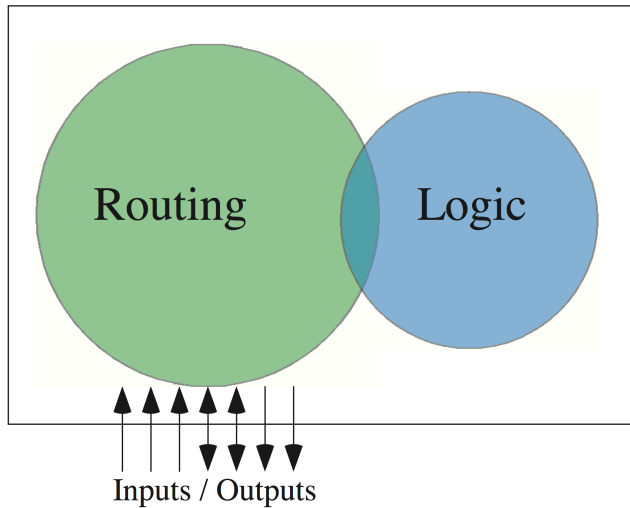
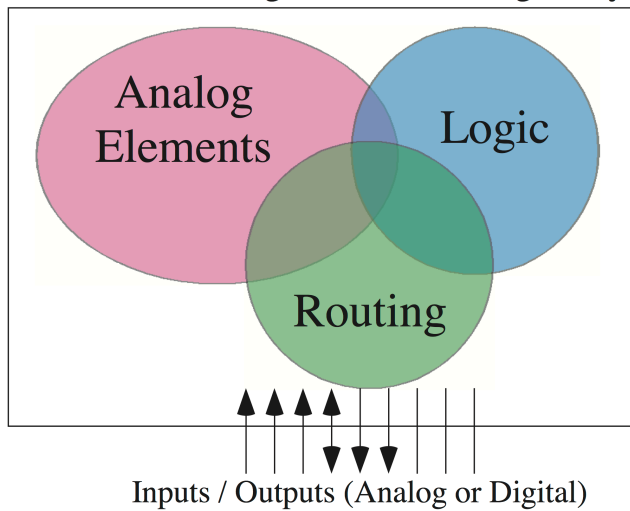


