From Research to Company

One Start-up's Story

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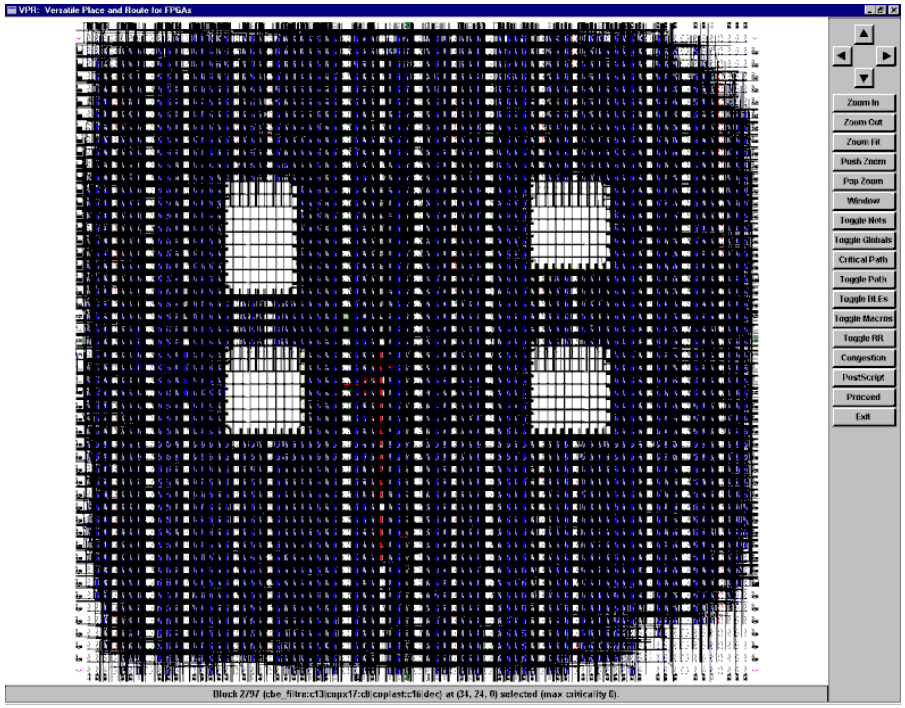
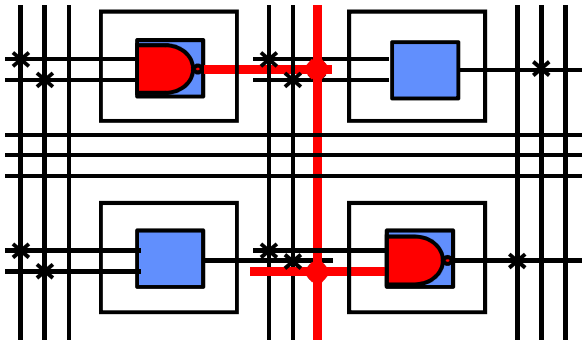
RIGHT TRACK CAD

