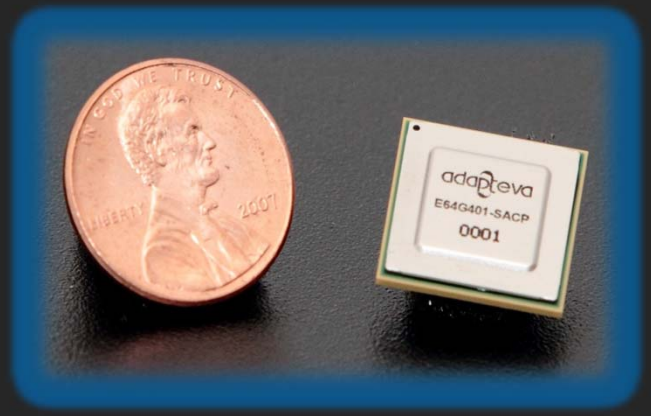
The good, the bad, the ugly of semiconductor crowd funding



Andreas Olofsson

Feb 6, 2013

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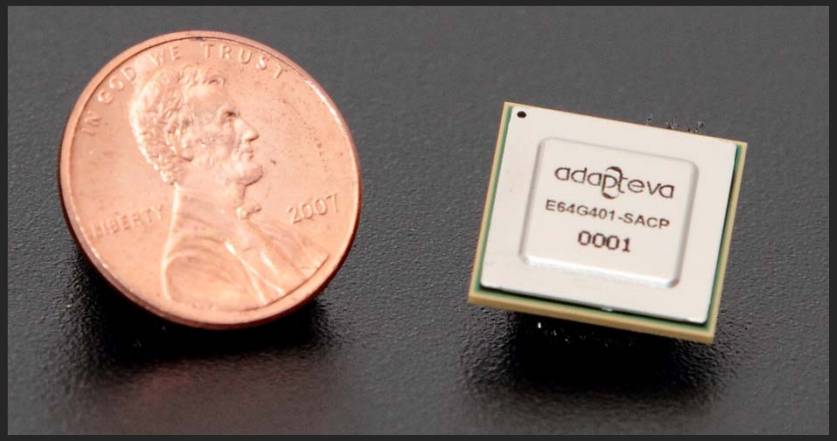
Adapteva Achieves 3 “World Firsts”

1. First processor company to reach 50 GFLOPS/W



2. First true open source OpenCL™ SDK in the mobile market

3. First semiconductor company to successfully crowd-source project

KICKSTARTER

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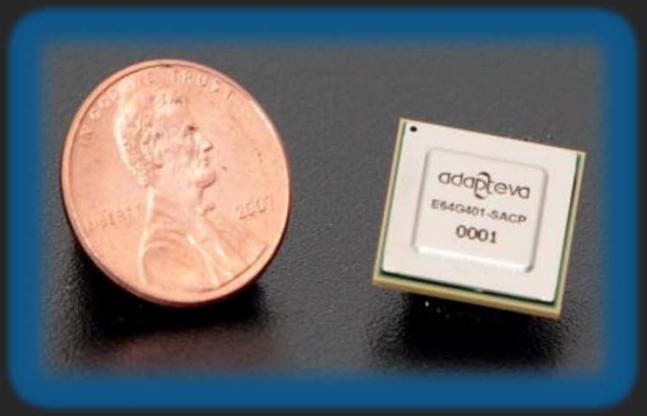
Adapteva Company Introduction

Company History:

- Fabless semiconductor company founded in 2008 by processor design team from Analog Devices
- Shipping 16-core 65nm Epiphany-III chip product since May 2011
- Sampling 64-core 28nm Epiphany-IV chip product since July 2012
- Launched revolutionary Parallella open computing platform in October 2012

Notable Achievements:

- #1 in processor energy efficiency
- 4 chips on $2.5M in raised capital
- $2M in total revenue to date
- 5K customers, 6,300 boards sold
- 18 Patents pending



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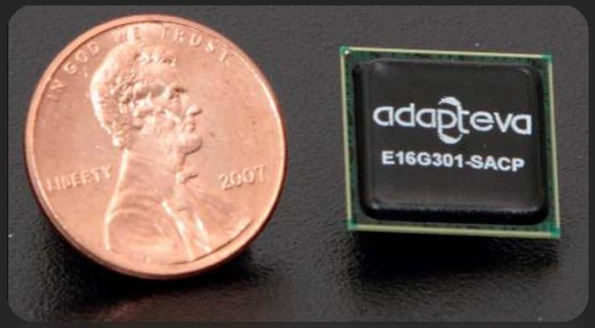
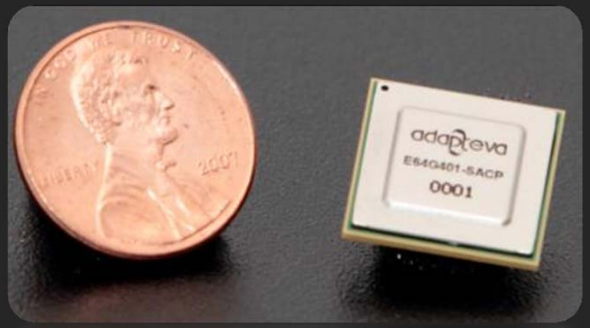
Products Shipping/Sampling

