld image processing application for medical industry
- A handheld device will enable a professionals in Ocular space to extend services to remote underdeveloped areas such as Africa, South America, etc

Design Goals – High Level Block Diagram



Demonstration



Theoretical Calculations

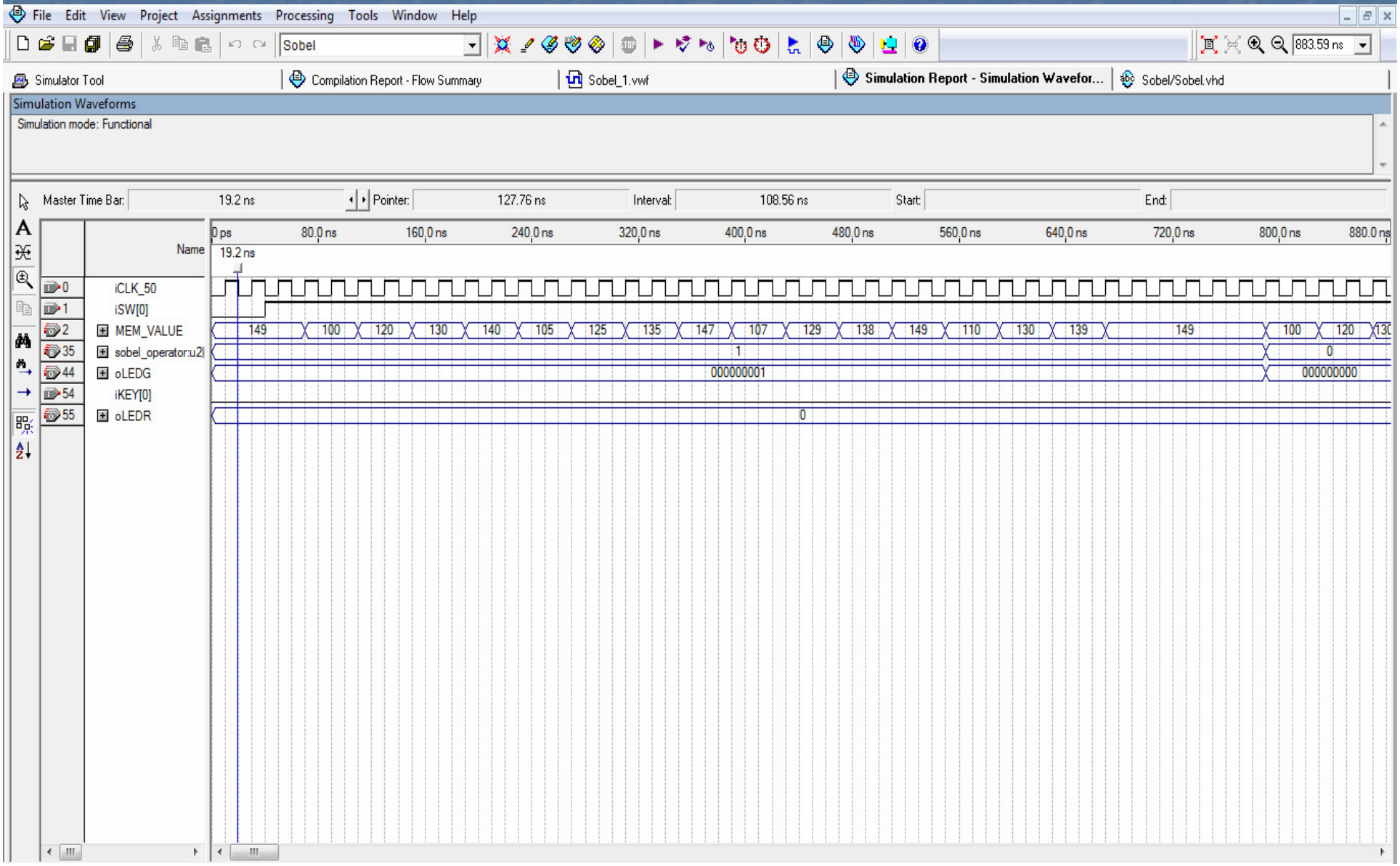
Image Data - PIXEL Data			
100	120	130	140
105	125	135	147
107	129	138	149
110	130	139	149

