

Thomas O'Neal, Office of Research and Commercialization,
University of Central Florida
Henriette Schoen, Department of Industrial Engineering,
University of Central Florida

An Incubator As A Catalyst For High Tech Economic Development

Abstract

The goal of this paper is to illustrate how certain entities within a region can have a catalytic effect on an area's entrepreneurial eco system. This is especially important to areas that are sub critical in terms of entrepreneurial infrastructure but have decided to promote this type of industry in their regions. This paper is a case study of the Central Florida region's efforts to diversify their economy through an economic development initiative based largely on developing local technology companies. We will show the interdependencies between the University of Central Florida and its Technology Incubator located in the Central Florida Research Park and the Greater Orlando area. The impact of the partnerships between the University and the local community entities is presented as a major reason for the Incubators' success. The effort required to get all the important parties of influence to cooperate in the Orlando area is producing excellent returns for the region. The Incubator has been the catalyst for several new initiatives that has helped boost new company development and entrepreneurship in the end resulting in an improved economy for the Greater Orlando area. A brief introduction to incubation and the UCF Technology Incubator is provided in the case study. Quantitative and qualitative measures from the initiatives started or influenced by the incubator are presented to show the effects and impact the incubator in this particular case had on this region. In other regions, entities other than an incubator may be the catalyst or champion for this type of economic development.

Keywords: *Technology* Incubator, University Based Incubator, Entrepreneurship and Economic Development

1. Introduction to the paper

An increasing number of communities are investigating how to transform their communities to take advantage of the new knowledge based economy. This paper examines how one particular region's efforts were catalyzed by a university based incubator and the partnerships formed to make it successful.

2. The creation of the UCF Technology Incubator (UCFTI)

The University of Central Florida Technology Incubator (UCFTI) opened its door in 1999 after a long period of fertilizing the idea and getting the initial funding secured. The champion for this project had personal experience from being a serial entrepreneur and having this knowledge was very beneficial in creating the framework and structure for the spin outs

from the university and it all later resulted in what today is called the UCF Technology Incubator.

The event of developing an incubator initially to help a few professors from CREOL at the University of Central Florida now has developed into a network of incubators and other resources that assist companies from the whole community to create successful entrepreneurial ventures. The latest development is that several foreign countries now request the expertise from the UCFTI management in setting up a similar framework as the UCFTI's in the quest of creating a comparable success for their own new local technology incubators.

3. Introduction to Incubation

The term incubator is defined in several ways throughout the literature but none has yet been able to give a good universal definition that really is applicable for describing what actually is going on in an incubator and also no paper has been able to fill that gap in the literature yet. In a very recent study from Sweden, (Bergek and Norrman 2007) concludes that despite of the apparent similarities between different definitions, the incubator concept has shown to be anything but clear in practice. With this in mind a basic definition of an incubator is given to ensure common understanding of what an incubator entails: The Merriam-Webster dictionary defines an incubator or incubation as:

“An organization or place that aids the development of new business ventures especially by providing low-cost commercial space, management assistance, or shared services.”

UCFTI has the following definition of what an incubator entails and it focuses more on the surrounding environment than the previous definition:

“An incubator is a facility and/or program that provide start-up companies with an environment and variety of services to help them grow more quickly and more successfully.”

Technology business incubation or business incubation in general has become an important factor for economic growth in a society. According to the National Business Incubation Association as of October 2006, there were a total of 1,115 business incubators in the United States. There has been a growing interest during the recent years in this kind of support for start-up companies and several States in the US are planning on supporting this area even more. Studies conducted by the National Business Incubation Association have demonstrated the effectiveness of incubation as an economic development strategy. The studies show that 87% of incubator graduated companies are still in business after 5 years. This is significantly higher than non incubator affiliated start-ups. Another interesting result from the same study revealed that 84% of the companies stay in the communities they were incubated in and continue providing a return for their investors. Another attractive aspect of incubation from an economic development perspective is that for every 50 jobs created by an incubator client; approximately 25 additional jobs are created in the community. Finding the best way to accommodate and help clients in their maturing process should therefore be one of the highest priorities for incubators all around the world.