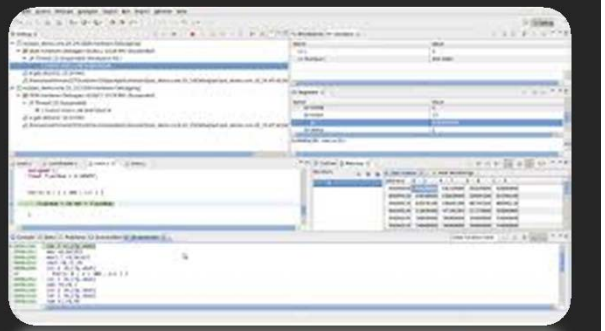
Epiphany-III Chip
16-cores/65nm



Epiphany-IV Chip
64-cores/28nm



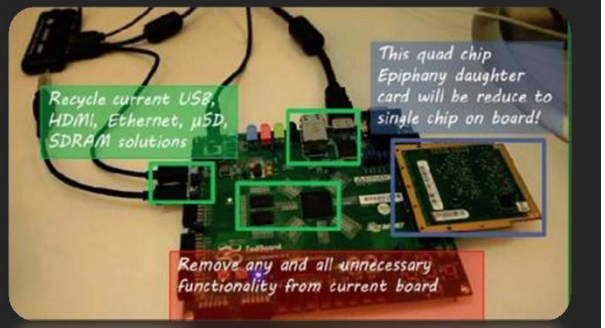
Epiphany Tools
Eclipse/GNU SDK



EMEK3
Evaluation Kit

FMC Daughter Cards
(from BittWare)

Parallella Board
(to sell for $99)



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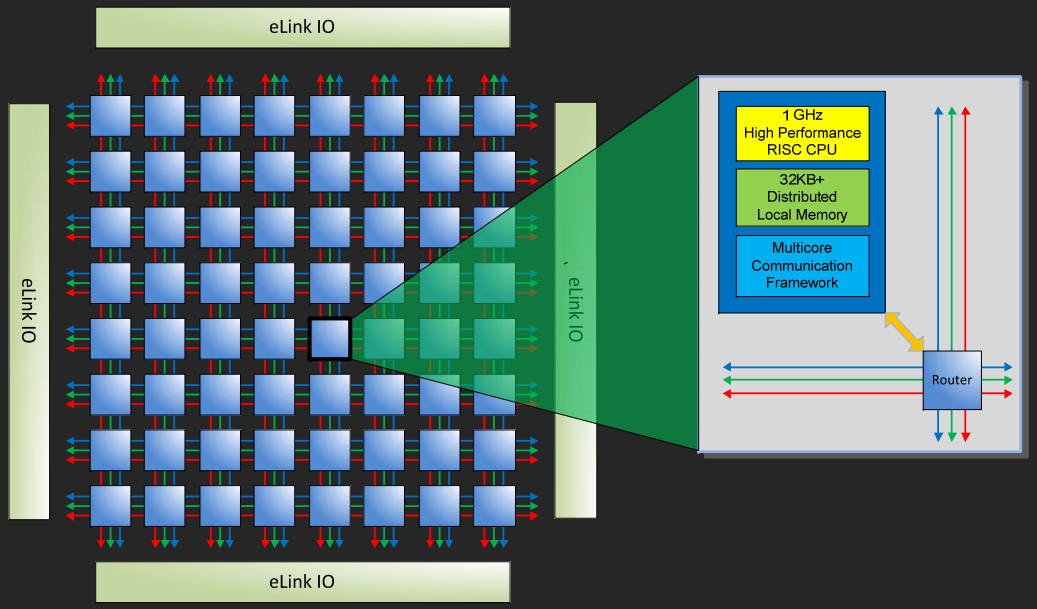
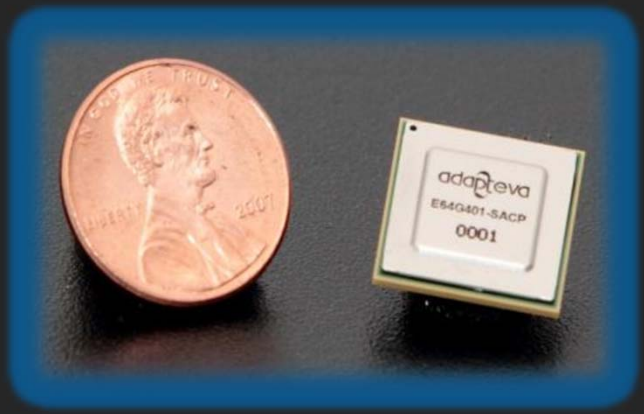
Epiphany-IV Specifications (28nm)

- 64 CPUs
- IEEE Floating Point (SP)
- 800 MHz Max Frequency
- 100 GFLOPS Performance
- 6.4 GB/s IO BW
- 200 GB/s peak NOC BW
- 1.6 TB/sec on chip memory BW
- 25 Billion Messages/sec
- 2MB on chip memory
- 10 mm^2 total silicon area in 28nm
- 2 Watt total chip power
- 324 ball 15x15mm BGA
- Sampling since July, 2012





