Trigger Processor Implementation

Nathan Felt
Harvard University
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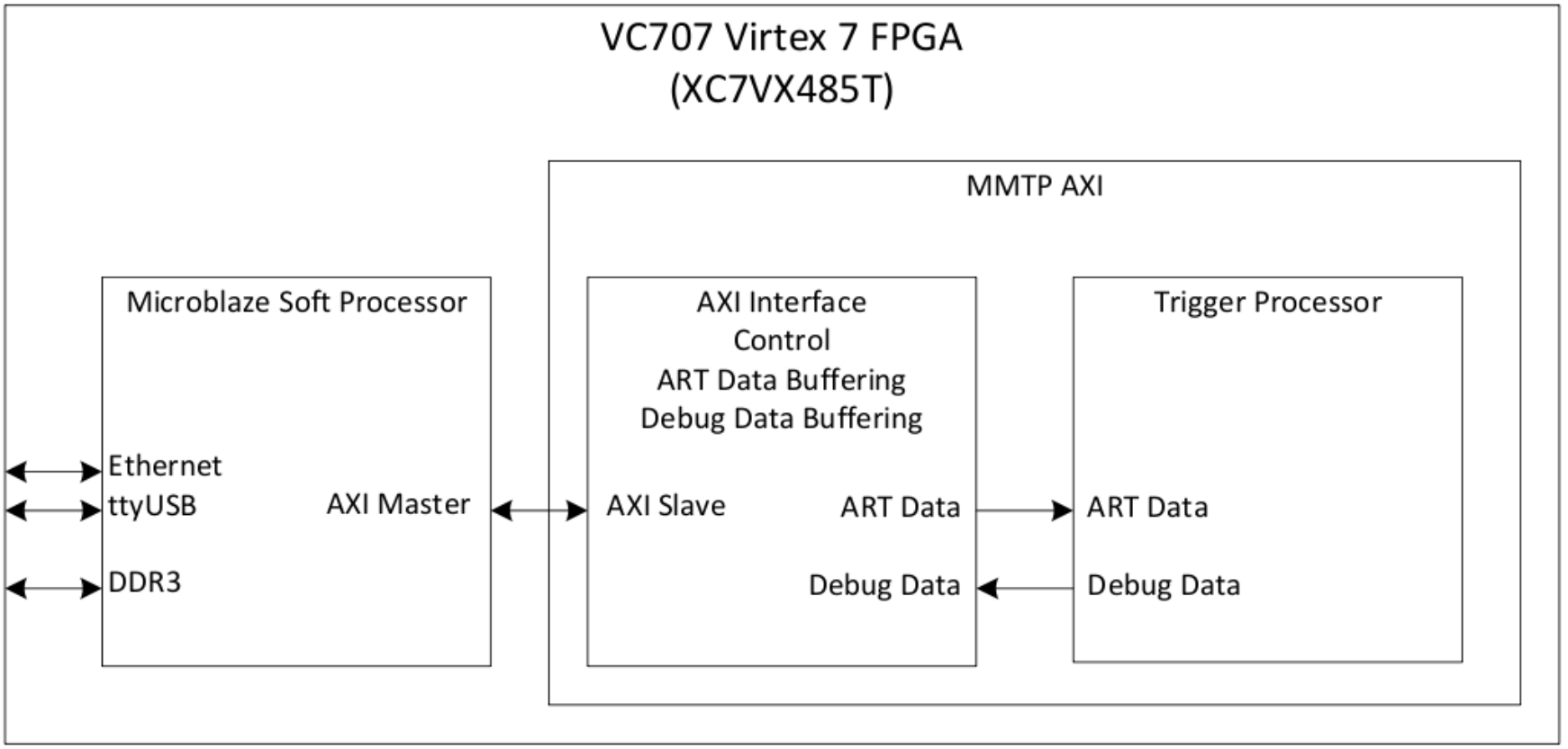
