



From the President



"A man's worth is no greater than the worth of his ambitions." – Marcus Aurelius Antoninus

If necessity is the mother of invention then entrepreneurs must be the mid-wives. Entrepreneurs and the small business that they create and grow have always been at the driving force behind the US economy and represent the very best of what American enterprise is all about. Entrepreneurs take enormous personal risks and make tremendous sacrifices to bring to market products and jobs to serve society. If successful they can enjoy a worthwhile vocation that is uniquely their own and perhaps even generate significant wealth as well deserved rewards. Thus, they deserve not only our respect but also our support. Photonics is especially indebted to entrepreneurs. Names like JDSU, Newport and Ocean Optics, all of the major firms in the industry were once the modest brain-children of intrepid engineers who struck out beyond their day jobs to create entirely new segments of the economy. Thus I am proud to bring this very special edition of the Florida Photonics Cluster Quarterly dedicated to venture capital trends in the photonics industry, contributed by Dennis Pape of AlphaLaunch, on the heels of his very successful webinar on the topic. Venture Capital (VC) is today a major component in the development of entrepreneurial firms and thus a fitting topic for the last issue of this newsletter before the holidays. I hope all of you had a joyous holiday season and I wish all the best for the New Year ahead to you and yours.

Trends in Venture Capital Funding of Photonics Companies - Dennis R. Pape, AlphaLaunch



Venture capital investment in enterprises is a relatively recent phenomenon. It wasn't until the latter half of the 1990's that significant amounts of money were invested, peaking at \$104B in 2000, as shown in Figure 1. A dramatic decline in VC investment in 2001 stabilized in 2002 at about \$22B, the amount invested in 1998. We may, however, be at the beginning of another wave of VC investment. There was an increase in funding in 2006 (\$26B) and the first quarter of 2007 shows an increase in funding over that of 1Q 2006. These increasing levels of investment are the result of the opening of the IPO market and a significant mergers and acquisitions market over the last several years that provides VC firms with a much clearer path to achieving liquidity than was the case in 2002 – 2005.

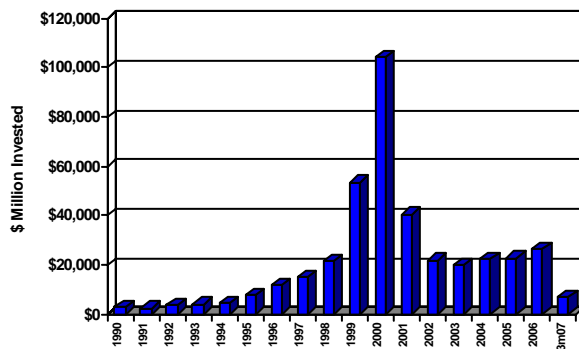


Figure 1 – National Venture Capital Investment (Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report, Data: Thomson Financial)

Historically, optics and photonics companies have attracted between 5 and 10% of all VC investment. This did not change appreciably during the 1999 – 2001 funding wave. What happened during this period, however, is that a significant amount (25%) of VC investment went to companies in the telecommunication and networking marketplaces and thus into optics and photonics companies in those marketplaces. Historically, only about 10% of VC investment has gone to companies in these marketplaces. The notion over the last few years that “VC investment has abandoned optics” is just a corollary to the fact that the dramatic increase in the percentage of VC investment in the telecommunication and networking markets seen in the late 90’s and early 2000’s has now returned to historic levels.

So far this year, 34 photonics companies have received VC funding. Alternative energy production is “hot” now (20% increase in VC investment dollars over that of 2006) and thus it comes as no surprise that all of the seed and first round photonics VC investment this year has gone to photovoltaic companies – including MWOE Solar, Petra Solar, Recurrent Energy, Sky Fuel, SolBeam, and SunLink. The other 29 photonics companies receiving second round and later VC funding were in the medical devices, biotechnology, telecommunications and networking, display, illumination, and semiconductor industries.

It is expected that the hottest investment areas this year will continue to be medical devices, biotechnology, and alternative energy production. Photonic companies in these spaces stand the best chance of receiving venture capital investment.