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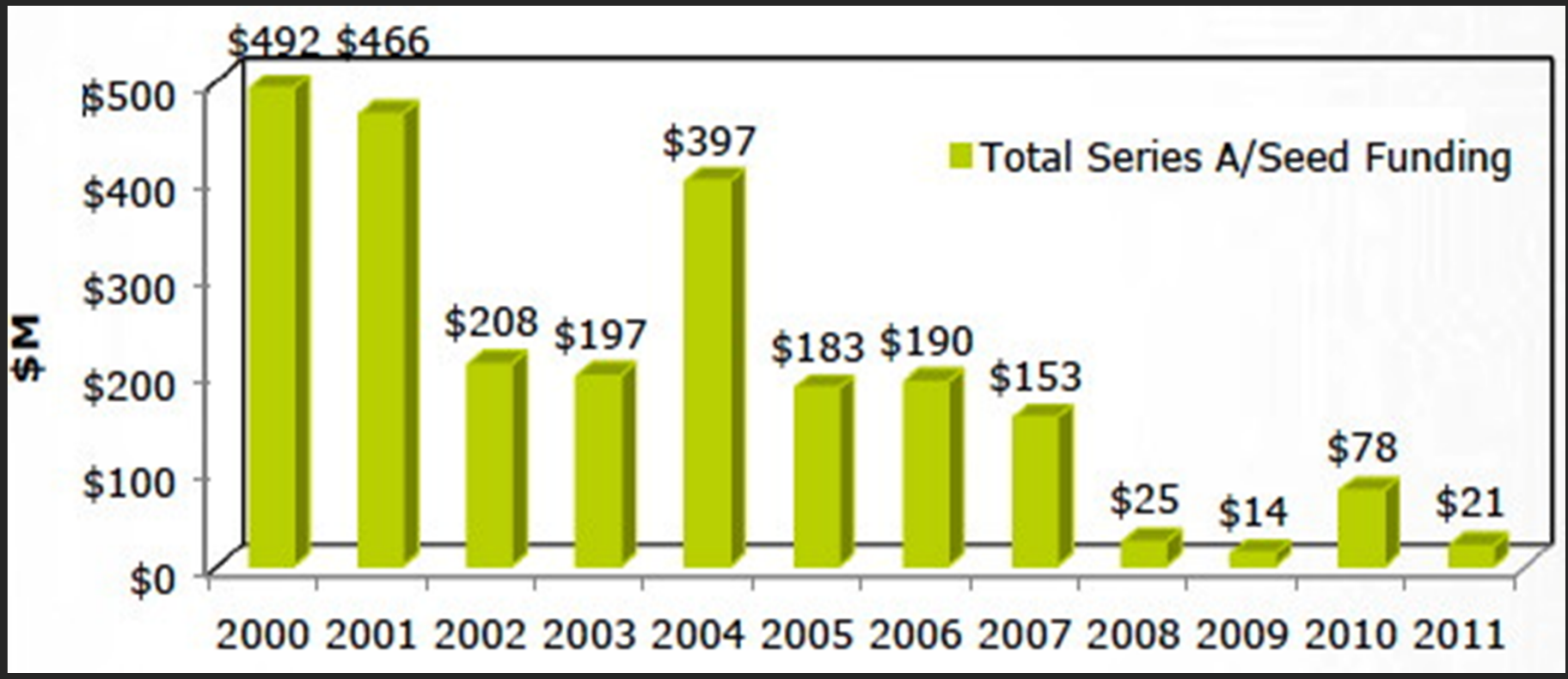
The Problem: No VC funding available!



Source: GSA

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Why (most) VCs don't invest?

- Bad history (for some..)
- Looooong time to exits (at least in B2B)
- The $100M ASIC myth
- Unattractive exits (compared to social/software at least)
- Ways they say no: no semi, no hw, no IP, too early, to small, no competitive edge, no processors, no digital startups, too risky, wrong market, no customers, no answer,..

