



当Python遇上FPGA

PYNQ开源项目的实践与体会

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FPGA 35th

National Inventors Hall of Fame



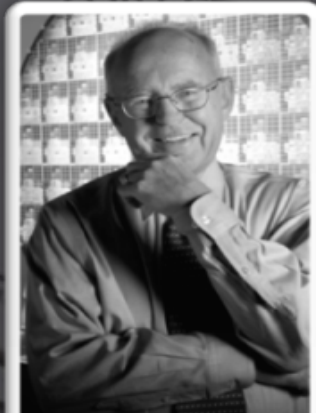
Integrated Circuit

Jack Kilby, 1958



Moore's Law

Gordon Moore, 1968



FPGA

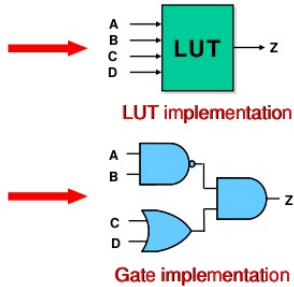
Ross Freeman, 1984



Field Programmable Gate Array

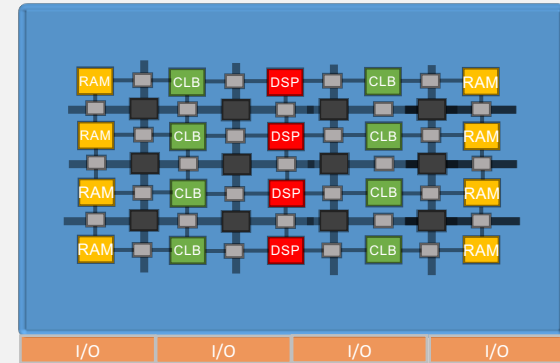
Look-Up Tables (LUT)

- Look-up table with N-inputs can be used to implement any combinatorial function of N inputs
- LUT is programmed with the truth-table