While VC investment at a national level returned to 1998 levels in 2002 and now we may be at the beginning of a new funding wave, the same cannot be said of VC investment in Florida companies, as shown in Figure 2. While Florida experienced the first funding wave in 1999 – 2000, with VC funding in Florida peaking at \$2.6B in 2000,

we have returned to funding levels seen in 1995 – 1996, about half of that of 1998. We may, however, be at the beginning of a recovery to 1998 levels this year. There was a dramatic increase in Florida funding in 1Q 2007 (\$150M) over that of the 1Q of 2006 (\$59.6M).

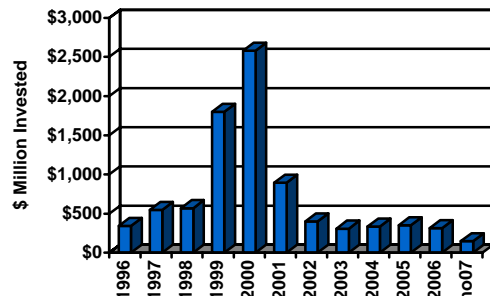


Figure 2 - Florida Venture Capital Investment
(Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report, Data: Thomson Financial)

So far this year, no photonics companies have received VC funding in Florida. Last year, only one Florida photonics company received VC funding – Raydiance (\$15M in Nov 2006). Raydiance, located in Orlando, is developing a portable ultra short pulse laser system – technology it licensed from UCF CREOL. Prof. Peter Delfyette and his students at CREOL developed this technology and serial entrepreneur Jeff Bullington, also associated with UCF, founded the company. Some of Peter’s students are now working at Raydiance.

The Raydiance story in Central Florida, the commercialization of photonics technology from a Florida university, is a story FPC hopes to see repeated at UCF as well as all of the other Florida universities with optics and photonics research programs. One of the key objectives and major initiatives underway within the FPC this year is the development of programs to stimulate entrepreneurial growth in photonics within Florida.

Not only is the FPC gearing up to stimulate photonic entrepreneurial activities here in Florida but the state is also embarking on two new venture capital initiatives this year

that will help photonic start-ups. The figures above show that Florida only receives about 1.2% of the total venture capital invested nationwide. The lack of venture capital in our state has limited our ability to create new high technology companies. Responding to this, in mid June Governor Crist signed into law House Bill 83 which creates the Florida Opportunity Fund. This fund (\$30M) will increase the availability of seed capital and early stage venture equity capital for emerging companies in our state. The law also creates the Institute for the Commercialization of Public Research to commercialize products of public research through a grant program available to Florida public universities. This new institute will administer a \$5M three phase grant program - phase 1 grants, which may not exceed \$50,000 per project, will be available to assist with early market research, independent evaluation, consultation, and other initial activities that may be required to develop an initial business model for a university research product that has the potential for commercialization, phase 2 grants, which may not exceed \$100,000 per project, will be available to assist with the development of a complete business plan for the commercialization of a university research product, and phase 3 grants, which may not exceed \$250,000 per project, will be available for the implementation and execution of a completed business plan for a university research product. All phase 2 and phase 3 grants established by this program require \$1 in private investment for each \$1 in state funding provided.

The prognosis is looking up for venture capital funding of photonics companies here in Florida. We will keep you informed as FPC's and the state's initiatives unfold this year and next.

Product Design Solutions Finds Adaptability Key to Survival and Success



PRODUCT DESIGN SOLUTIONS, INC.
WWW.PRODUCTDESIGNS.COM

Recently I was fortunate enough to spend some time talking to an old friend and entrepreneur, **Eric Ferree** of

Product Design Solutions, Inc. (<http://www.productdesigns.com/>) a design, development and fabrication firm based in Eustis, Florida and a member of the FPC. Product Design Solutions, Inc. has its roots in the G-Tech Incubator in Gainesville, FL and has been an important contributor to many important photonics based products.

AF: Eric, can you tell me about Product Design Solutions (PDSI) and what it does?

EF: I develop hardware almost exclusively for optical and medical device manufacturers. I provide R&D support for new product development, help provide custom fixtures, machines, or instruments to manufacturing, and help find solutions when things aren't going smoothly.

Product Design Solutions, Inc. is my means for providing these services, and I think that is an important distinction to make. Not long ago there were more people involved with me in PDSI, and I would have answered the same way, except substituted "we" for "I". This business is very much about how we as individuals can apply our skills and experience to solving problems for our clients.

AF: What are PDSI's key differentiators?