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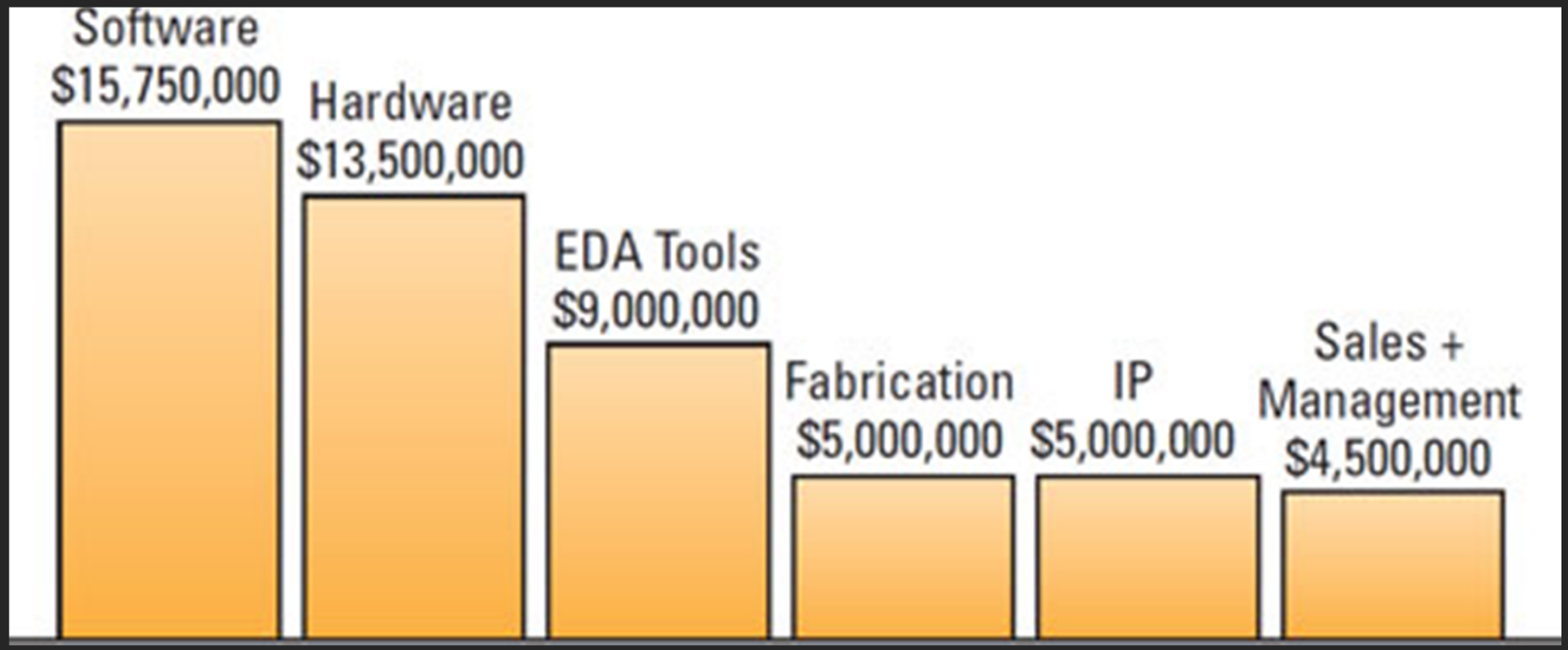
The Data Behind the $100M ASIC Myth



What is the biggest expense for semi startups? (A: salaries)

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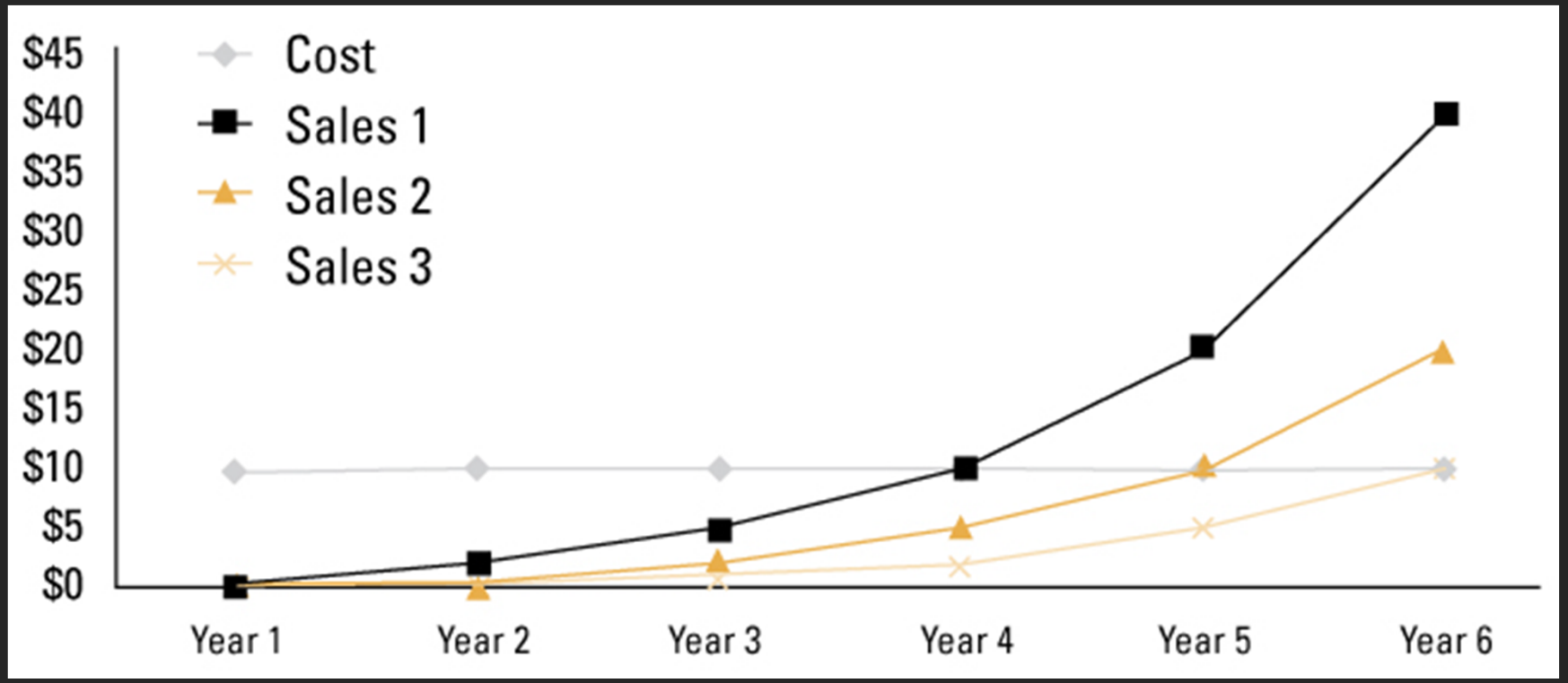
The Problem with a High Burn Rate



