The Future of HPC: Task-Parallel, Heterogeneous, Efficient, Open

@ Energy Efficient HPC BOF, SC12

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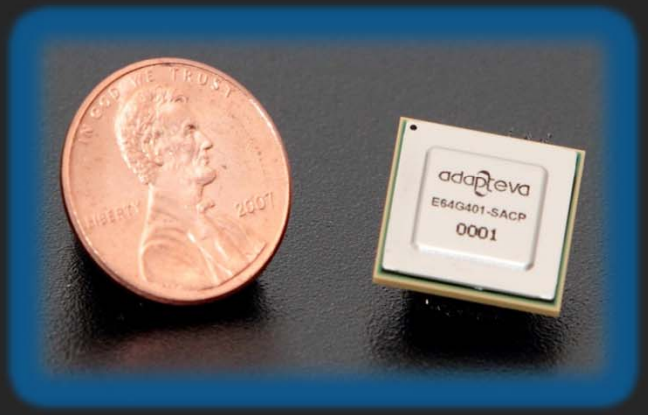
Adapteva Company Introduction

Company History:

- Founded in 2008 by processor design team from Analog Devices
- Shipping 16-core 65nm product since May 2011
- Now sampling 64-core chip product in 28nm

Notable Achievements:

- 50 GFLOPS/W demonstrated at chip level
- 28nm 64-core product is 10mm^2
- Architecture scales to 1024 CPUs on-chip
- <$2.5M in raised capital



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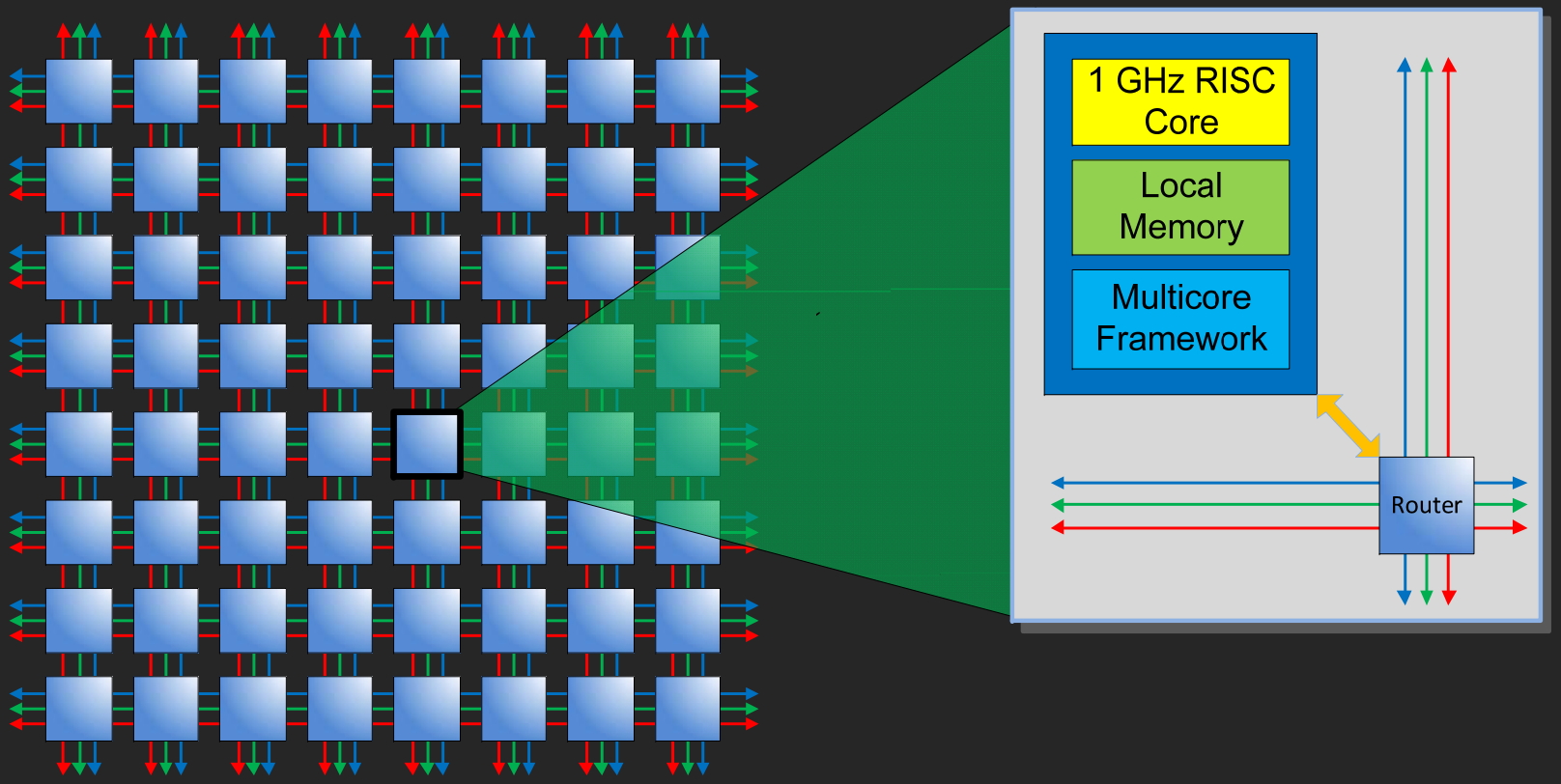
Massive Task-Parallelism