The Idea

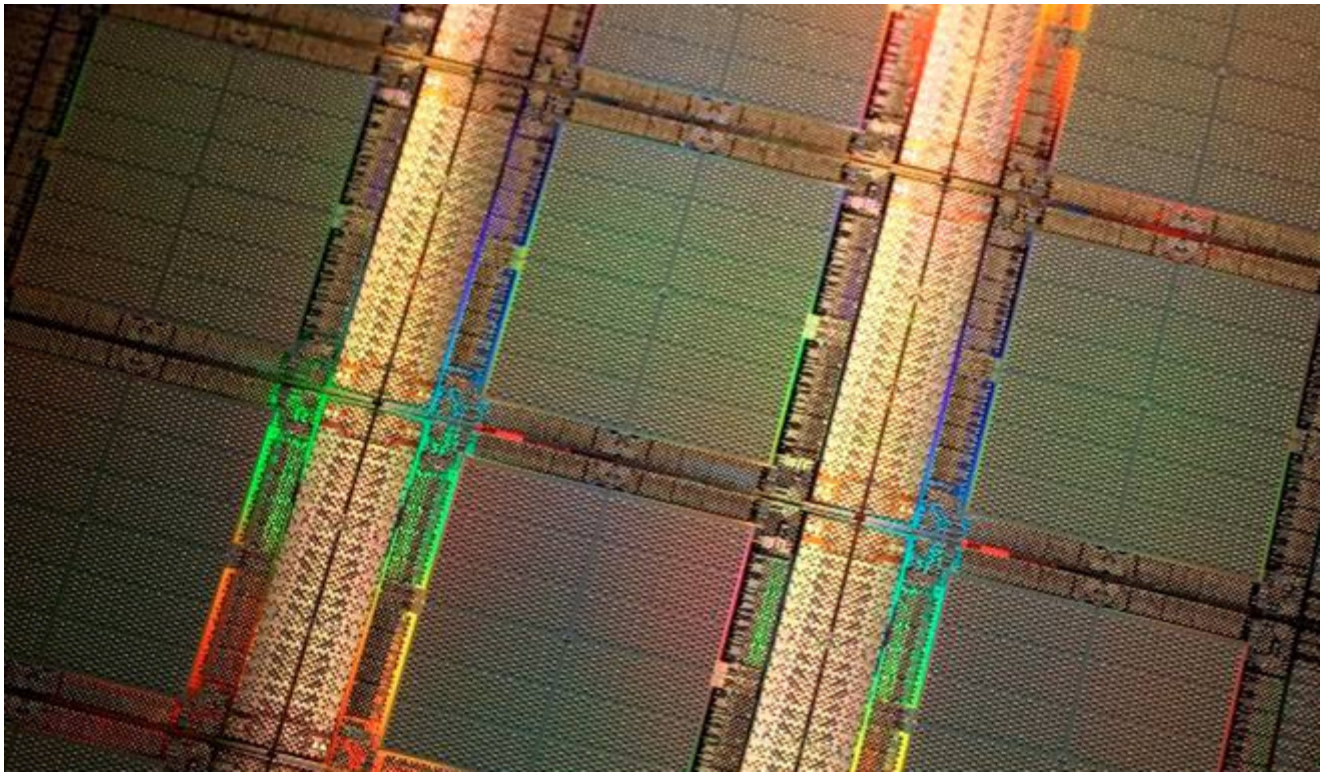
- PhD: developed new software that:
  - Made it easier to design a certain type (FPGA) of computer chip
  - Lets you get more performance out of those computer chips
- 1998: getting commercial interest
- Turn this research software into a commercial product?





Field-Programmable Gate Arrays (FPGA)

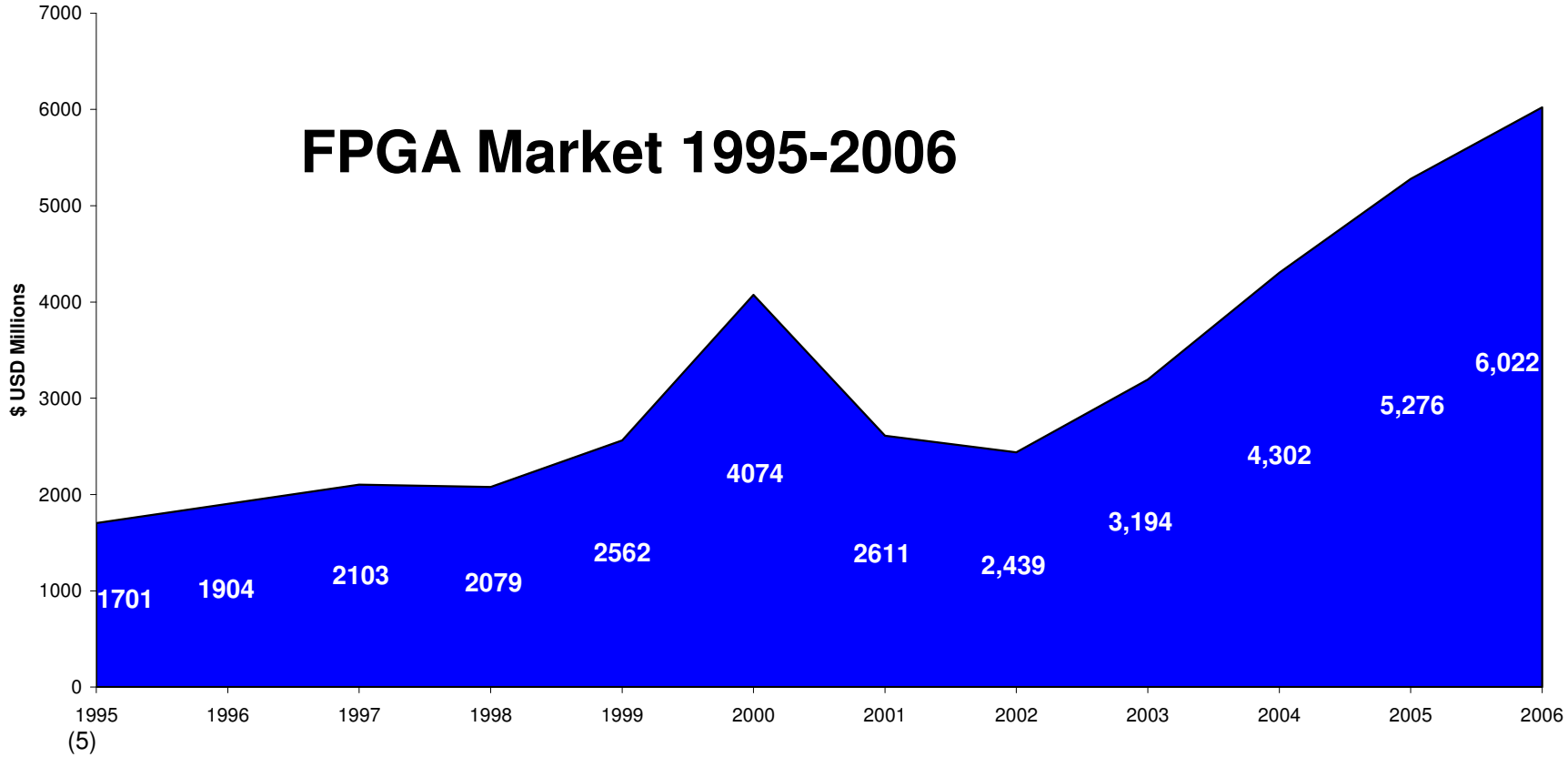
- A pre-fabricated computer chip
- Can become any circuit by programming, in seconds
- Design a product: 2 months vs. 2+ years with trad. chip
- Costs $200 vs. $100 million with traditional chip