4. Current status of the UCF Technology Incubator

As of this writing, the UCFTI has assisted more than 120 firms. It is home to 62 current clients and has graduated 31 companies. The UCFTI was named the Incubator of the Year in 2004 at the National Business Incubator Association's annual conference, and it has been placed in the top ten in terms of revenue growth and jobs created for several years in a row. In summary, see table 1, over the first eight years, clients in the program have the following results:

Table 1: List of Incubator clients results:

Jobs created	> 900
Average salary	\$58,000
Investment raised	\$150M
Generated revenue	> \$200 M
Patents held by clients in the incubator	286
Copyrights held by clients in the incubator	74
Trademarks held by clients in the incubator	47
Trade secrets held by clients in the incubator	64

The UCFTI has clients in the fields of: Biomedical, Digital Media, Education Training Technology, Engineering, Environmental, IT, Materials, Optics, Lasers, Simulation, and Modeling.

5. The UCFTI provides the following services

The UCFTI provides some very outstanding services to its clients such as: Mentoring and advising in all aspects of business development and growth including business and strategic planning, legal counsel, accounting/tax, human resources, government contracting, strategic partnerships, marketing and PR, financing, grant preparation, insurance and risk management.

The UCF Incubator Program has now expanded from the one original entity – the UCFTI to currently include five separate facilities under a newly created UCF Incubator Program. The program consists of connected incubators that are created having the same framework and thereby ensuring the same quality level, the services offered, even though being spread out geographically over the Central Florida region.

6. The UCFTI as a catalyst for new programs

The success of the UCFTI helped create an awareness of entrepreneurship, technology commercialization, and the link between research, innovation, and economic development. Academic programs and services have been initiated and facilitated to create value for the students at UCF and the clients in the UCFTI, mostly through cooperative efforts between UCF's Colleges of Engineering, Business, and Photonics. These new initiatives include the following:

- “Excellence in Entrepreneurship” certificate course consisting of a twenty-one hour program with seven different workshops that future incubator clients needs to pass to be considered eligible for the UCFTI
- Graduate and Undergraduate entrepreneurship tracks
- Established Center for Entrepreneurship and Innovation (CEI)
- Technology entrepreneurship workshops
- The UCF/Orange County Venture Lab
- Entrepreneurship curriculum, seminars
- Industry Executive for the day Program
- Entrepreneurship Speaker Series
- The UCF Engineering Entrepreneurship Colloquiums
- Boot camps for Potential Entrepreneurs
- UCF Student Entrepreneur Society
- Internship Program for Entrepreneurial Students
- Competitive Business Idea Pitching Competitions:
 - The Joust, where the full business plan is presented and judged, prices total: \$20,000
 - The King of the Court, 3 min. pitching of a business idea, prices total: \$3,000
- Assistance to other incubator programs
 - Sanford, Tampa, Melbourne, St Pete, Puerto Rico, Egypt, etc.
- Support for industry associations
 - AEA, Photonics Cluster, Florida Business Incubator Association
- Created PeerSpectives, peer to peer CEO roundtables for second stage companies

7. The elements needed for successful client incubation and graduates

According to (Gartner, 1990) a list of ten ingredients being the most important in creating a successful start-up is the following:

1. Suitable financing
2. Availability of a competent workforce
3. Accessibility to helpful suppliers
4. Government support, or at least the absence of obstacles
5. Proximity of universities to assist in research
6. Availability of land or facilities
7. Access to transportation
8. Support of local population
9. Available support services – secretarial, telecommunications, etc.
10. Low entry barriers

Each of the above factors is important. Some of them may be more critical to one venture and not another, but all of them have a considerable role in ensuring new venture success. Proximity to universities is noteworthy in two respects. In high tech start-ups where new inventions or technologies play a dominant role, these institutions can make significant contributions to successful start-ups through research, problem solutions and engineering support. Another benefit of the university is its business school and the availability of consulting services in terms of marketing,

production systems, Management Information Systems, accounting and finance advice, etc.

