Lessons Learned by an Academic Entrepreneur

Roger Chamberlain
Dept. of Computer Science and Engineering
Washington University in St. Louis

4 Companies

BECS Technology, Inc.

Hearing Emulations, LLC

exegy

VeloData

BECS Technology, Inc.

Graduate school startup (in late 1980s)
Evolved out of consulting activities w/ college roommates
Manufactures controls for industrial applications
Water – Municipal Pools, Drinking Water, Waste Water
Agriculture – Hog Barns, Chicken Houses, Grain Bins, etc.
Technology from Undergraduate Education
Combining Electrical Engineering and Computer Science
No university owned intellectual property or involvement in the company

BECS Technology, Inc.

Recently moved to new 47,000 sq.ft. facility

Recent Connection to Research Agenda

Security for IoT

IoT and the Cloud

Automated Titration
Lessons Learned – BECS Technology

- Maintain appropriate separation from university
  - Honor conflict of commitment rules
  - Don’t expect its success to help tenure case

- Growing a company is a lot of work
  - Someone has to be very dedicated – I had partners
  - Think hard about doing this while full-time faculty

- And it can be very rewarding!
  - Much more tangible than typical academic pursuits

Lessons Learned – Hearing Emulations

- More of a classic university startup
  - Initial funding via SBIR grants through NIH

- Excellent technology
  - Make hearing aids act like human cochlea
  - Demonstrated improved speech understanding in noisy environments – Important hearing problem

- Very difficult marketplace
  - Going it alone is quite problematic
  - Not-Invented-Here syndrome is common at big companies

Published as We Went

- Hearing Benefits

- Novel Numerical Representations

- Low-power Implementation

Lessons Learned – Hearing Emulations

- Pick your market carefully
  - The deck was stacked against us from the beginning
  - Incremental improvement (even if real) isn’t enough

- Leadership must not think/act like academics
  - Someone has to be the business leader
  - This task is NOT anything like an academic job
  - Either transform or partner with someone
Exegy, Inc.

University technology
  - Patents applied for in 2000, Exegy formed in 2003
  - Local St. Louis (angel) investment to start

I served as initial Director of Engineering
  - On leave from the university
  - My job included the task of hiring my replacement

Computational acceleration
  - Initially focused on approximate search applications
  - Repositioned to financial market data in 2005

Published as Technology Developed
- "Streaming Data from Disk Store to Application," in Proc. OF SNAPI, 2005.

Exegy, Inc.

marketdatapeaks.com
  - Msgs per second through one Exegy ticker plant
  - Exegy services $1 trillion in trades per day

Short Detour on Intellectual Property
- Three fundamental forms
  - Copywrite
  - Patent
  - Trade secret

Patent is most compatible with university culture
  - Technology is published, not hidden
  - Grants exclusive rights to manufacture, sell, use
  - Valued in financial markets (e.g., venture capital)

Exegy started with university-owned patent applications (now 21 patents + 1 pending)

Lessons Learned – Exegy
- Be Flexible with Company Direction
  - Again, great technology but hard-to-crack market
  - Successful only once we focused on customer needs
- Focus, Focus, Focus
- Professional Leadership is Key
  - Engineering
  - Marketing
  - Sales

VelociData, Inc.

velocidata.com
10425 Old Olive St. Rd.
St. Louis, MO
VelociData, Inc.

- Spinout from Exegy
  - Return to initial product focus
  - Process large volumes of enterprise and/or IoT data
- First cohort of cable industry startup accelerator

Lessons Learned – VelociData

- Understand market needs
  - Good technology is essential
  - Must be paired with good market understanding
- Understand value proposition
  - Good technology is not enough!
  - Must make (or save) money for customers
- Startup accelerators can be very beneficial
  - Access to the right people
  - Network, network, network

Summary

- Lots of fun!
  - The personal sense of accomplishment is huge
  - True “impact”, which is often difficult to gauge in academia
- Lots of work!
  - Much (most) of the work is NOT engineering
  - Either partner with people that have business skills or develop them yourself, but don’t just assume they exist

Thank you …

My contact information:
http://cse.wustl.edu/~roger
roger@wustl.edu