Time to revenue is THE biggest risk in semi.
Solution: Be lean!

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Richard Feynman's Lecture (1959)

"There's Plenty of Room at the Bottom"
An Invitation to Enter a New Field of Physics

"Why cannot we write the entire 24 volumes of the Encyclopedia Britannica on the head of a pin?"

"The principles of physics, as far as I can see, do not speak against the possibility of maneuvering things atom by atom."

"I don't know how to do this on a small scale in a practical way, but I do know that computing machines are very large; they fill rooms. Why can't we make them very small, make them of little wires, little elements – and by little, I mean *little*. For instance, the wires should be 10 or 100 atoms in diameter, and the circuits should be a few thousand angstroms across."

Other Concepts:

- *Rearranging atoms, Micro-machines, Chemical synthesis, Micro-antenna arrays*

Applies to chips AND semiconductor operational costs

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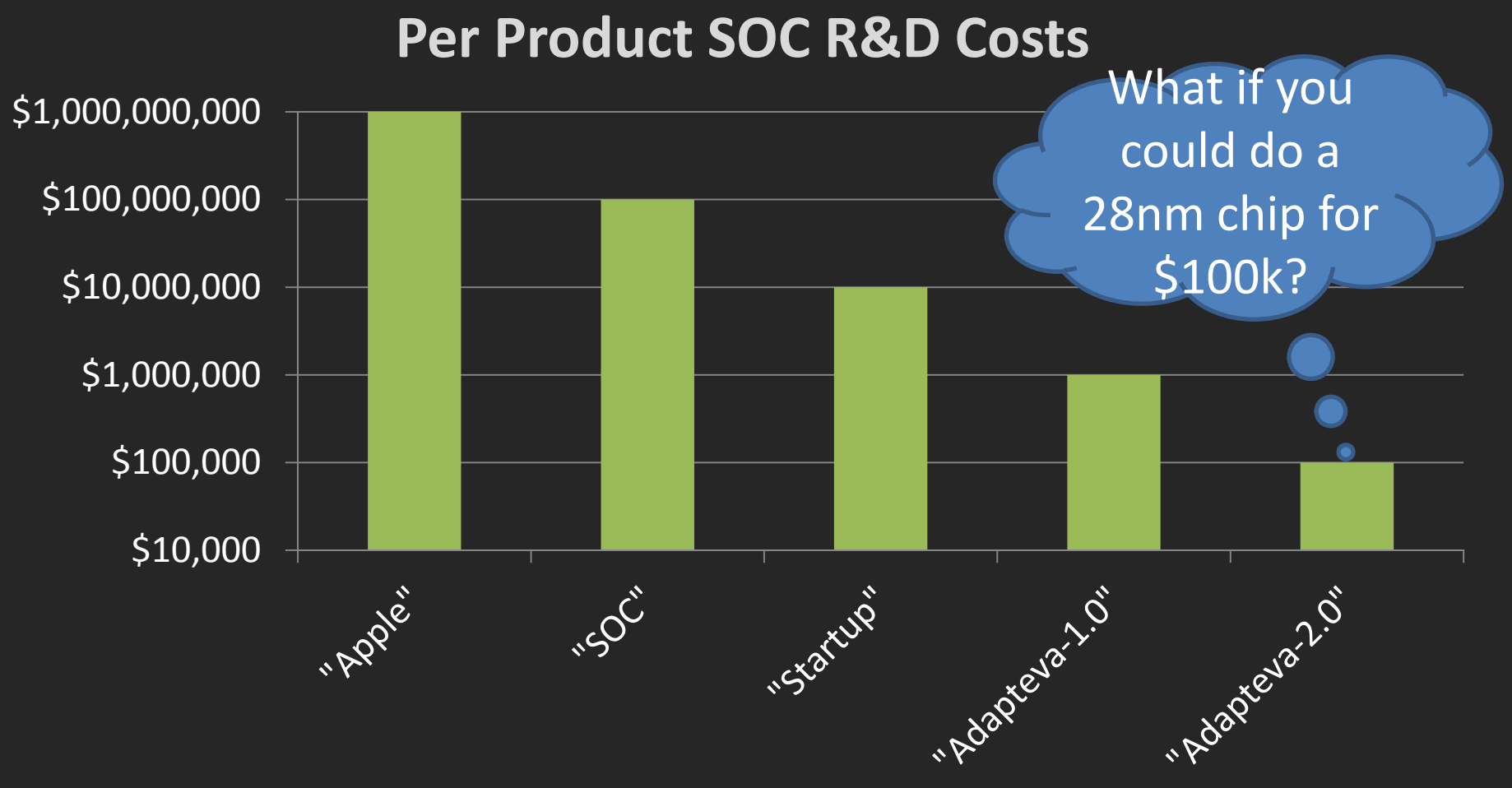
How low can we go in chip design..



