

Myricom – An Entrepreneurship Story

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Chief Executive Officer***

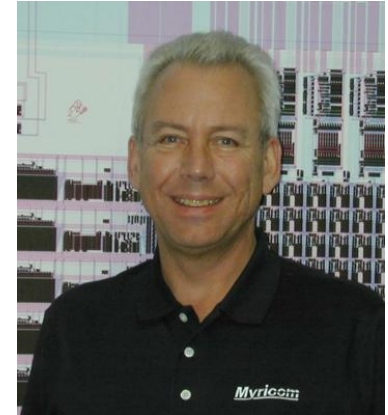
8 September 2010

Outline

- Myricom's Story
 - Myricom Markets, Products, and Technology
 - A Retrospective
 - For Myricom
 - As an entrepreneur
- Note: Myricom is a privately held company that does not publish its revenues or other key financial metrics.

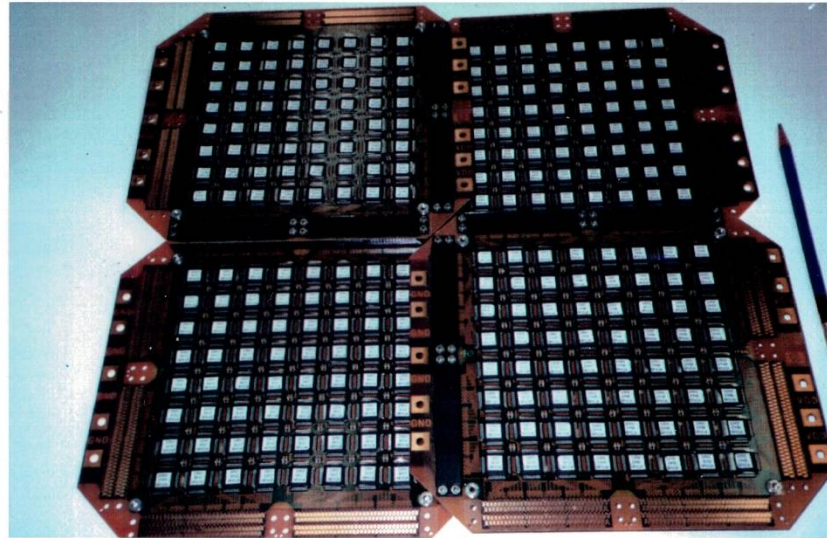
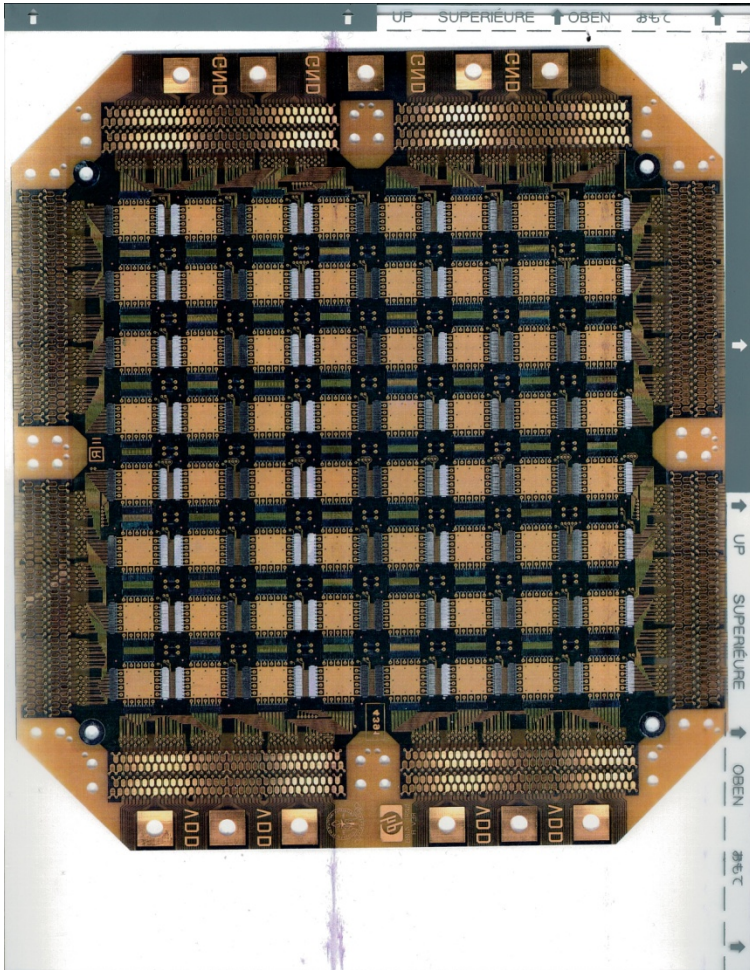
Myricom's Story