FPAA: FPGA Extension

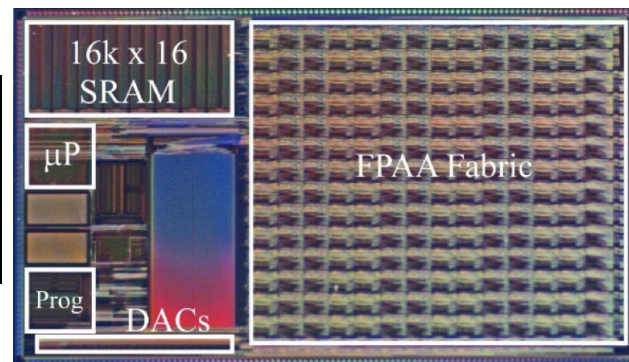
FPGA: Field Programmable Gate Array



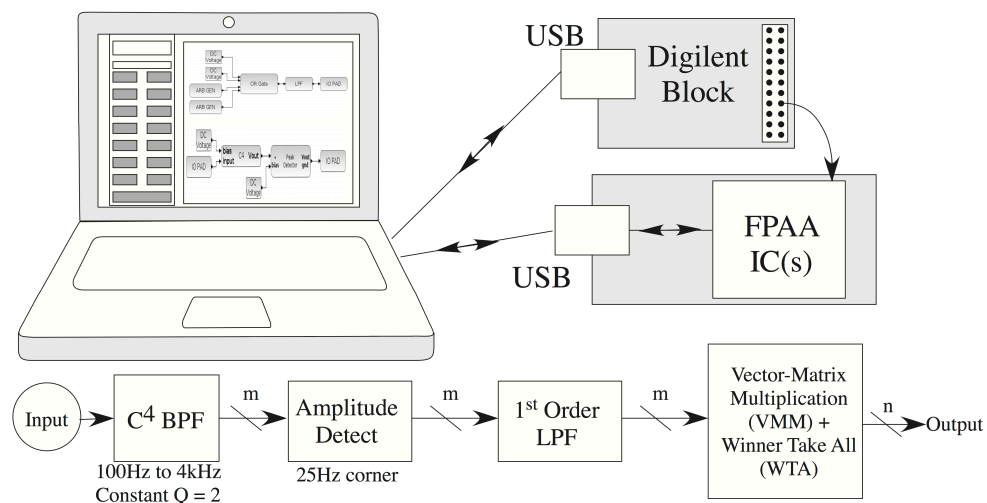
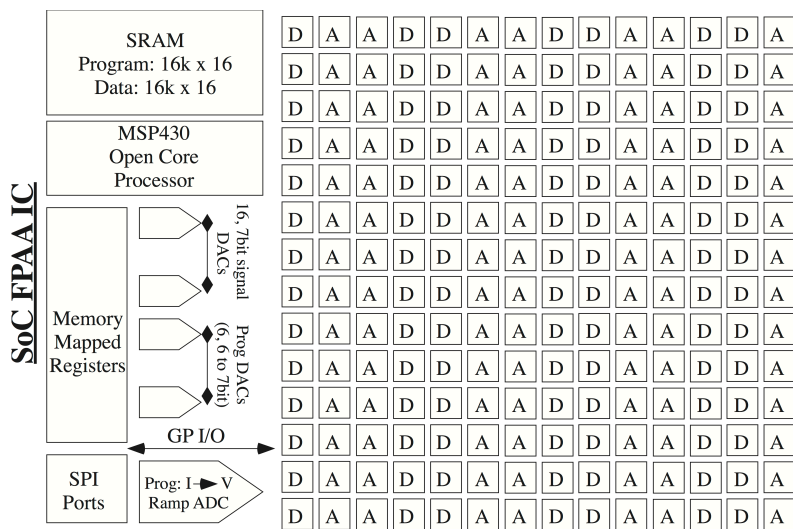
FPAA: Field Programmable Analog Array



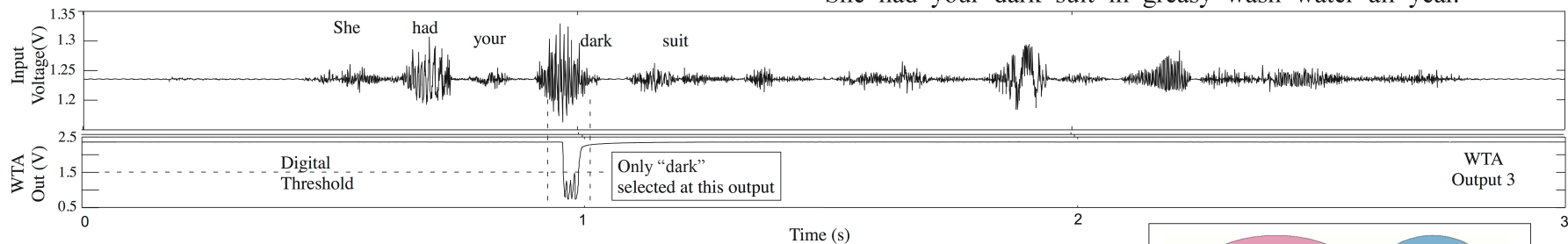
SoC FPAA



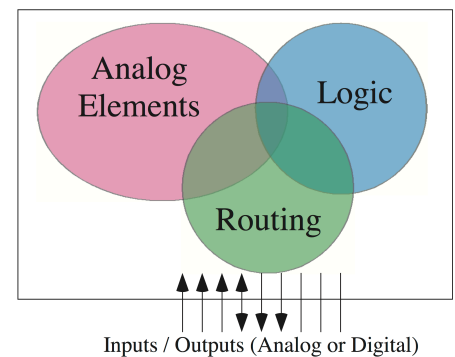
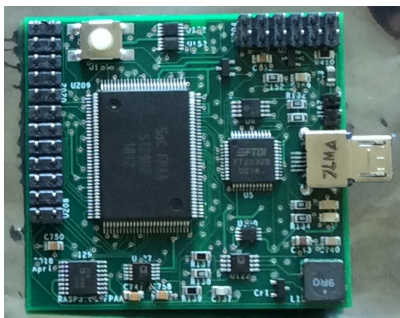
SoC FPAA: Computing

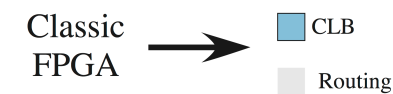


“She had your dark suit in greasy wash water all year.”