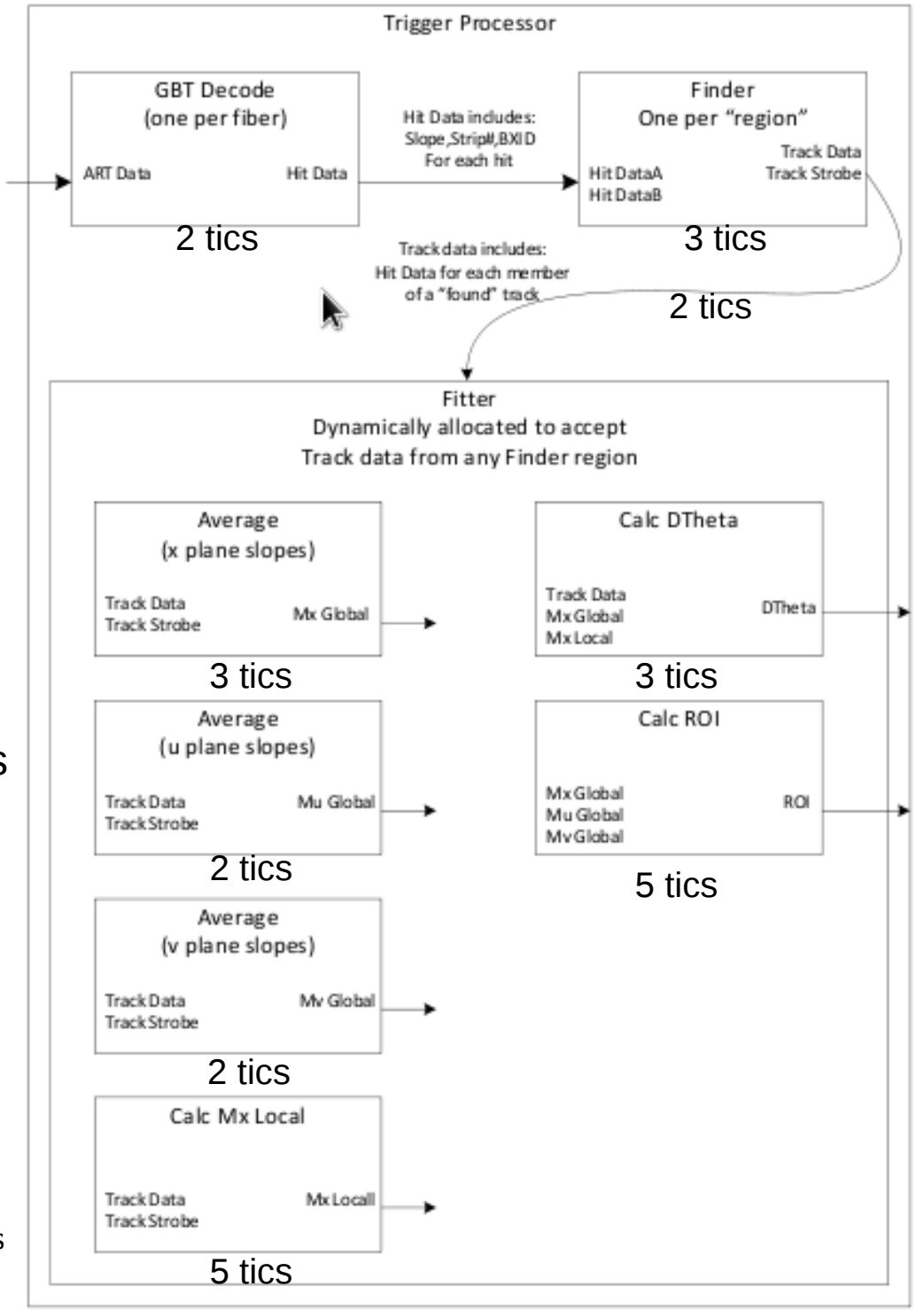
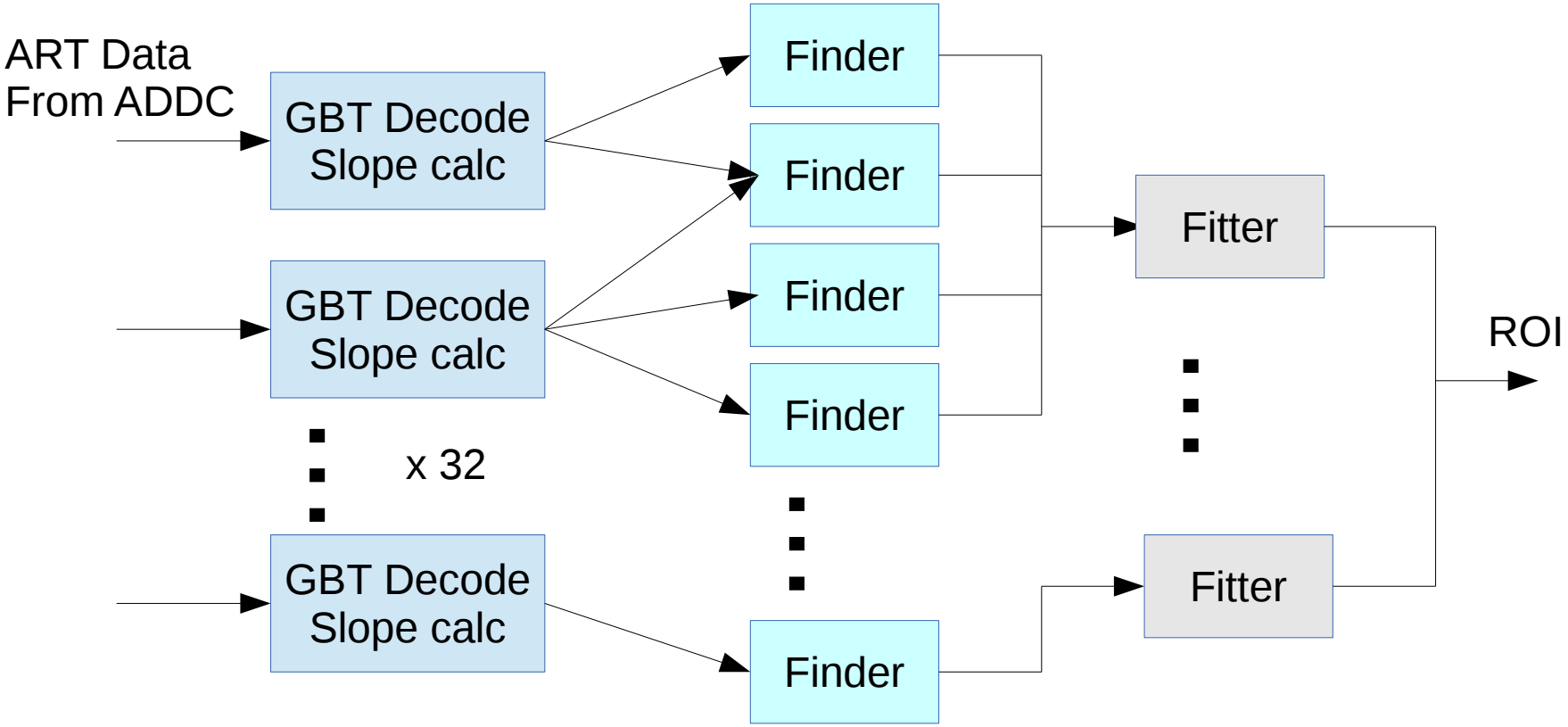
Eval Board Overview



