Measurement Results of Within-Die Variations on a 90nm LUT Array for Speed and Yield Enhancement of Reconfigurable Devices

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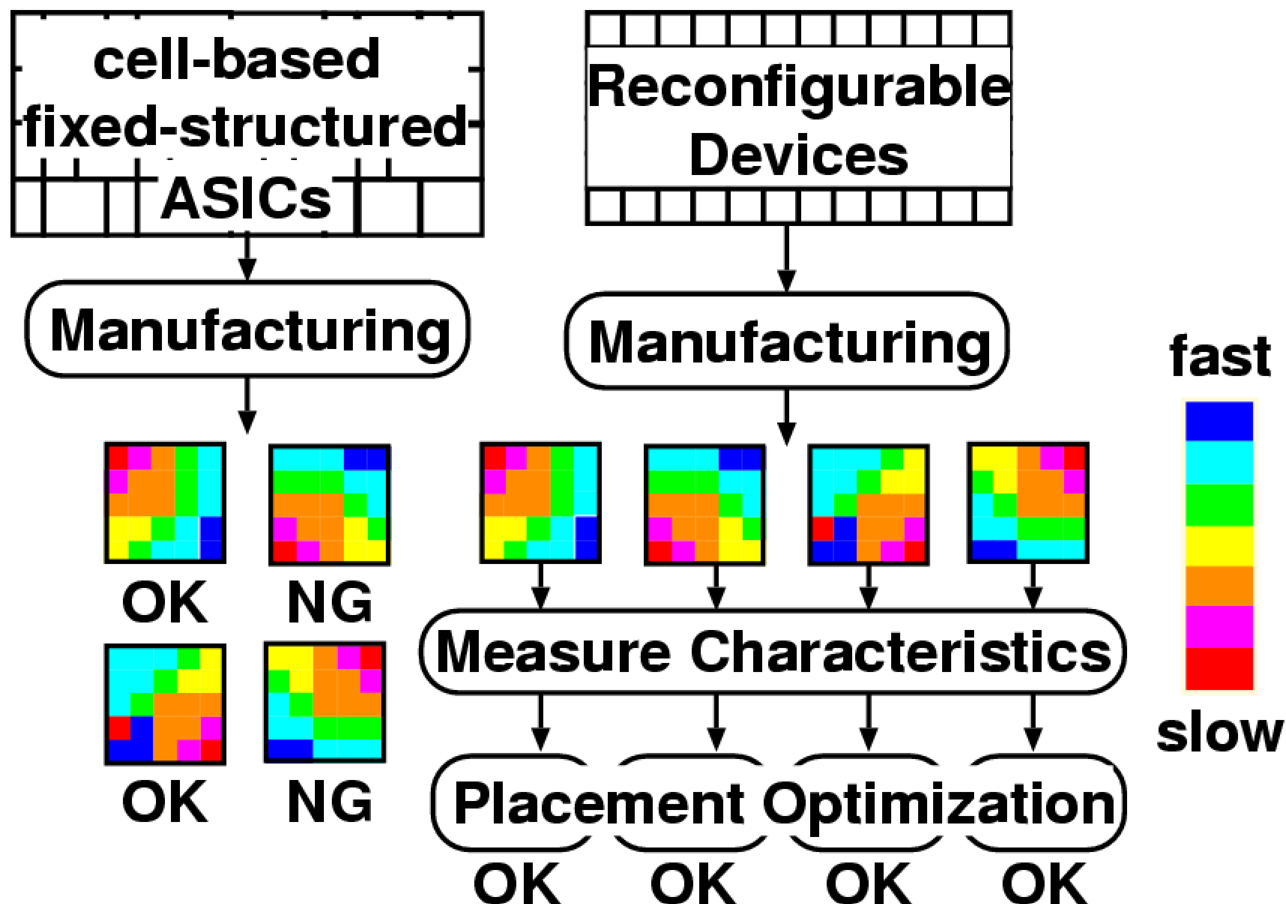
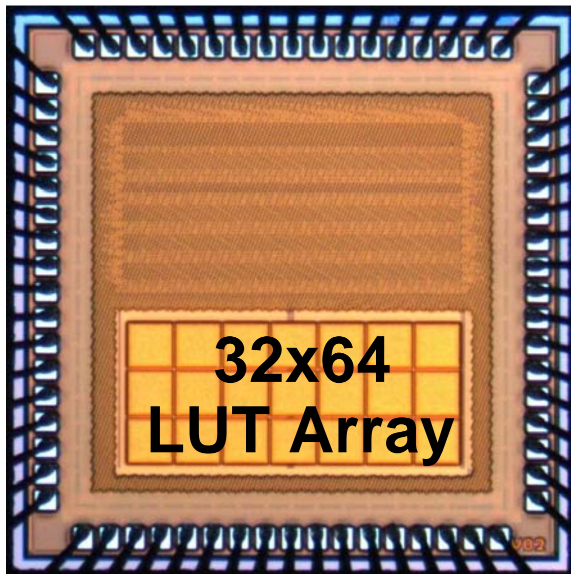
Fundamental Idea