Coprocessor to ARM/Intel CPU

25mW per core

C/C++ programmable

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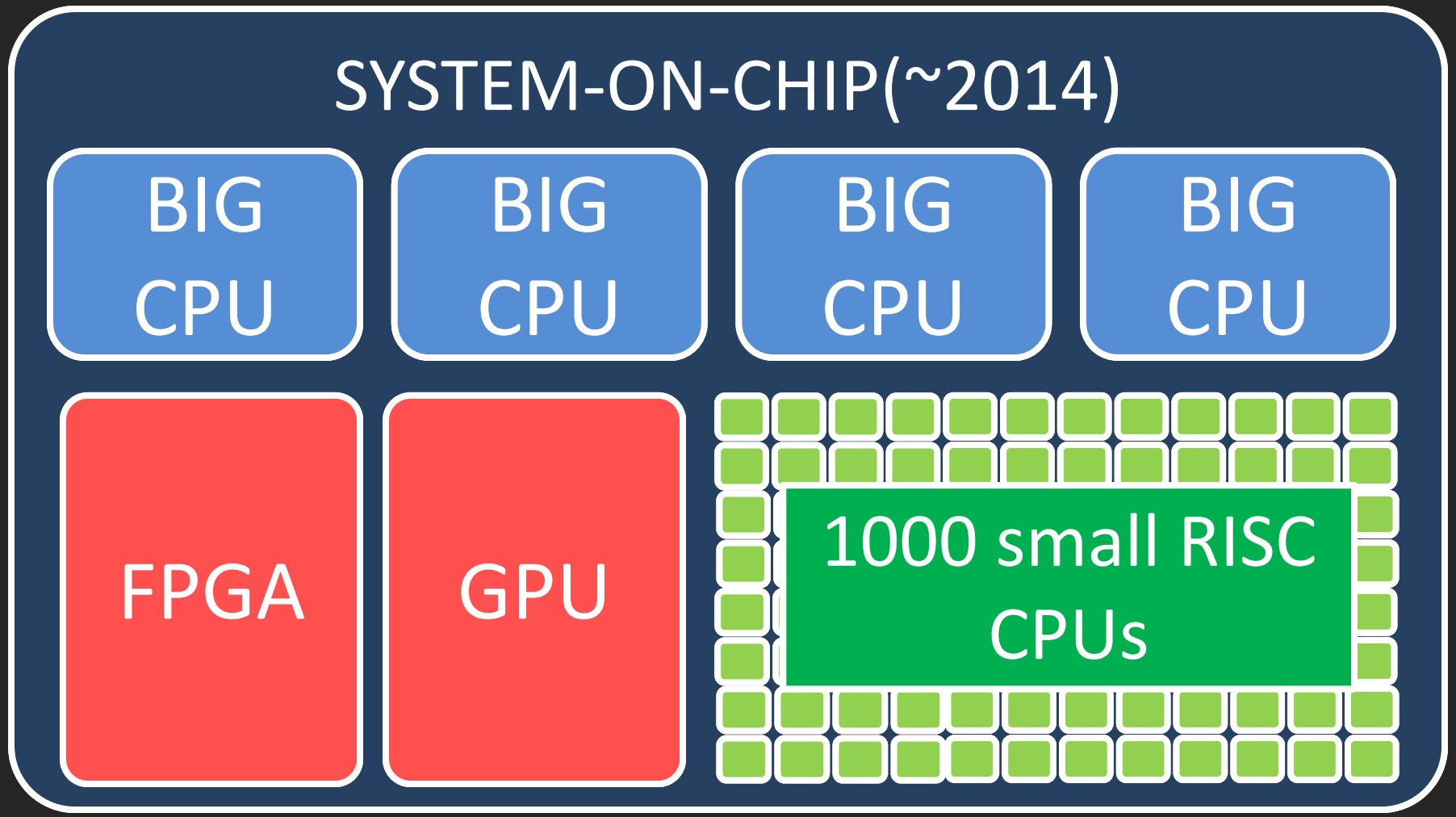
True Heterogeneous Computing