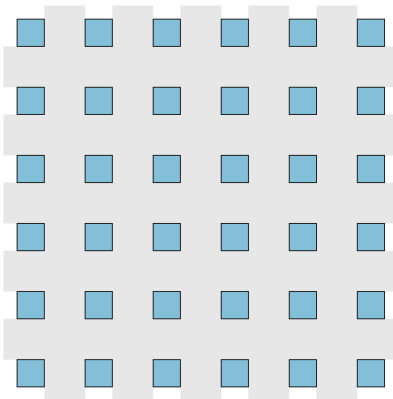


SoC Dev Board

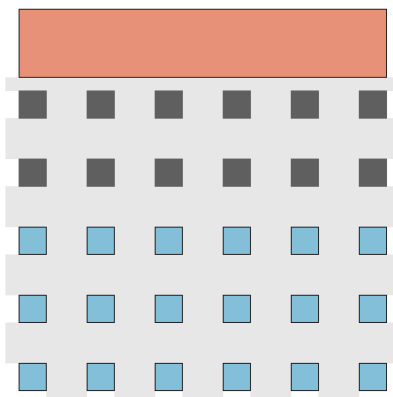




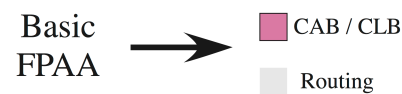
Basic FPGA Concept



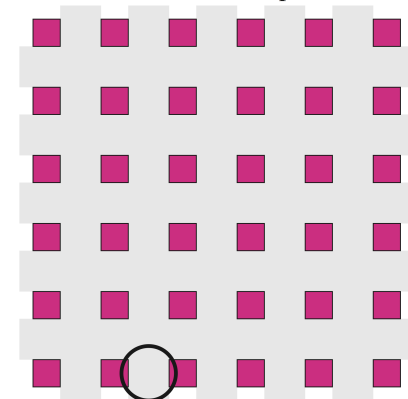
Practical FPGA with VMM Support



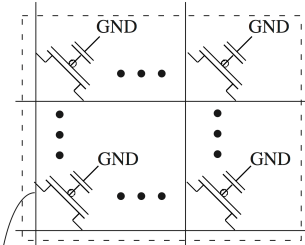
Coefficient RAM
Multiplier (and Add) Units



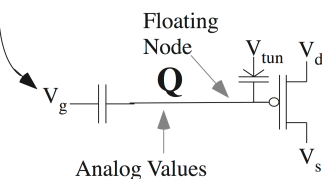
FG enabled FPAA Concept



FG Routing Crossbar



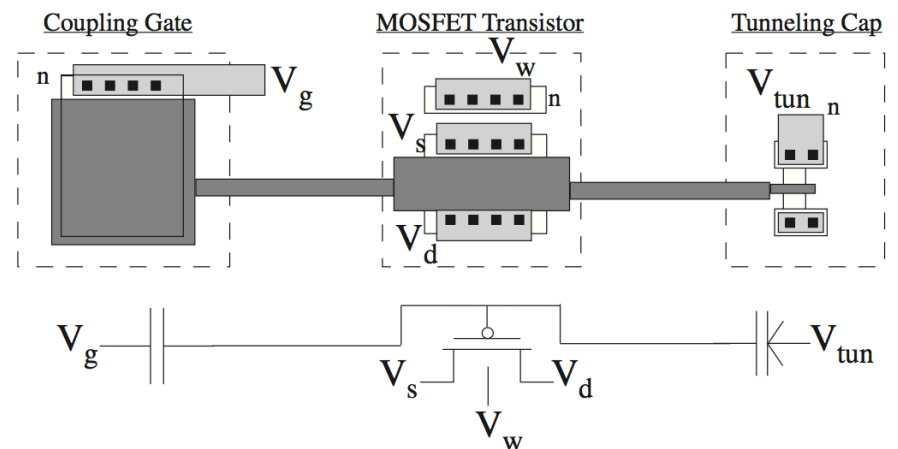
Analog FG Programming → VMM



Large Scale FPAA Devices utilize high density of Programmable and Configurable components (often the same components)

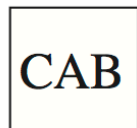
FG circuits enable in one device:

- Programmable Memory
- Transistor for Computation
- Potential adaptation

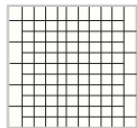


- FG 10 year lifetime, 10-100 μV
- Electron Tunneling (erasure)
- pFET channel Hot-Electron Injection (precision programming)

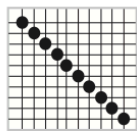
FPAA Routing



Computational
Analog and/or
digital Block

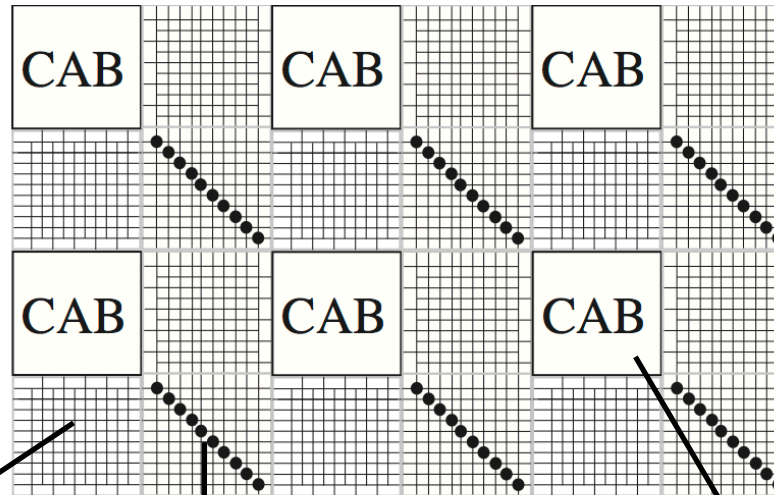


C Block:
Routing to CABs

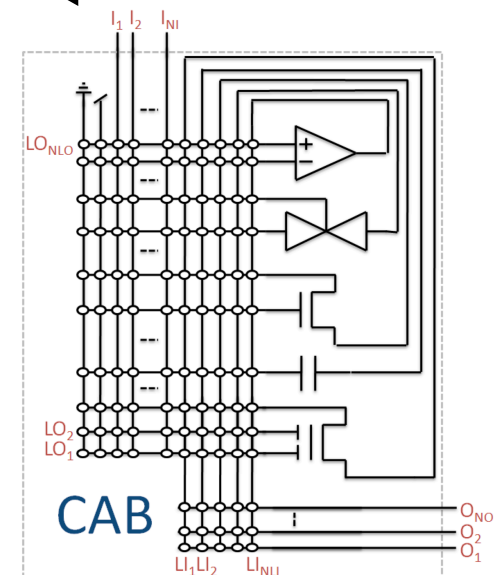
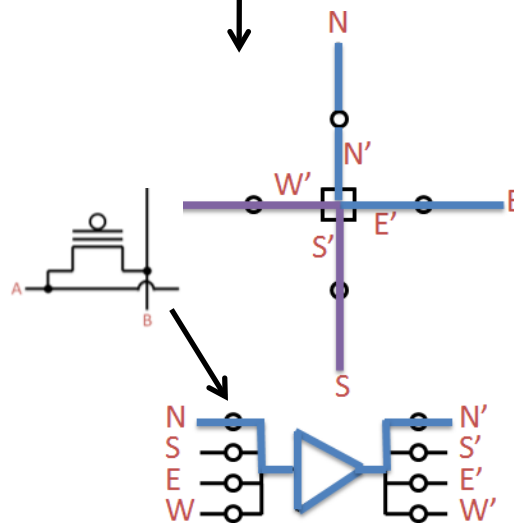
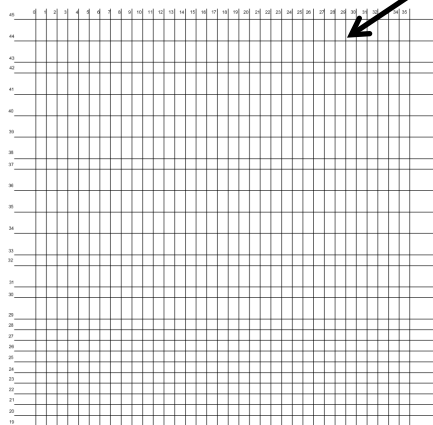