- Principal Investigator: Professor Chuck Seitz (National Academy of Engineering '92)
 - Concurrent Computing Group was funded by DARPA (Defense Advanced Research Projects Agency)
 - Developed the Cosmic Cube and other pioneering “multicomputers” – large numbers of computers tightly coupled together with a high performance network to perform parallel computations
- In 1992/1993, the entire research group (Chuck and 5 others from Caltech, plus two from USC/ISI) decided to leave Caltech to commercialize our research
- On April Fools' Day, 1994, Myricom began operations.



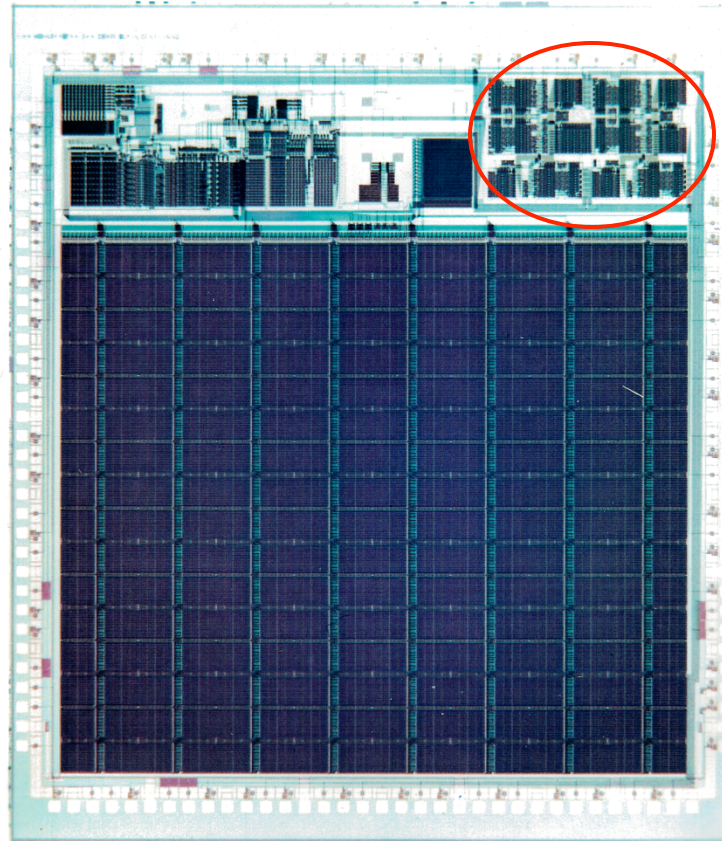
Prof. Chuck Seitz,
Lead Founder

Mosaic C Multicomputer



But what were we really good at?

*Custom VLSI
design for
networking*



Mosaic C version 1.3 (MC1.3)
(Processor, packet interface, router, & 64KB memory)
in 1.2 μ m MOSIS SCMOS technology

The Business We Thought We Were In...