A Chip that Can change Its Spots

The Industry

- 2 big suppliers (Xilinx & Altera), 5 - 10 smaller players, and various start-ups
- Used in many different areas



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Source: Dataquest

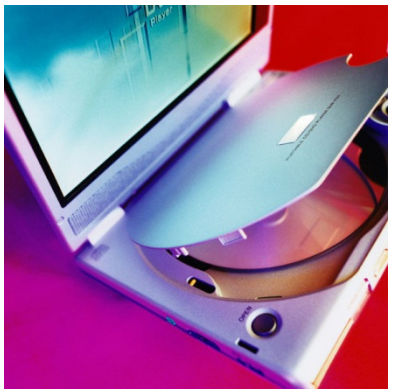
Communications, Computer

Industrial, Video, Automotive

Consumer Applications

Set-Top Boxes

Touch Panels



DVD Players

LCD, Plasma Displays/TVs

Consumer Music

Printers

Camcorders

Handheld Media Players

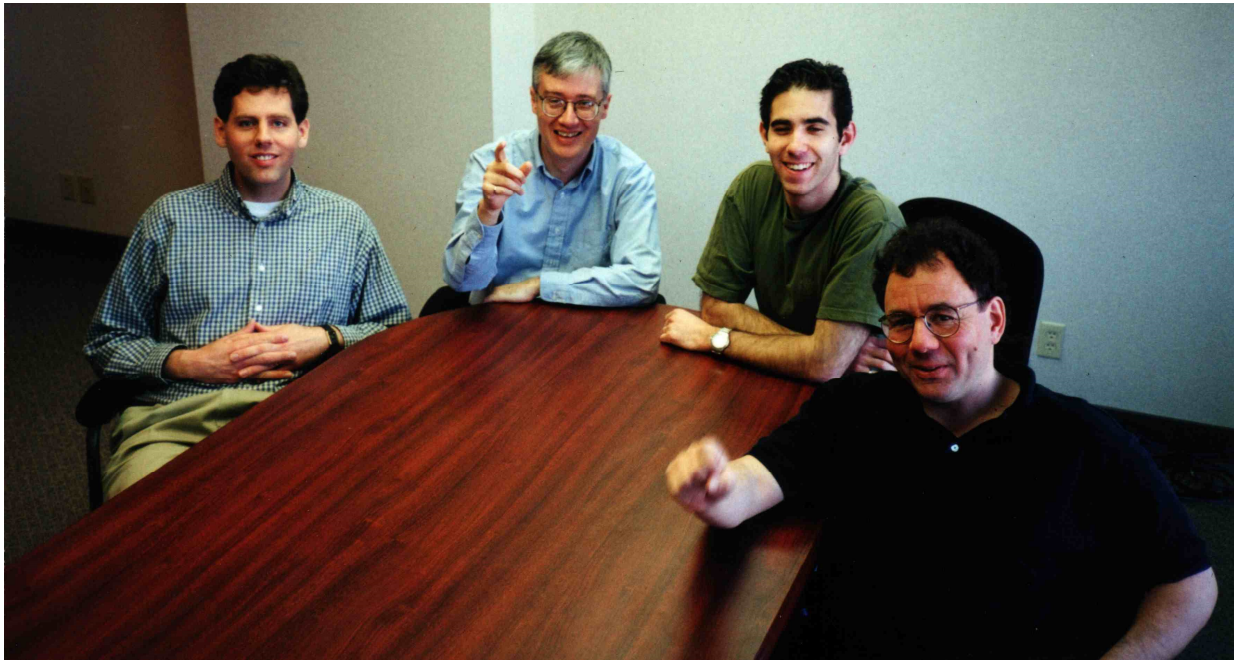
Should We Commerialize?