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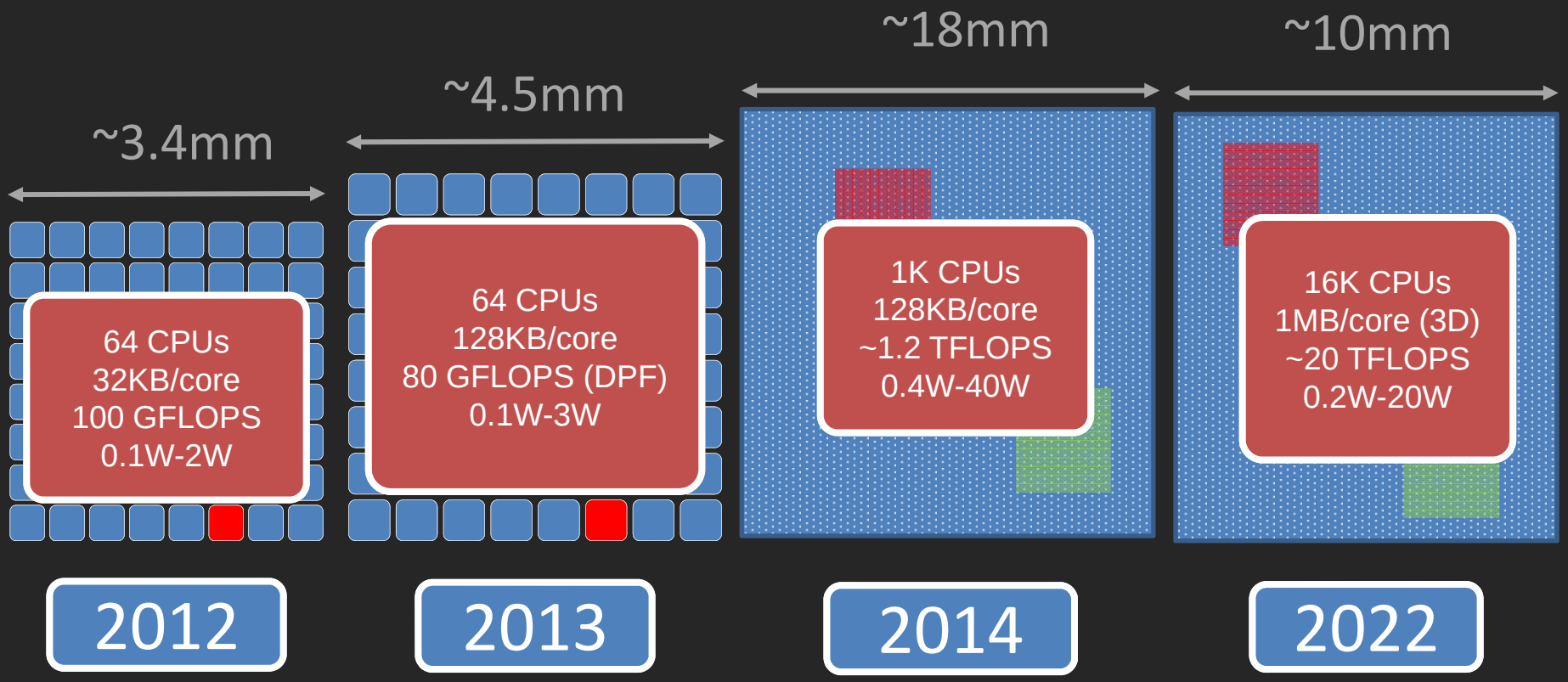
Efficient Computing