Benjamin Mokry suggests that in order to create a more receptive environment for entrepreneurship, a number of fundamental societal changes must occur (Mokry, 1984). He supports the major truism that “local communities are the breeding ground of entrepreneurship” and are capable of creating an environment favorable to it, and that is also the shared belief of the Economic Gardening Theory. Mokry has added two factors to Gartner’s list that affect entrepreneurial success:

- Existence of an entrepreneurial sub-culture. The tremendous success of incubators in Silicon Valley, Boston, Austin and San Diego very much support the notion that entrepreneurs feed off each other in a synergistic fashion and create their own dynamic environment.
- Incubator organizations, many of which are initiated by local universities and governments as enterprise centers.

Combining these listed important factors with what (O’Neal, 2005) postulated as being the most important elements for creating a successful university-based technology incubator are incorporated in Figure 1 below.

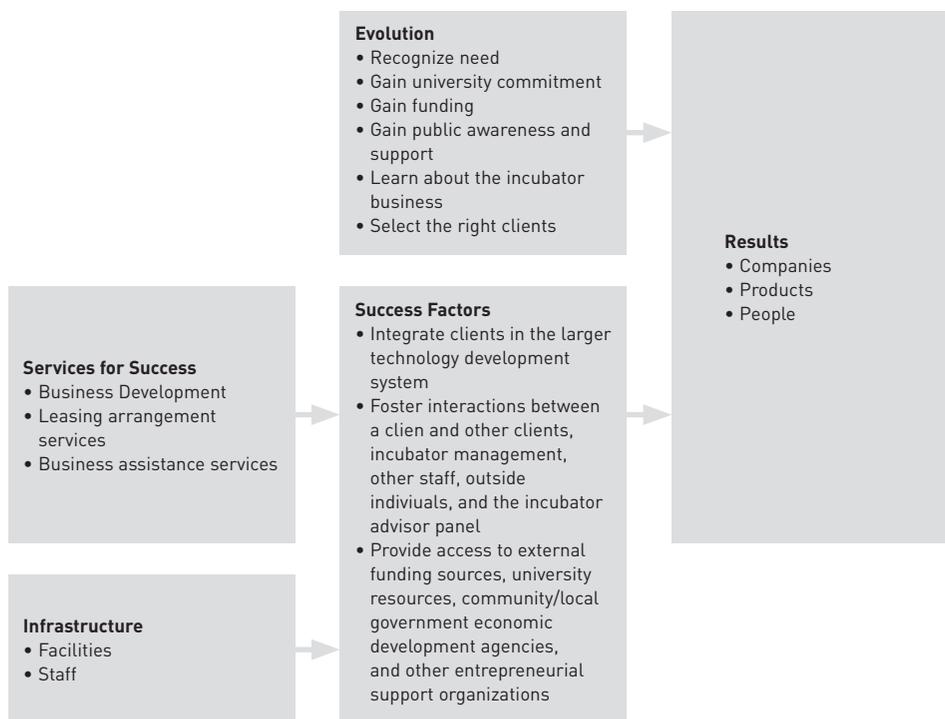


Figure 1: Elements for a successful university-based technology incubator, (O’Neal, 2005)

The figure shows the connection of Services for Success, Infrastructure, Evolution, Success Factors and Results and together with the entities they consist of, should according to (O’Neal,

2005) give the needed combination for creating a success with incubation of client companies. The incubator management evaluates the new client through the twenty-one hour “Excellence in Entrepreneurship” certificate course. The course consists of seven, three hours sessions in topics related and highly relevant for an entrepreneur. The course also helps incubator management determine what kind of assistance the future new client needs the most to become successful. They also get a chance to judge the new aspiring clients before they have been accepted to the incubator and can, through this process, weed out the entrepreneurs that are not compatible with the incubator in terms of viability, coach-ability, and commitment to their business idea.

8. UCFTI and the its surrounding Eco system

A key to success for an incubator appears to be the network of partners, service providers, and entrepreneurs that contribute to the program, access to the resources of a large research university, and a healthy or beneficial reputation as the place to go to start a high tech company. The reputation benefits have been the key for attracting increasingly sophisticated and successful clients. A positive feedback loop has been established in the sense that better companies add to the credibility of the incubator, attracting better clients that further add to the credibility, and so on. The current twenty-one hour selection process has proven to be an effective self filtering process and helps ensure high quality clients.