- Interest from companies
- Me: risk-averse!
- Jonathan Rose (PhD advisor)
  - Energetic optimist: go for it!
- Mix was important!
- Commitment: start **if** we could find funding for real salaries
- Four founders, with mix of skills & personalities
  - Technical vs. business
  - Optimistic vs. pessimistic
  - Trust!

The Company

- Incorporated 1998
- Capital: $1000

RIGHT TRACK CAD



Business Plan

- Jonathan: sell better software to FPGA users
  - Problem: FPGA users used to near free software
  - Problem: FPGA makers don't give out details of their chips
- Me: sell straight to the vendors
  - Make better software for their chips
  - Help them make better chips
  - The money is in the chips!
- Went with my plan → key decision
  - Critique / war game your business plan

Funding

- Venture capitalist (San Jose)
  - Why not sell straight to FPGA users?
  - Wanted to repeat last success in a different area of CAD
  - Would force us into a business model I didn't believe in

- Used bootstrap financing
  - Fund with pre-payments from FPGA vendors
  - Good: Ensures immediate customer contact → build right thing
  - Good: Don't dilute ownership
  - Bad: Will cut amount we can charge first customers
  - Good: Forces us to prove business plan viable at company start

University IP

- Needed to license CAD source code from university
  - University very reasonable
  - Wanted prestige / jobs / links of a start-up, not immediate $$
  - Our strength: university could not commercialize sw without us

Getting customers: Cypress

- Spent 6 months negotiating with Cypress Semiconductor
  - Big semiconductor company, but small ($30M / year) FPGA div.
  - Develop next generation chip and software for it
  - Very slow progress, no willingness to commit

Getting Customers: Altera

- One day, Altera called
  - Industry leader: > $1B / year in FPGAs
  - Wanted better software for their current chips
  - In 1.5 months had signed contract!
    - Much negotiation
  - Money up front for office, computers, salaries
  - Performance bonus
  - No Venture Capital required!

Contract Issues

- Wanted legal advice, but grad student!
  - George Takach (McCarthy Tetrault) understood issues
    - Read quickly for big issues (cheap)
    - If no big issues and we're close to signing read carefully ($$)
  - Get a good lawyer
    - George saved us many times
    - Needed him involved early, to prevent **big** mistakes
      - E.g. right of first refusal on acquisition

Intellectual Property (IP)

- Needed to own our IP (otherwise consultants)
- But selling core technology to FPGA vendors
  - They needed some control / ownership too
- Solution:
  - We own general IP
  - But they get source code & rights to extend
  - Major concession → customer can reverse-engineer

Success

- Delivered software to Altera
  - In 10 months
  - Maxed-out performance bonus
  - Altera replaced their SW with our prototype
- Negotiated further work
  - With much stronger hand
- Cypress also customer

Exit Strategy: Acquisition

- Altera made offer to buy
- Sell?
  - ✓ Sell at top of our game
  - ✓ To a top player with great engineers → impact
  - ✓ Industry consolidating → bad for our model
  - ✗ Lose control of your beautiful company and vision
- Acquired May 1, 2000 after much negotiation
  - – Wrote unusual items to protect culture

Acquisition

- Altera Toronto Technology Centre
  - Grown to 140 people
  - Developed Altera's most recent chip families and core software
  - Over $10 billion sold
- Key to keeping value
  - Altera basically let us run Toronto the way we wanted
  - Altera willing to replace own technology & re-deploy own teams

ALTERA

Quartus II

QUARTUS II

Acquisition Aftermath

- Cypress sued Altera
  - Wanted us to still develop their next-gen chip
  - Altera said no (competitor)
    - Coke to develop Pepsi's new soft drink?
  - Small IP ambiguities in contract became important!
  - Jokes in emails → hours with lawyers!

Lessons Learned

- Get close to your customers
- Focus – solve only what you need to
- It's not price, it's value!
- Negotiations: be prepared & patient

- Incredibly rewarding & memorable experience!