

Forth on the ARM Cortex-M1 FPGA Development Kit

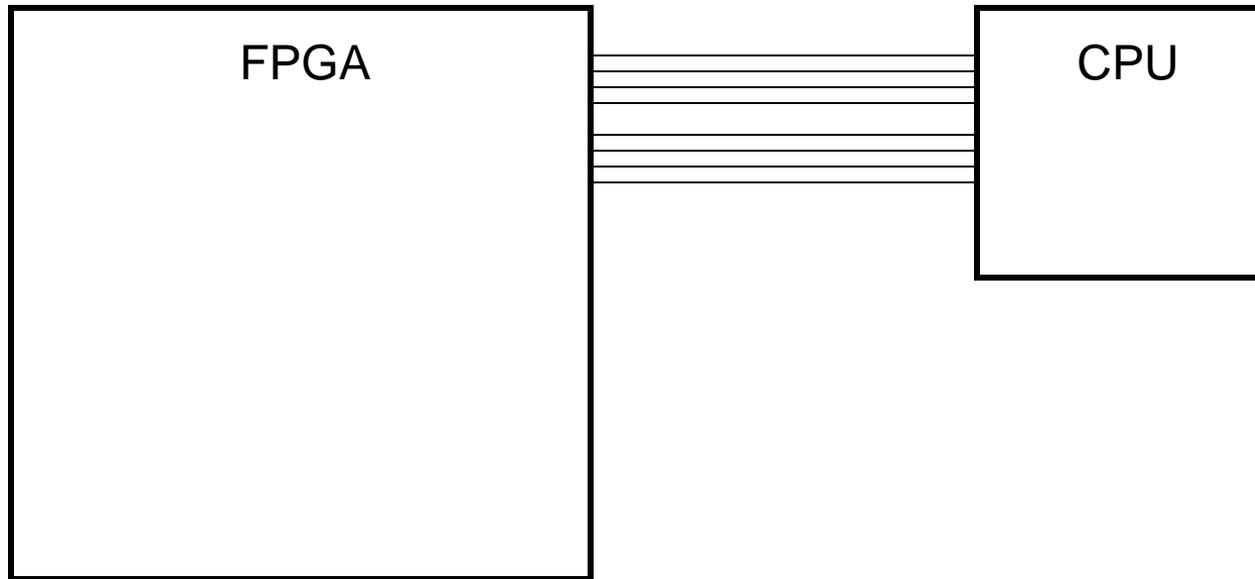
Forth Day 2011

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<http://www.forth.com/downloads/cm1.pdf>



FPGA + CPU



FPGA Soft Cores

- MicroBlaze and PicoBlaze
 - Proprietary, limited to Xilinx devices
- Nios II
 - Proprietary, limited to Altera devices
- LatticeMico32 and LatticeMico8
 - Open source, optimized for Lattice devices
- LEON (SPARC-V8)
 - Open source and proprietary
 - Described in synthesizable VHDL
 - Originally developed by ESA



FPGA Soft Cores

- ColdFire Core
 - ColdFire V1, V2, V4 cores
 - Proprietary license
 - Standard ISA (ColdFire)
 - Max 40 MHz, 29% used on Cyclone III
- MicroCore (uCore)
 - MicroCore Exploratory License
 - Described in synthesizable VHDL
 - Klaus Schleisiek (inventor) plus community of contributors
 - Forth ISA



Klaus and Friends



FPGA Soft Cores

- Cortex-M1
 - Proprietary (ARM, Ltd.)
 - Vendor independent
 - FPGA, ASIC, ASSP
 - Industry-standard processor
 - Supported by large ecosystem
 - Fast and small
 - 150 MHz, 2300 LUTS on 90 nm Altera Stratix-II
 - 200 MHz, 1900 LUTS on 65 nm Xilinx Virtex-5
 - 120 MHz, 14% used on Cyclone III
 - Standard ISA (ARMv6m)



Forth on Cortex-M1

- SwiftX-ARM (FORTH, Inc.)
- Quartus II (Altera)
- Cortex-M1 FPGA Dev Kit (ARM, Ltd.)
- Cyclone III Starter Kit (Altera)
- Serial port