- Myricom's initial product vision was to make very high performance LANs (Local Area Networks).
- The dominant networks of the day were 10Mb/s Ethernets. We were offering a network that was 64x times faster (640Mb/s), with arbitrary, discoverable, network topology
- The venture capitalist networking trend of the day was "ATM was the network of the future." Most thought we were crazy to start our own network from scratch.




An Existing Gigabit/second Network

Myricom's Story

- The venture capitalists weren't interested in our story, and we didn't like their viewpoint/constraints.
- We bootstrapped the company on \$1M in angel investing from five wealthy investors, including a lead investor who had hired Chuck a few years earlier as a consultant
- We cut an innovative (at the time!) deal with Caltech to license our own research without royalties.
 - Caltech received a several percent equity share of Myricom, with the stipulation that eventual proceeds would be used to endow a professorship chair in Computer Science

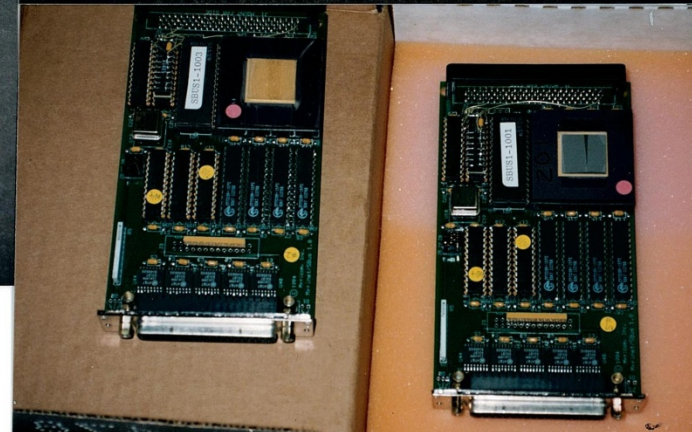
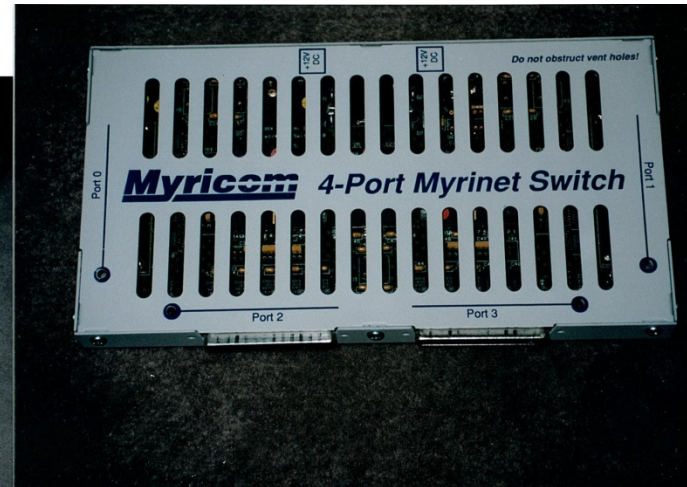
Myricom's Story

- Most importantly, we were able to take our DARPA contracts to cover our burn rate while we commercialized our first products.
- After one crazy busy summer of 1994, we launched our first product four months after we commenced operation.
- Our first, friendly, customer was.... 
- We decided to make our products “open source” (before there was a name for such things)

“We make mechanism, not policy...”

First Products

- Because our Myrinet protocol was completely new, we had to design and manufacture
 - NICs (Network Interface Cards)
 - Switches
 - Cables



My Ph.D. work was the basis for the first Myrinet control program on the NICs.

The Business We Actually Were In...