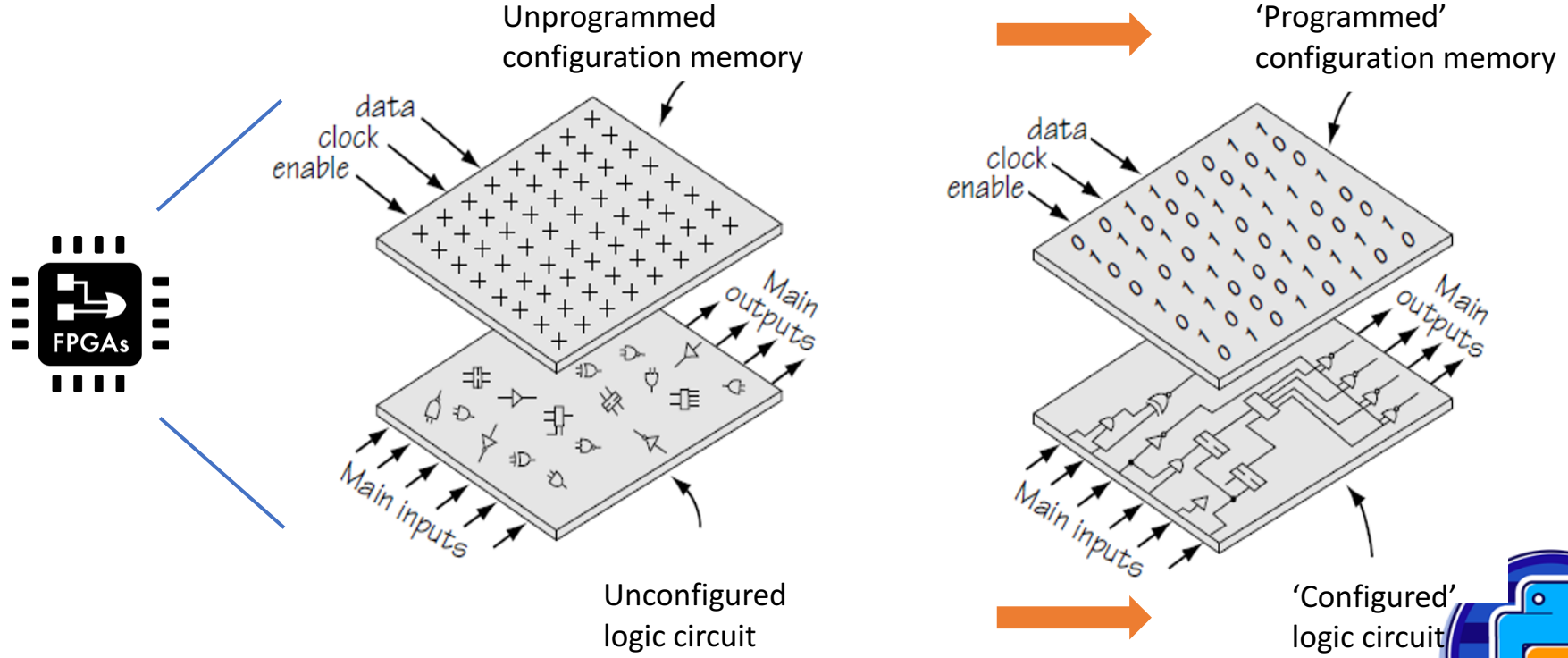


Inputs				Output
A	B	C	D	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

FPGA



Field Programmable Gate Arrays (FPGAs)



Credit: 'Bebop to the Boolean Boogie: An Unconventional Guide to Electronics'



Transformation Through Innovation

World's
First FPGA



1980

First
Virtex FPGA



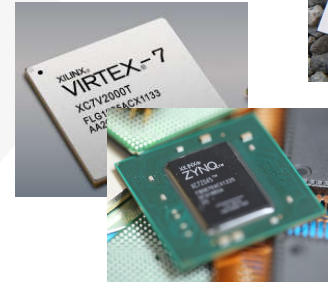
1990

Virtex-2 Pro



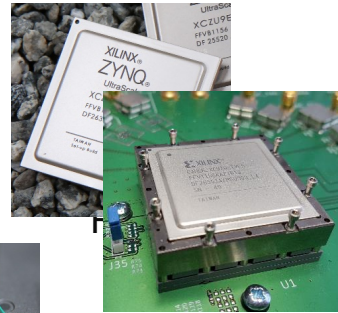
2000

First 3D FPGA
& HW/SW
Programmable SoC



2010

First
MPSoC & RFSoc



2020

ACAP



Driving Adaptive Computing with Versal

The World's First Adaptive Compute Acceleration Platform

PyConChina
2019



Scalar Processing Engines



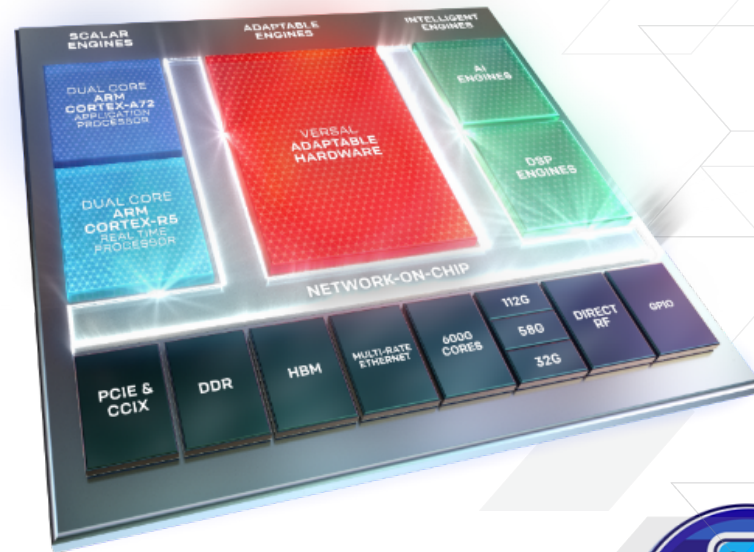
Adaptable Hardware Engines



Intelligent Engines
SW Programmable, HW Adaptable



Breakout Integration of Advanced
Protocol Engines





THANK YOU

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