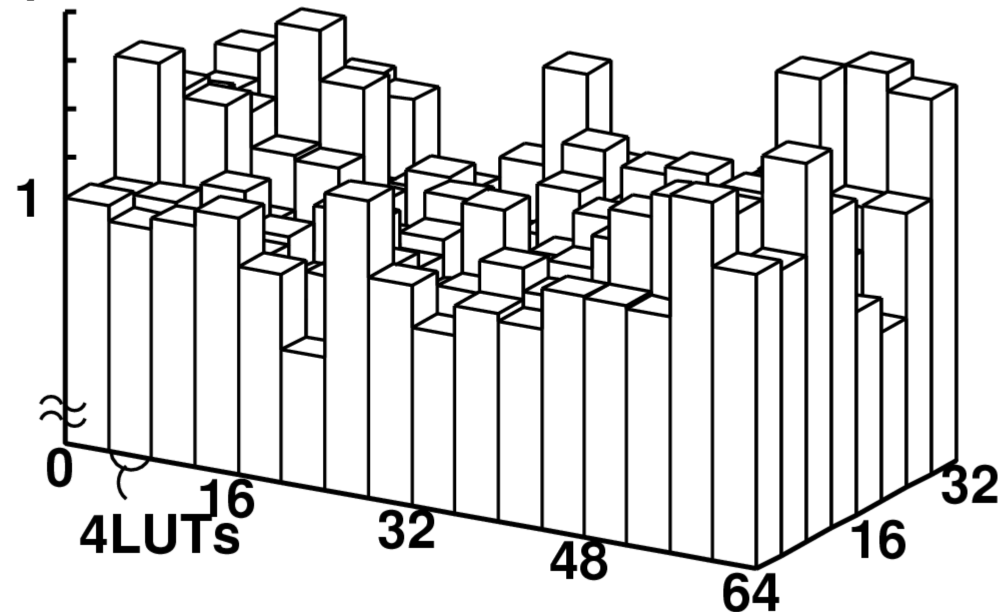
- Reconfigurable devices can **utilize the WID variations** by reconfiguration