EF: The biggest differentiator is turnkey project sourcing. Yes, I provide mechanical design services, but 75% of PDSI's revenue is flow-through to other partners or vendors. This business model allows me to take on projects of a scope that I find interesting and helps me provide more value to my clients. Most projects begin with some

brainstorming on a general concept and end with delivery of hardware and a formal engineering release of the design data and specifications.

AF: How did you get PDSI started?

EF: In 1999 I was working for Kaiser Optical Systems in Ann Arbor, Michigan. Their parent company was bought by Rockwell Collins and it took a while for the dust to settle. I had always wanted to build a business so I decided that was the right time to hang out my own shingle. With a supportive client base, I built the business to two locations (Michigan and Florida) and 5 full-time and 2 part-time employees.

However, the ride was bumpy, and I found it impossible to scale the business model as it existed, so in 2004 with twin daughters on the way, I knew I had to scale it back. That was difficult. I laid off employees, sold equipment, and closed both locations. This move, in effect, reduced PDSI to a well-equipped home-office operation. I enjoy the business now more than ever, but I hear the Siren song of entrepreneurship so I think there is another chapter yet to be written.

AF: What do feel were the biggest obstacles?

EF: Balancing sales, cash flow, and capacity. No question! This is difficult in any business, and I have the highest level of admiration for those who can do it well.

AF: No question about it! So what was the biggest surprise and most important thing you have learned thus far?

EF: My biggest surprise was that I had the wrong business model for successful growth. That was not a pleasant realization. Others have built successful businesses in similar niches so it can certainly be done, but only after-the-fact did I understand that my vision didn't have some of the key components that would allow us to scale. Ouch!

The most important thing I have learned is the true value of building strong relationships. I have clients, colleagues, and vendors that have been with me from very early on. These are the folks I can turn to and ask, "Hey Joe, what do you think about this?" ...or vice versa. I've learned that good business starts with an idea and then a conversation.... and another... and another. You can get a job or a project by responding to an RFQ, but it's hard to build a business or a career that way.

AF: As an entrepreneur what do you feel can and should be done to improve the success rate of entrepreneurial firms by government at its various levels?

EF: Simplify compliance and taxation. Okay, I hear you laughing, but really, I think that would be the most helpful thing to entrepreneurial businesses. In my opinion, success is all about selecting the right vision, focusing on its implementation and then revising vision and strategy as we learn. Distractions or obstacles can be fatal especially when staff and resources are limited. And as an entrepreneur who has run a small multi-state business I can speak to this directly and from experience. If we want small business to succeed we need to help reduce the burden associated with simply running a business and allow our entrepreneurs to focus on growth.

On a positive note, I want to say that the nature of R&D has changed a great deal since I've been in engineering. I believe that the push to license IP resulting from government-funded basic research is an engine that is just starting to mature. With R&D becoming more expensive and patent timelines growing longer, licensing and partnering on R&D is a very promising option for small technology businesses.

AF: What are your plans for PDSI in the future?

EF: I learned a while back that I'm not a visionary. I am, however, the kind of guy who can help put wheels under a vision. So for the moment I'm very happy to play my part in launching the visions of my clients. But then the Sirens of entrepreneurship start singing again...

AF: It sounds like there's a lot of vision there actually but even more determination! Thanks for taking time out to talk to us!

EF: My pleasure!

Economic Development Programs Aim To Cultivate Entrepreneurship – Eric Ushkowitz



If you are a small business or a startup that is looking for assistance, there are a few options available within your various communities. In Orlando, there is the Metro Orlando Economic Development Commission and the Disney/SBA National Entrepreneur Center. If you are outside of Orlando, you can contact your local Economic Development Organization or your local government for more information. Enterprise Florida is the Economic Development organization for the entire state of Florida.

Enterprise Florida: www.eflorida.com

Enterprise Florida is committed to assisting companies confidentially with their expansion and location plans. We provide site selection services, demographic information, incentive information, trade leads and much more. We also coordinate introductions to our network of economic development partners located throughout the state.

Metro Orlando Economic Development Commission: www.orlandoedc.com

The goal of the Metro Orlando EDC is basically two-fold. To attract new business investment, the EDC markets the Orlando region worldwide as a top location for business. In addition, the EDC works with local companies to assist them with expansion plans and other business concerns.

To meet this goal, the EDC provides key services and support, which range from relocation and expansion expertise to export counsel to long-term planning with various community partners.