Why We Used Kickstarter For Parallella

- No other choice... (no funding left)
- Our project goals fit the Kickstarter profile
- Kickstarter is a good project launching platform
- Excited by the fund raising success of Ouya
- Inspired by the viral success of Raspberry Pi (not on KS)
- Get funding and customers simultenously, cut out middle man.

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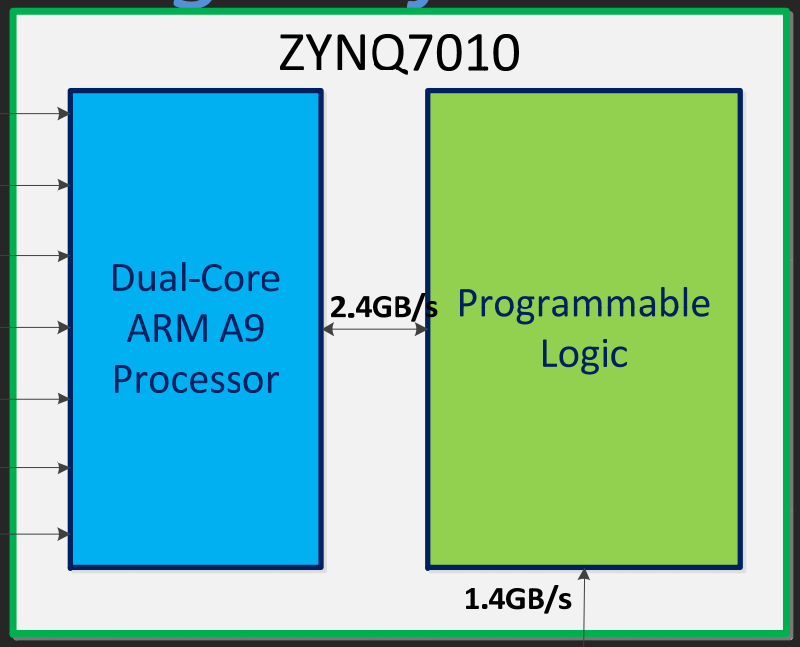
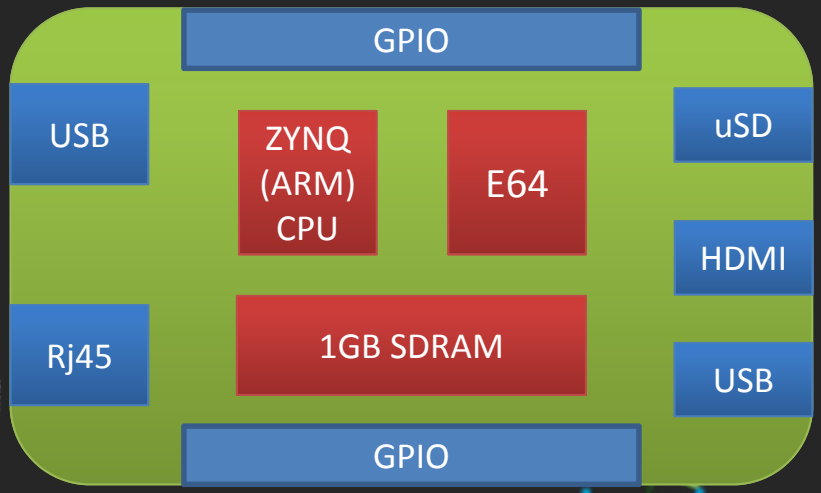
Parallella Computing Project

- Open (and ”free”):
  - Documentation
  - Board design files
  - Drivers
  - Software Tools
- Accessible (NO NDAs!)
- $100 entry point
- ~4000 devs signed up in 4 weeks





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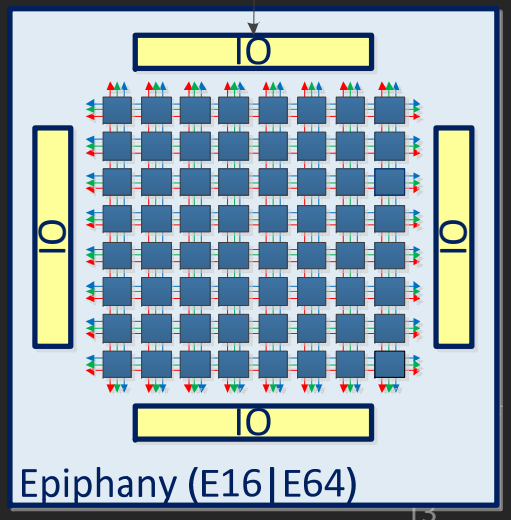

Kickstarter In a Nutshell

- Kickstarter is a platform that allows you to fund a project/product through donations from individuals. In return for donations, you give these supporters substantial rewards (for example special prototypes, products, perks, etc).