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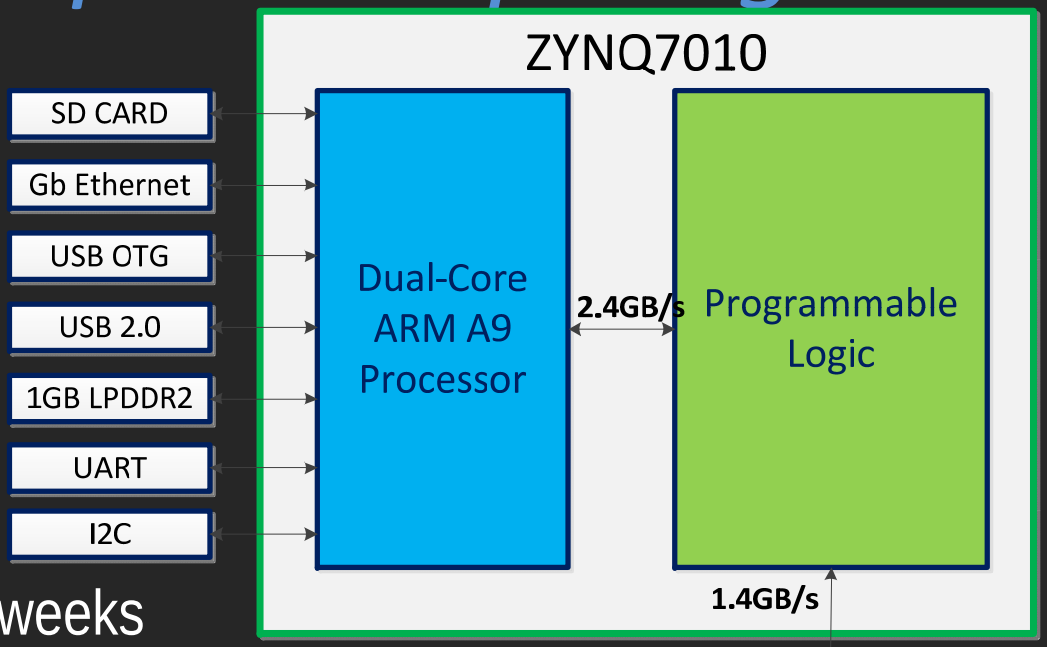
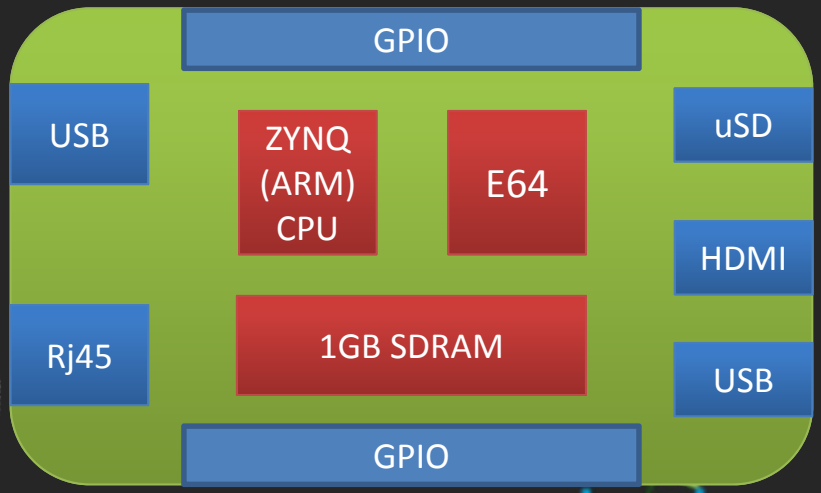
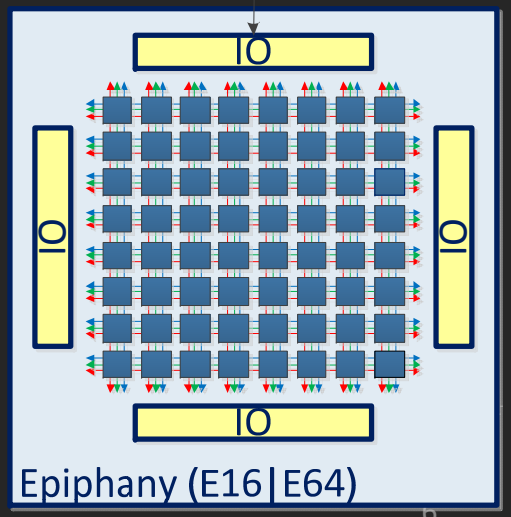
Parallella Open Computing