Disney/SBA National Entrepreneur Center: <http://www.floridanec.org/>

The Entrepreneur Center is a unique public-private partnership dedicated to the development, growth and success of small businesses. Through a cooperative effort of a diverse group of business support organizations, the Entrepreneur Center ” offers professional business assistance, quality educational programming, and access to practical industry expertise.

Bringing together proven small business service providers and other tools/expertise, the Entrepreneur Center provides an ideal working environment for entrepreneurs to start and grow their businesses.

Press Releases: Ocean Optics Appoints New President



Rob Randelman takes helm at Dunedin-based photonics manufacturer Dunedin, Florida (October 5, 2007) – Ocean Optics, leading spectroscopy and photonic

instruments manufacturer and FPC member, has promoted Rob Randelman, Ph.D. to the position of company President. Randelman's appointment follows the move of former President and company founder, Mike Morris, to the position of Vice Chairman for the company.

Randelman joined Ocean Optics in 2006 as Vice President, Sales & Marketing and has been instrumental in driving the company's continued sales and profit growth. He has directed the expansion of the company's geographic presence, which included the establishment of a full sales and service facility based in Shanghai, China.

Prior to Ocean Optics, Randelman served as Director of secure electronic payment technology company, VeriFone, where he directed a \$40M services division. His career also included management stints with Hewlett Packard and Exxon. Before progressing to industrial management positions, Randelman worked in miniature fiber optic sensor and spectrometer research. He earned Doctorate and Master of Science in Engineering degrees in Chemical Engineering from Lehigh University (Bethlehem, Pa.) and dual undergraduate degrees in Physics and Chemistry from Ursinus College (Collegeville, Pa.).

"Having been on both the academic side and the technology management side during my career, I feel like I bring a unique perspective to Ocean Optics," said Randelman. "I'm looking forward to using that experience to help the company continue on its successful track and look for ways to better serve our end users."

Headquartered in Dunedin, Fla., Ocean Optics(www.OceanOptics.com) is a leading supplier of solutions for optical sensing - fundamental methods of measuring and interpreting the interaction of light with matter. With branch offices in Asia and Europe, the company has sold more than 90,000 spectrometers worldwide since 1989. Ocean Optics' extensive line of complementary technologies including chemical sensors, analytical instrumentation,

optical fibers, thin films and optics is also used for diverse applications in medical and biological research, environmental monitoring, science education, and entertainment lighting and display. The company is part of the Halma group of safety and detection companies.

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Why Join the FPC? To Make Money!

- Identify common needs and interests
- Leverage to develop opportunities through joint efforts, pooled resources and knowledge
- Regional, Statewide, National and International Reach
- Small, Medium, Large Corporations, Academe and Government Benefit!

FPC membership benefits include:

- The strength of a unified industry voice providing a platform for local and state legislative support
- Visibility for your company through FPC's website, marketing literature, and trade show displays with member spotlight on companies and products and opportunities to participate in state and national sales and marketing efforts
- Liaison opportunity with other international photonics organization such as other photonics clusters (Arizona, Rochester, UK), scientific societies (OSA, SPIE) and industry trade organizations (OIDA).
- Networking opportunities through annual and regional membership meetings

- Discounts (10%) on exhibit space and other special benefits at SPIE and OSA conferences. Typical benefit per show start from over \$300 (10' X 10' booth) and \$600 (10' X 20' booth).
- Discounted membership rate with the University of Central Florida's School of Optics/CREOL Industrial Affiliates Program
- Admission to all Florida Photonics Cluster Events included in membership
- Access to service providers that can assist your company with the actions that are necessary for sustaining your business such as banks, suppliers, and professional marketing, communications and legal services organizations at preferred rates
- An expansive resource base that includes partnerships with Enterprise Florida, area economic development organizations, the Florida High Tech Corridor Council, and CREOL to provide access to incentives and business development programs and research
- Assisted access to venture capital and opportunities to help develop Florida photonics companies into worldwide participants
- Opportunities to participate in the curriculum development in state universities and community colleges and advanced access to Florida's best and brightest students and the additional ability to recruit nationwide through the FPC website

FPC Officers:

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To join the Florida Photonics Cluster, go to <http://www.floridaphotonicscluster.com/> and explore further the benefits that the network of the FPC can provide for your company.



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