Sobel Operator - Horizontal		
-1	0	1
-2	0	2
-1	0	1

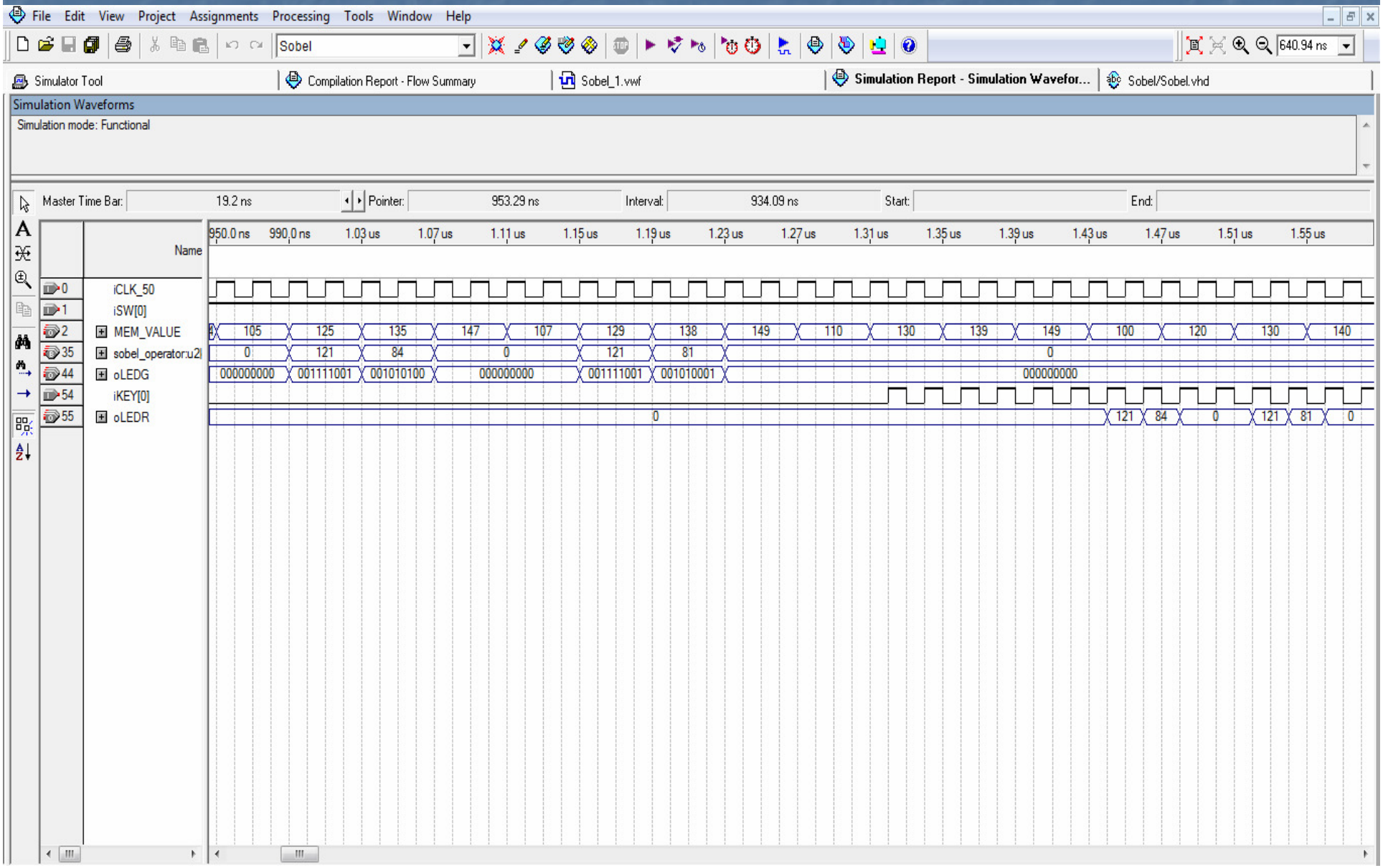
Results	
121	**84**
121	**81**

81	**1010001**
84	**1010100**
121	**1111001**

Simulation – Sobel Method



Simulation – Sobel Method



Take Ways

- Integrate Verilog into VHDL
- Improved understanding on VGA controllers
- Image processing – Edge detection
- Memory and further appreciation on signal timing