- An early customer, Univ. of California, Berkeley had the insight that they could use our high-performance hardware and modified open-source software to create
 - Clusters of Computers, which became the dominant architecture for HPC (High Performance Computing) in the late 1990s
 - By about 2004, clusters had displaced Cray machines and other supercomputers for nearly all of the Top500®

Growth Highlights

- We shipped product for revenue ***four months*** after we commenced operation.
- Within ***eleven months***, we were cash flow positive.
- Starting in 1995, we began a string of ***48 consecutive profitable*** quarters
- By the end of 1994, we had four customers; by the end of 1995, we had thirty.
- By 1997, we had signed an OEM agreement with HP, who private labeled our Myrinet hardware as “Hyperfabric.” HP became over 40% of our revenue.
- Because we were so strongly cash-flow positive, we never took another dime of angel money. We funded all growth from earnings.
- **By 2004, Myrinet was used in ~40% of the Top500® HPC (High-Performance Computing) systems in the world**

Myrinet in the Large

LANL Lightning Cluster, 1408 dual Opterons, Linux,
Myrinet, #11 on the June-2004 TOP500®,



Proven Scalability of Myrinet Switching



MareNostrum Cluster in Barcelona. The central Myrinet-2000 switch has 2560 host ports. Photo courtesy of IBM.

A Myrinet Switch Network for 2560 Hosts



*Photo
courtesy
of IBM*

The switch network for the MareNostrum cluster at the Barcelona Supercomputing Center. MareNostrum was ranked #4 in the Nov-04 TOP500, and is the fastest cluster in the world.

T2K Cluster at U Tokyo



Changes in Myricom Due to Growth

- As the business grew rapidly, we struggled to change the company to keep pace.
- I transitioned from writing software to running our Production Department.
 - I later ran the Sales Department, became Executive Vice President, CFO, a Board member, and now CEO.
- In 1997, we hired “professional” Production managers.
- In 1999, we hired “professional” Sales people.

By 2004, we had ~50 employees.

In mid-2004, we wrote an S-1, with Merrill Lynch as lead banker, for our IPO to occur in September 2004.

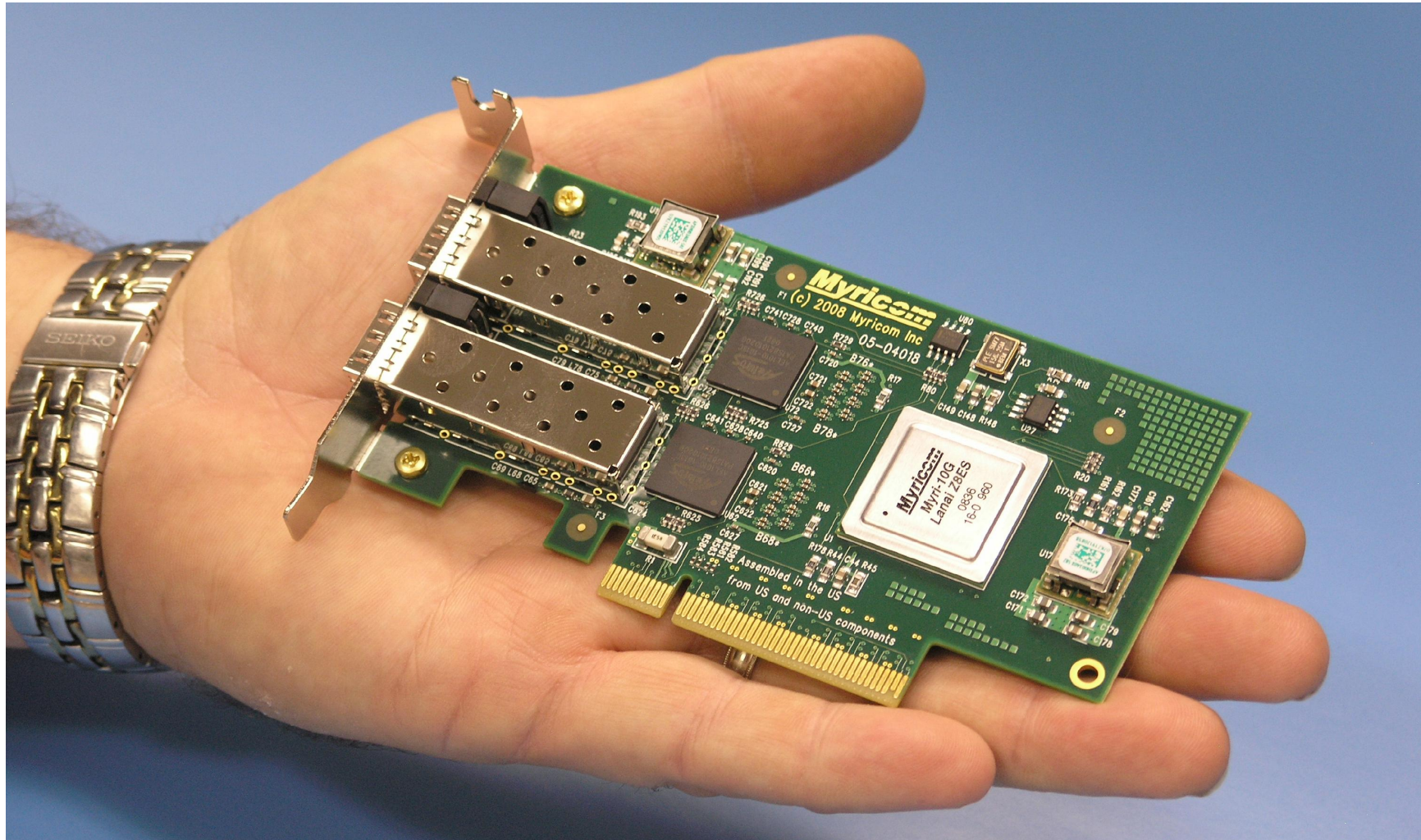
So, what happened then?