Incubator – UCFTI Eco System

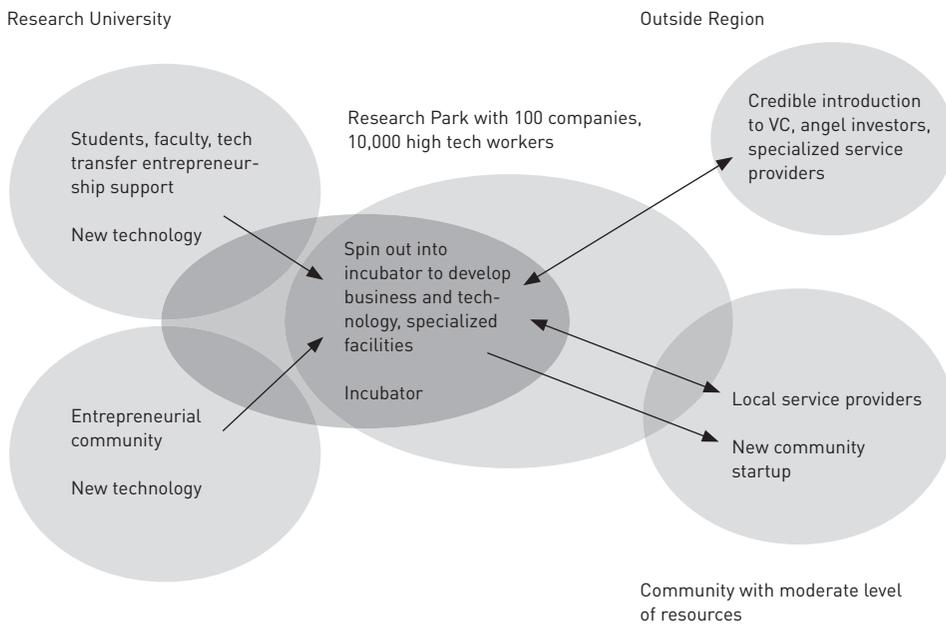


Figure 2: UCF Technology Incubator Eco System

The incubator is a fully functioning part of a larger incubation system that again is part of the eco system for the region. It is however, one of the more visible parts of the system that facilitates

and catalyzes much of the high tech economic development activities of the region, particularly when the university is involved. It is a tool for the university's technology transfer activities and the region's local economic development partners. Local Angel and Venture capital firms view the incubator as a place to find the best investment opportunities and appreciate the monitoring services provided by the incubator program. The eco system for the UCFTI is shown in Figure 2 below and it can be seen that it consist of: The incubator itself, the research university, the research park, access to resources outside the region, the community with moderate level of resources, the local service providers, the entrepreneurial community with its new technologies, and funding sources. Additional community based infrastructure such as effective air and land transportation play a major role in this system. All those interacting entities impacted and continuously impact the success of the incubation efforts in the Greater Orlando area.

9. Discussion

In terms of how an incubator program can become a catalyst for economic development, the UCFTI address many unmet needs of the region. In some cases it was able to act as a focal point for local resources that were spread out across the region and not easily identifiable to new entrepreneurs. Entrepreneurship and the culture of creating companies was not a regional priority prior to the UCFTI. The notion of Economic Gardening was absent with most economic development activities focused on recruitment and retention. Figure 3 below illustrates the components necessary to create and sustain an innovation based economy. The areas shaded in red show the gaps that were filled by the UCFTI.