S Block:
Routing to Routing

Manhattan Geometry

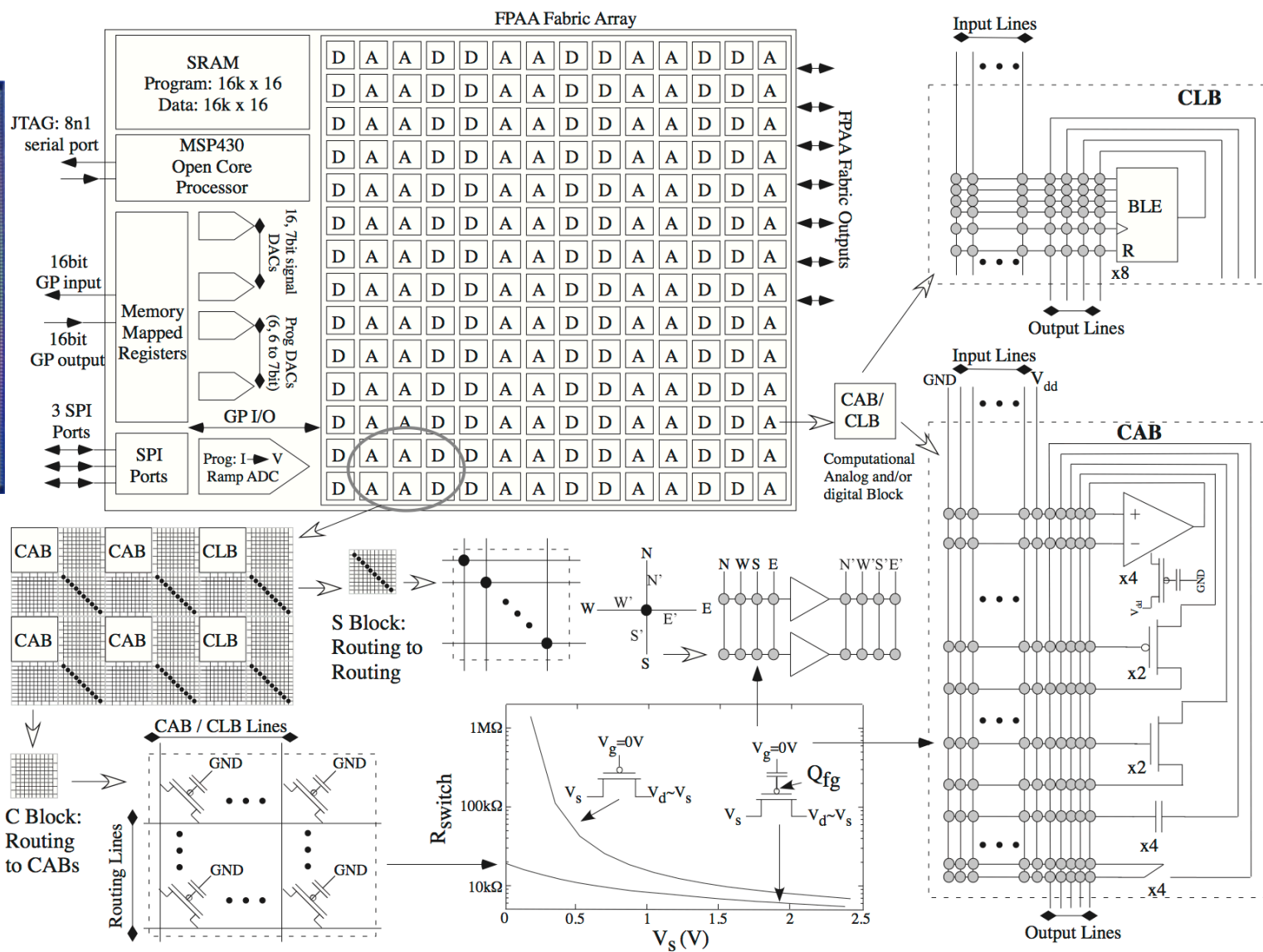
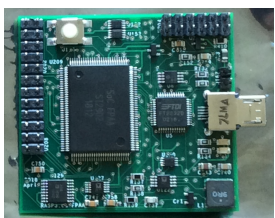
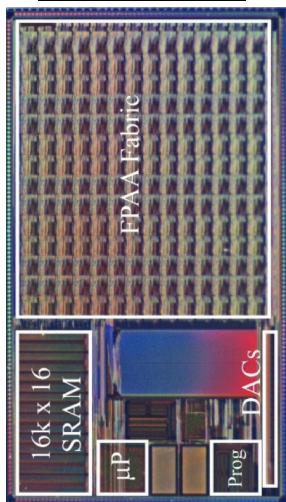