- GBT Decode
  - Deserialize ART data
  - Calc slope using mult DSP slice
- Finder
  - Each finder has unique upper and lower slope road boundaries
  - Collect hits within its boundaries
  - Regions have overlapping boundaries
  - Pass hits only from track candidate that satisfy plane occupancy requirements to Fitter
  - Background hits will expire in Finder
- Fitter
  - Calculate ROI, dθ



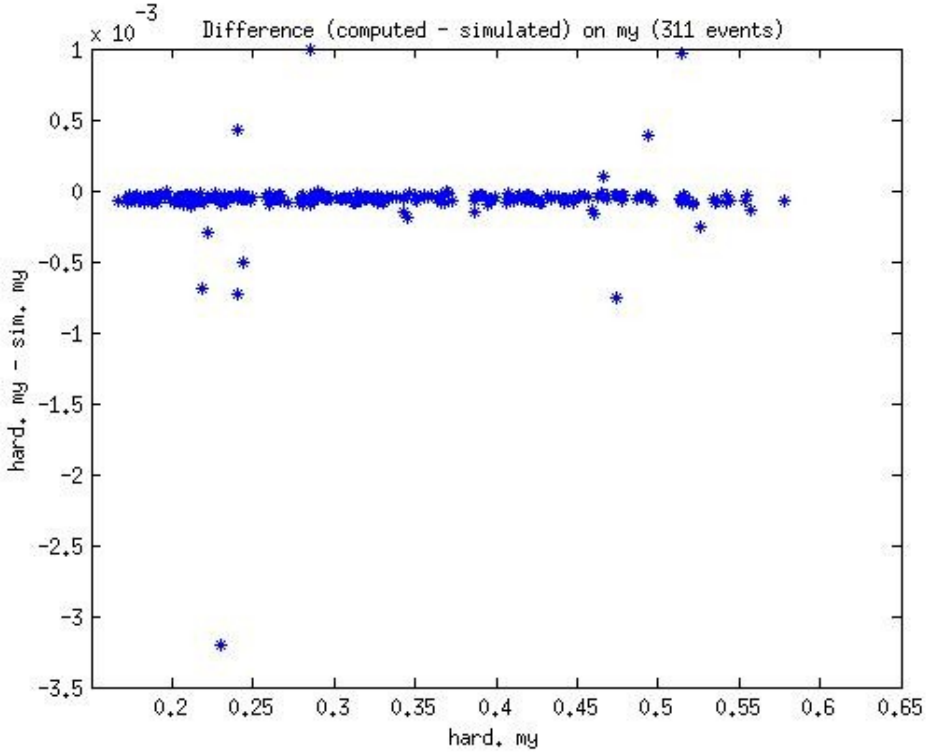
Multi-Region Structure

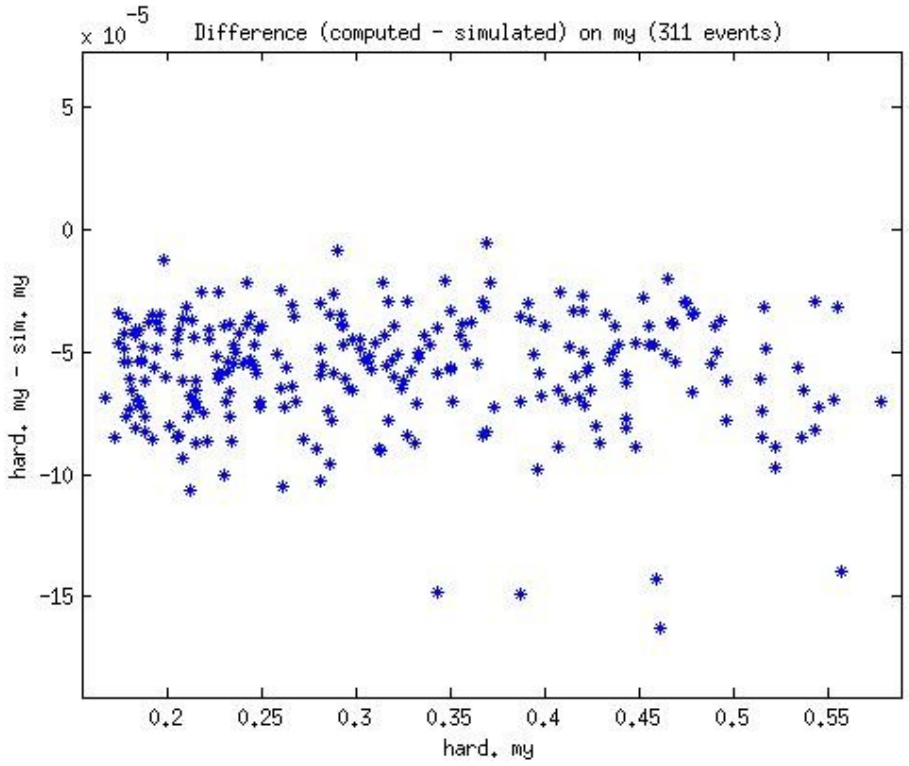


Software

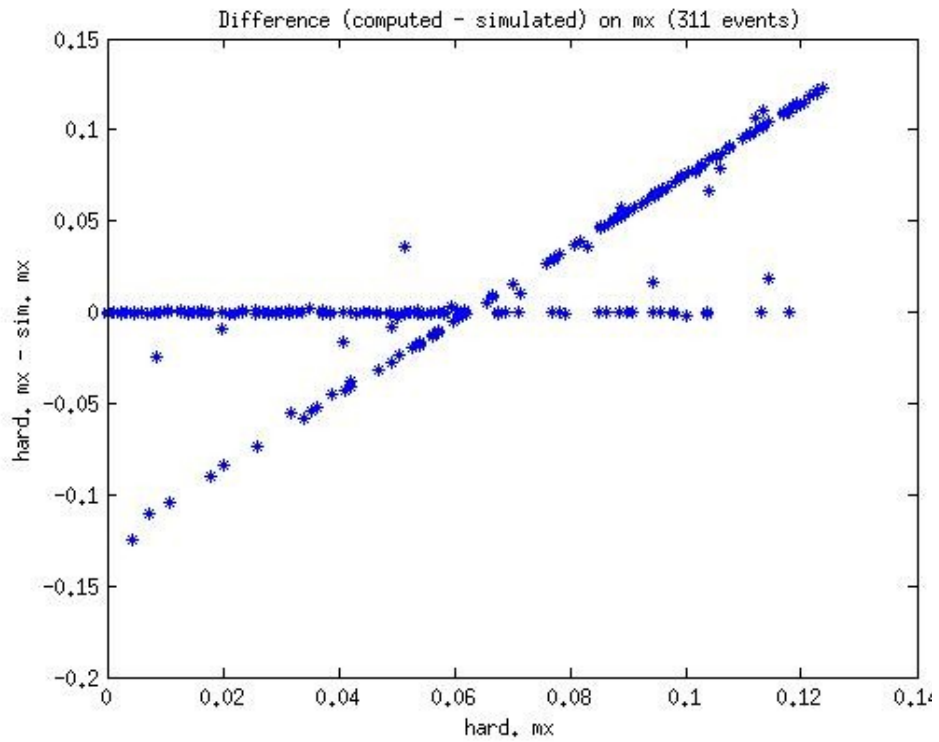
- Simulation using Mentor Graphics Modelsim and Matlab
- Trigger Processor algorithm synthesized using Mentor Graphics Precision Synthesis
- Place and route using Xilnx Vivado
- DAQ and analysis in Matlab