90nm LUT Array LSI

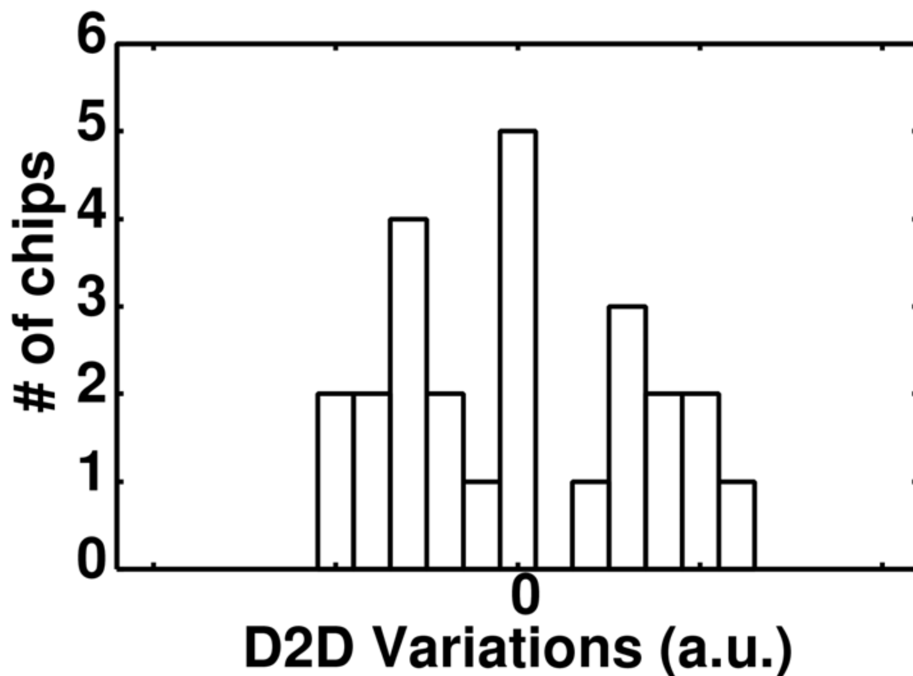
- Confirm the variations of reconfigurable devices that have regular structure
- Measure the variations by counting the # of LUTs a signal is passing through within a certain time

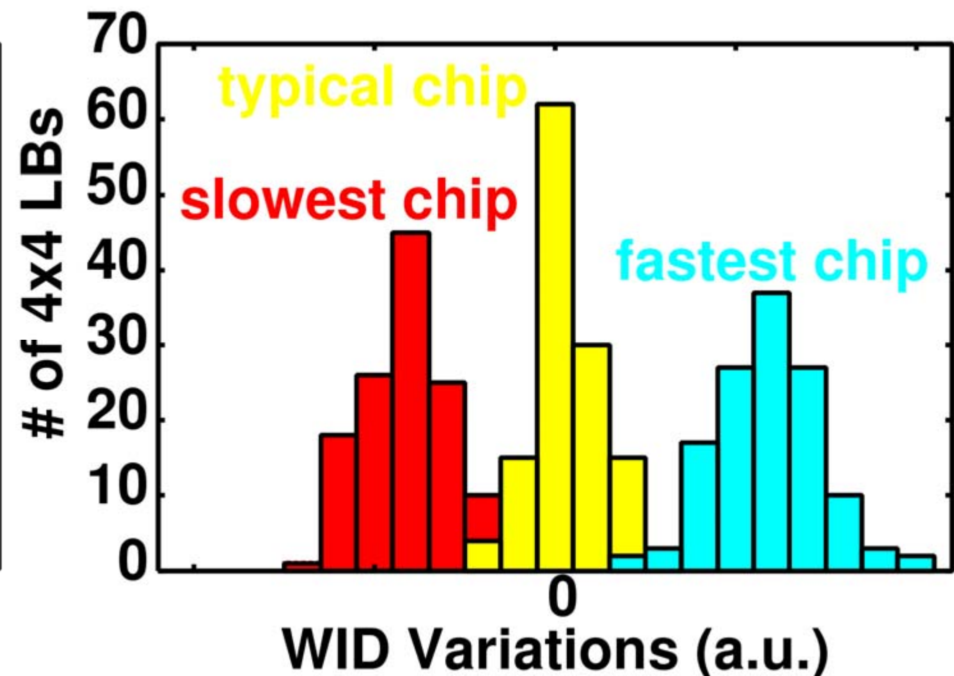




Extracted D2D and WID Variations

- The peripheral LUTs tend to be fast
- We separated the tendencies and extracted the D2D and WID variations
- D2D and WID variations have same order





Experiment of the Speed and Yield Enhancement

- Reconfiguration according to the WID boosts yield and increase speed by 4.1%
- Effect of the proposed method increases according to the process scaling