- Key Kickstarter project concepts:
  - The minium fund raising goal is set at launch and cannot be changed.
  - Supporter rewards cannot be changed once offered.
  - The campaign runs for a fixed amount of time (say 45 days)
  - It's all or nothing. If the minimum is not raised by the end of the campaign, you get nothing

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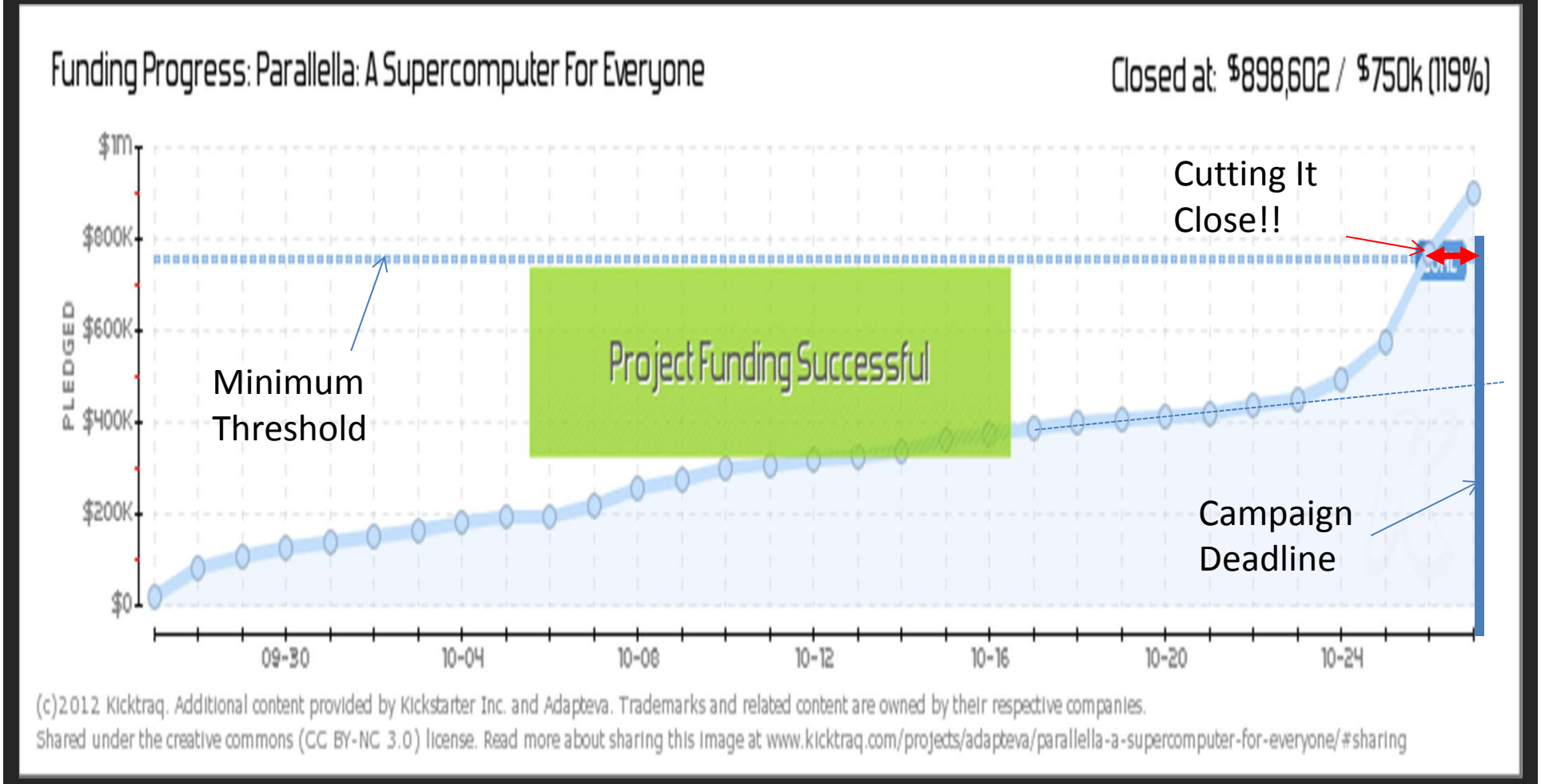
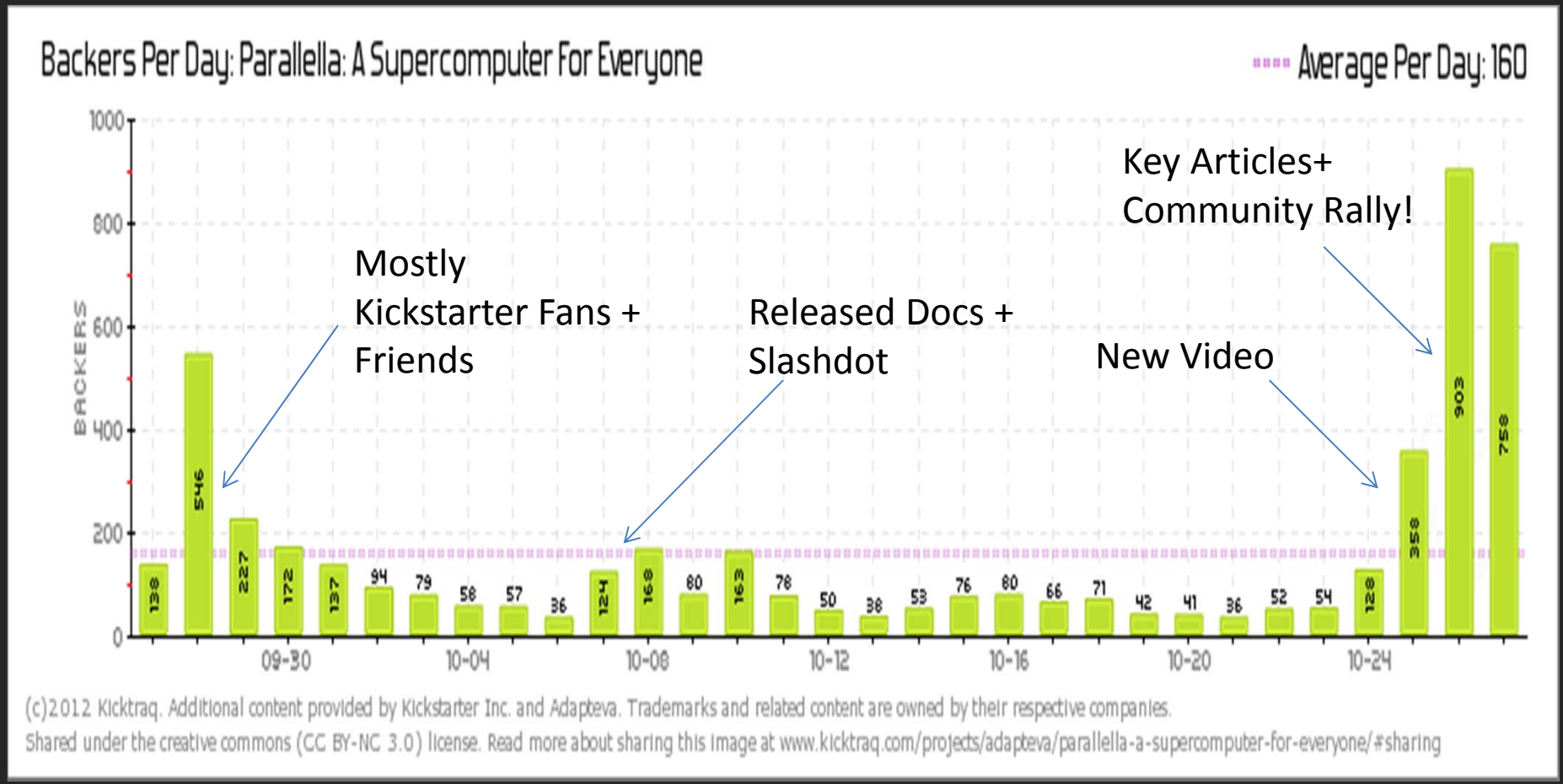
It Actually Worked!!