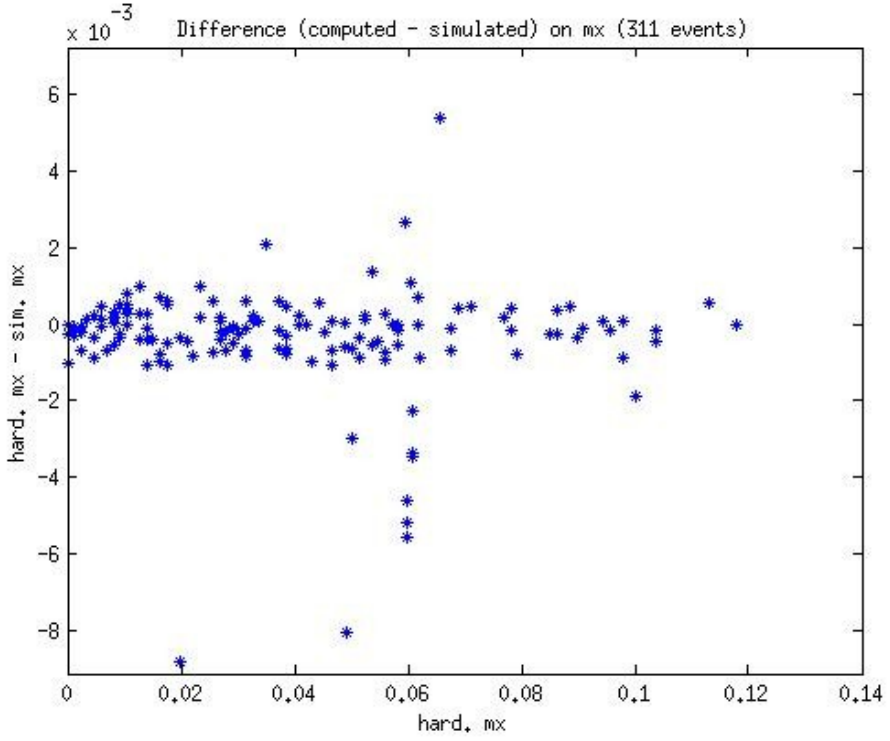
ROI Coordinates
Hardware vs Simulation



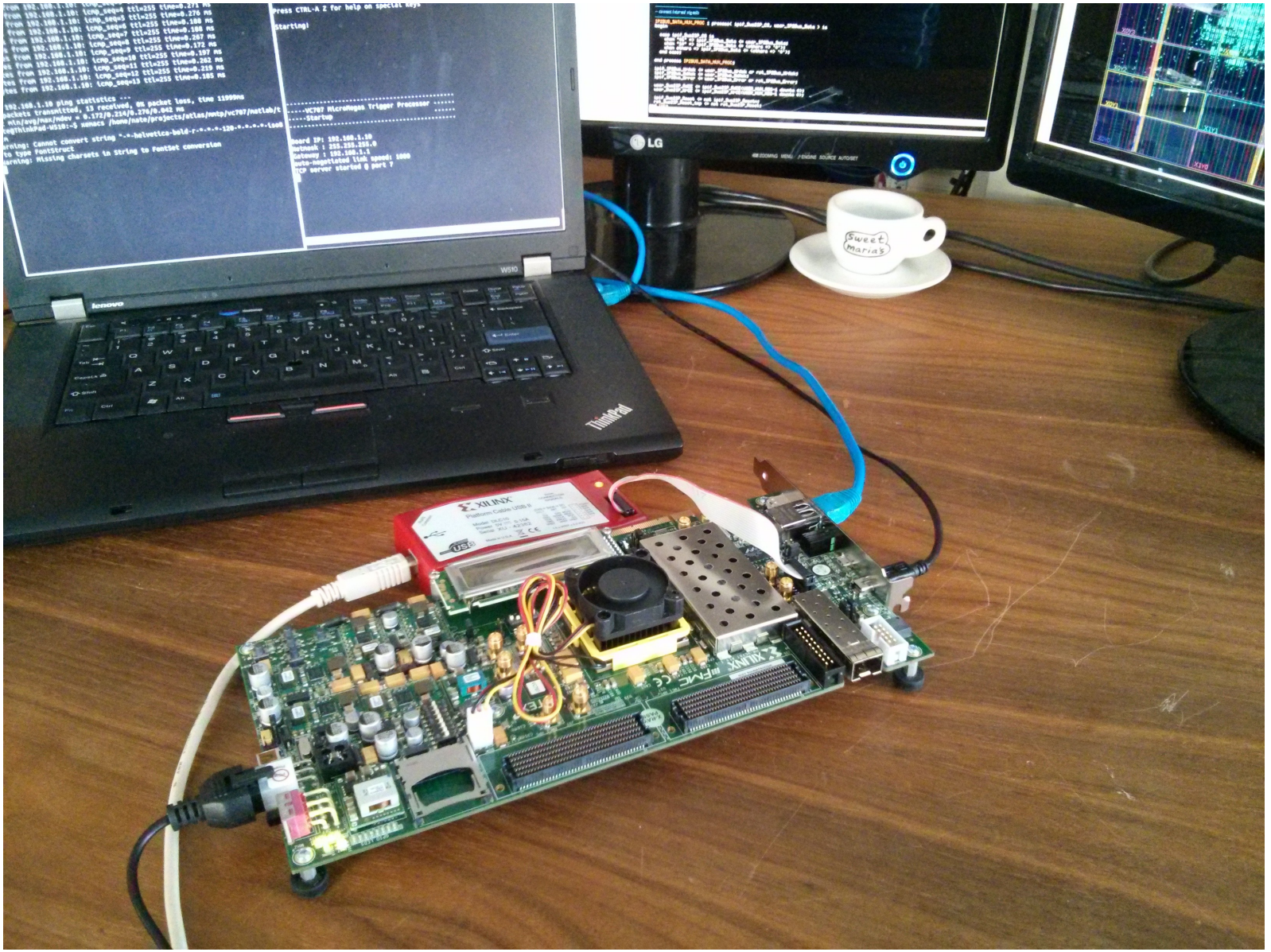


ROI Coordinates
Hardware vs Simulation





Backup


XILINX
ThinkPad
LG
Sweet Maria's

Timing Simulation