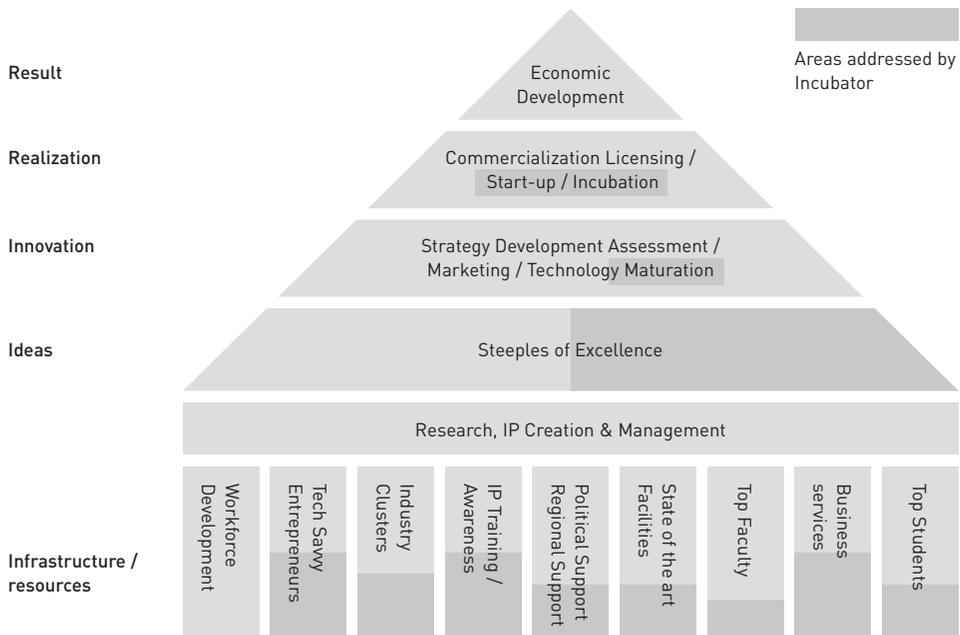


Figure 3: Components necessary to create and sustain an innovation based economy

The Greater Orlando area had a demand for help in creating the same kind of technology based economic support systems that regions such as Silicon Valley and Boston enjoy. The region's leaders also began to realize that overdependence on tourism and hospitality was undesirable. The success of the incubator created awareness among political and economic development agencies that there was a third option to economic development beyond recruitment and retention that added creation to their strategies.

The UCFTI is very aware of the fact that every client is different and has different needs. Many of the programs started after the UCFTI were in response to regional resource gaps or in some cases it provided proactive leadership for the community. Trying to determine what is the right amount of support for a client and in what way it should be provided varies tremendously from client to client. Realizing this fact is what defines a quality incubation program. Incubation is a process, not a facility. Some general support mechanisms can of course be developed but they might not provide the support/help that the specific client actually requires and it is those uncertainties that demand a continuous guidance and support system through the incubation period. Entrepreneurs deal with the real world every day and they need support that is appropriate, timely, and easy to locate.

10. Summary and conclusion

The incubation of companies is a very positive process that has a positive impact on so many parts of the society in general. Small businesses are the heart of the United States economy. Research by the Office of Advocacy shows that small businesses creates most of the nation's net new jobs, and they bring dynamic ideas, innovative services, and new products to the marketplace. They account for almost all of the nation's employer firms and generate half of non-farm private output. New business creation is a key factor to increasing gross national product, personal income, and total employment.

The UCFTI is a perfect example of how much such an entity can change the surrounding community and raise the involvement and foster economic development on a level that goes beyond the region it serves. This influence that the UCFTI has had on the region is probably the reason many different countries now get in contact and would like to acquire assistance so their own incubator will be running as smoothly and with as much success as here. It is important to note however that an incubator in itself is less likely to have the kind of effect that the UCFTI and Central Florida has enjoyed. The success seems to be based upon the aligning of the different entities in the Greater Orlando Area, thereby aligning the UCFTI to the larger eco system where every contributing partner supports the incubator strongly and can see the relevance and the importance of UCFTI's existence in the community. The incubator identified and filled many of the existing gaps in the community's larger entrepreneurial eco system, and the UCFTI is now an integral part of a much larger creation based strategy which the community strongly supports.

There is a continuous search for new ideas for improvement at the UCFTI and a research position in the incubation topic has been created. This research takes foreign studies into account in the hope that there will be some new procedures that can be implemented to the current incubation process – in the constant quest for the continuous improvement of daily processes and services.

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Authors' contact details:

Dr. Thomas O'Neal
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, FL 32826–3246
Email: oneal@mail.ucf.edu

Henriette Schoen, PhD
Industrial Engineering and Management Systems
University of Central Florida
4000 Central Boulevard, P.O Box 162993
Orlando, FL 32816–2993
Email: hschoen@mail.ucf.edu