Kickstarter Tracking



Parallella Fundraising Summary

Amount Raised (after fallout, overhead)	$810K
Backers	4,965
Pledge Per Backer (total)	$181
International Backers	2,200
Countries Represented	67
US States Represented	50
Boards To Ship	6,300
Cases to Ship	1,200
Parallel Programming Books to Ordered	750

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Our Fund Raising Report Card

GOOD	BAD
Positioning(supercomputer, open, parallel)	Not prepared enough on day #1
Timing (Rasperry Pi, Ouya)	Team was too small (1+2)
Pricing ($99)	Spread ourselves too thin
Product Specs (Researched)	Too optimistic on day #1, no backup plan
Listened to backers	Need to come in with community
Never Gave Up!	Need to come in with prototype ready!
“Pivoted”	Not enough time (for our market..)
Great grass roots press coverage	Horrible logo picture!
Worked incredibly hard	Didn’t use FB or Google+ early enough
Maximizing donations with rewards levels	No applications/community on day #1
Good secondary concept (“linux TV”)	

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Kickstarter Aftermath

GOOD	BAD
Community is growing really well	Still struggling with money
Now taking 500 reservations/week to website	Running late
Web visitors/day up from 50 to 500	Enormous stress level
Enjoying work again	Didn't help with VC/strategic funding
New partnerships	Now a 5 person system company…

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Three Takeaways

If you believe in your product, don't give up!

For B2C, a new HW funding model is here:
Personal→F&F→Angel→Kickstarter→Profitability

Semiconductor is not that hard with the right team.

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