Crossbar FG Switches

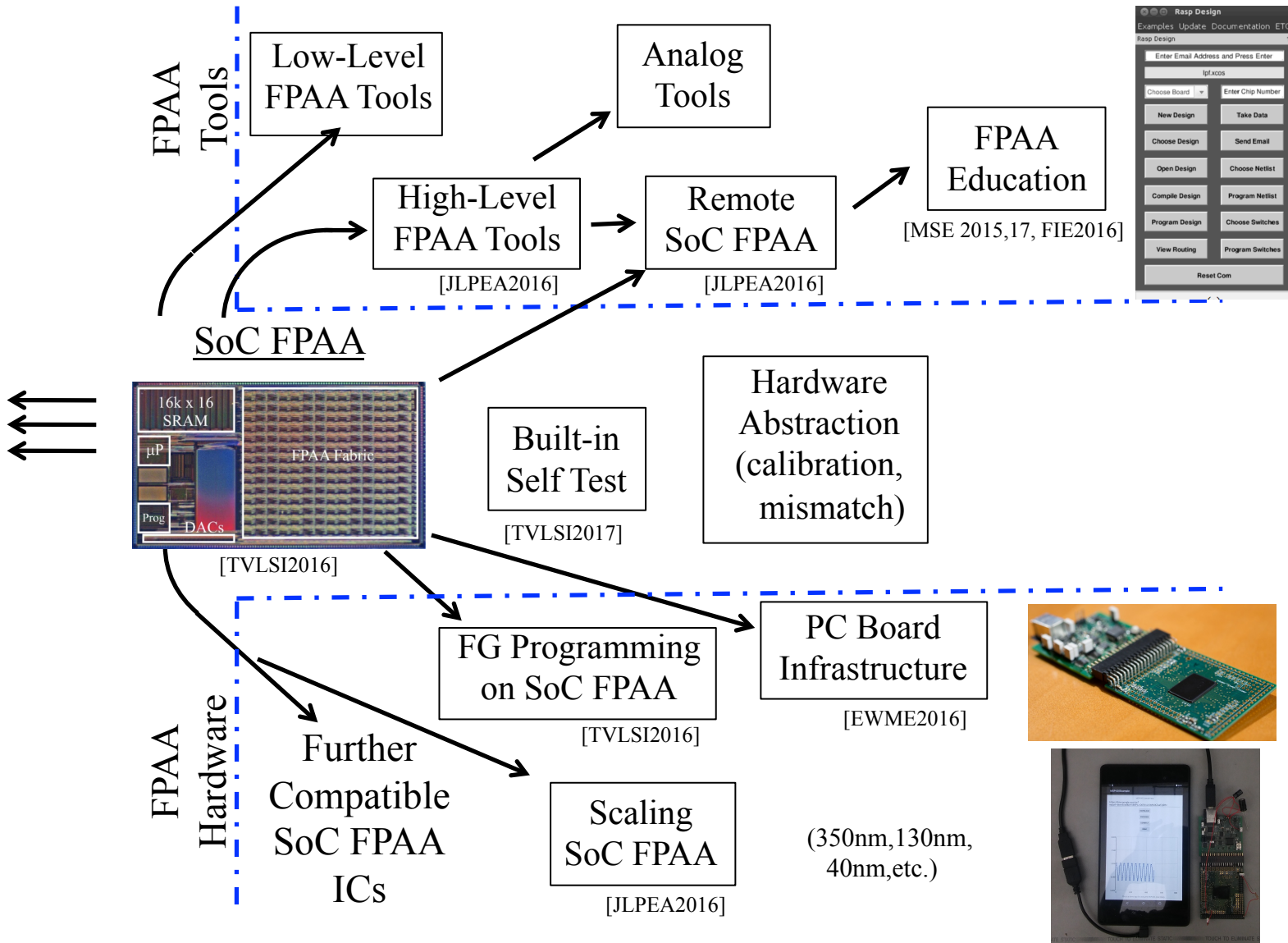


RASP 3.0: First SoC FPAA IC (2016)

SoC FPAA



Circuit / System Application
Build on SoC FPAA



SoC FPAA Infrastructure