What Happened Then

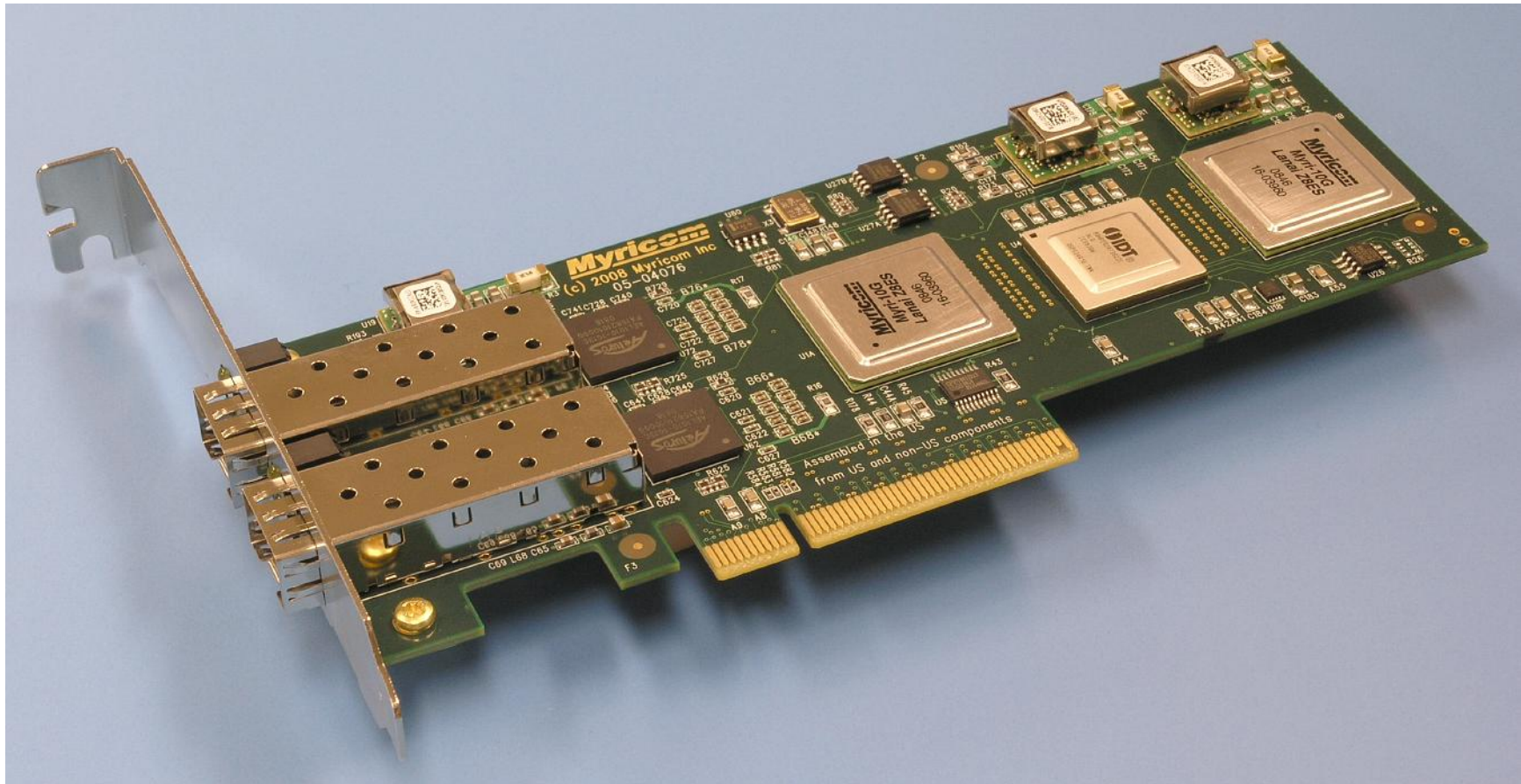
- The HPC networking market shifted out from under us
 - Infiniband appeared, a heavily funded VC effort
 - Almost \$1B invested in ~30 startups to attack what was then a \$30M market
 - All but one or two failed, but those one or two trashed the market, eventually went public and have made lots of \$\$\$
 - In our technical opinion, their technology was crude and derivative.
 - Their marketing bandwagon (“Infinibandwagon”) was amazing.
- We stared into The Abyss of being a public company and decided we couldn’t live that way.
- Starting in 2005, our revenues peaked and then declined. We became unprofitable. Customers adopted other networking standards...

So What Does Myricom Do Now?

*Fastest, lowest cost, **lowest power**, 10-Gigabit Ethernet NICs available*



Our highest performance NIC



Fastest two-port 10-Gigabit Ethernet NIC on the market

Myri-10G Modular Switches



“Vertical Markets”

Myri10GE for conventional TCP/IP and UDP/IP
MX (Myrinet Express) for HPC
Video Pump for IPTV video streaming
Sniffer10G for Ethernet packet capture
DBL (Datagram Bypass Layer) for financial trading

What we did right

- Had an outsized impact on the dominant computing architecture of the era
- Over 16 years, we have developed four generations of groundbreaking networking products and innovations
- Listened to our customers' ideas, especially the smart ones

I wish I'd known...

- What you chose to work on defines you, and to large degree, your success/failure
- The seeds of our limitations were sown the first day
- You should respect the crafts of others, particularly if doing that job yourself would drive you crazy or take you away from what you should be doing
- Listen **MORE** to your customers' ideas, especially the smart ones
- Focusing on profitability, at the expense of competitive position, is not a wise long-term strategy
- It is really annoying to laser-site a market for your competitors to capture
- It is possible to have too *little* paperwork

What I have learned (so far) at UCLA

- All companies have a lifecycle.
- Our focus should have been broader than the technical innovations.
- Marketing is not advertising – it is a picture you paint for your customers, competitors, and yourself.
- Business is a craft learned some through education, but mostly through experience.
- Myricom is doing something fairly rare – having an exciting “second act.”

Thank you! Questions?