- Open (and free):
  - Documentation
  - Board design files
  - Drivers
  - Software Tools
  - Access
- $100 entry point
- ~4000 devs signed up in 4 weeks







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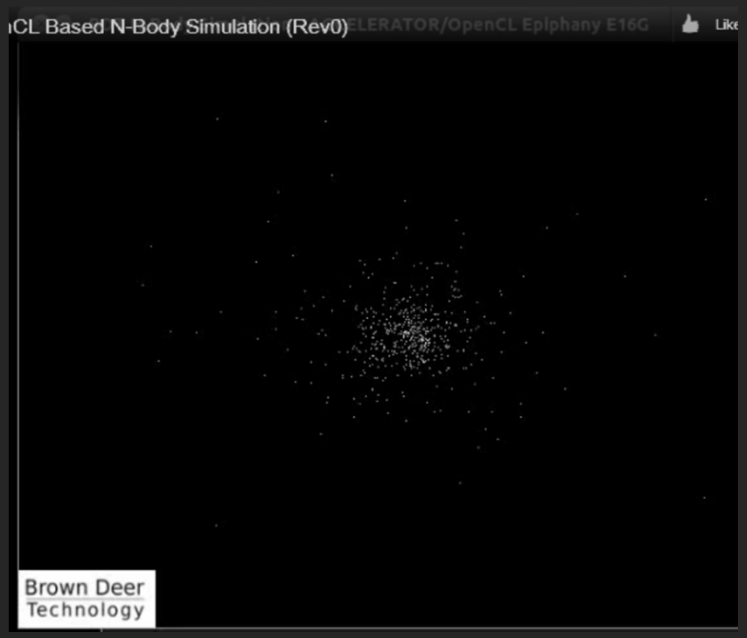
First OPEN OpenCL SDK for ARM?

- COPRTHR OpenCL SDK:
  - GPL License (Free)
  - Works on x86, ARM
  - Works with (but not limited to) GCC
- Epiphany Ports of COPRTHR:
  - OpenCL 1.1 (work in progress)
  - Beta released for x86 based eval kit Nov 2012
  - Alpha working for ARM, Nov-2012



Brown Deer Technology

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