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FLORIDA'S INNOVATION BENCHMARK STUDY EXECUTIVE OVERVIEW



"Inertia is the biggest
impediment" see page 6

Research and
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100 Colony Square
1175 Peachtree Street
Suite 1660
Atlanta, GA 30361
BoyetteLevy.com

EXECUTIVE OVERVIEW

Introduction

Historically, Florida is a geographically large and culturally diverse state. Its economy is built upon agriculture, tourism, retirement services, defense and the real estate development resulting from each. Over the last 50 years, Florida has transformed from a sparsely populated, southern frontier state, to the suburbanized melting pot we know today. The next 20 to 50 years will continue to provide economic challenges and opportunities. How the state, its regions and communities respond to such challenges and opportunities, will determine whether Florida continues to enhance the standard of living of its citizens, or whether the quality of life Floridians so value will begin to decline.

The issues impacting Florida's future economic development path are far too numerous and interrelated to fully address each in the context of this study. The objective of this project is to assess Florida's movement toward a more innovative and knowledge-based economy while benchmarking the effort against other states. The study was not intended to be an analysis of traditional economic development incentives and did not focus on recruitment of large-scale projects from out-of-state into Florida. Rather, it looked at a combination of policy, programs and incentives that are geared toward the organic growth and support of an innovation-based economy.

This report provides an analysis and summary of innovation-based economic development policies, programs and initiatives, and includes some examples of how other states have addressed challenges similar to those Florida is now facing. Many of the topics and issues that are covered are already familiar to the funding sponsors of the study. The report is designed to reach a broader audience and raise the profile of the discussion surrounding Florida's need to diversify through innovation. The findings are not intended to provide specific recommendations, but rather observations on the current status of Florida's

innovation efforts and possible tools to accelerate the momentum. **The three combined perspectives (in-state snapshot, out-of-state benchmarks and state benchmarked rankings) are designed to provide a platform for discussion by the broader economic development community to begin to build and coalesce around a long-term strategy designed to position Florida as an economic leader in the 21st Century.**

Florida has made a great deal of progress over the past five to ten years building a foundation for an emerging 21st Century innovation-based economy. Recent establishment of life science projects through state appropriated funding, creation of new programs, policies and tools such as the Centers of Excellence and Opportunity Fund, and the added emphasis on commercialization of technology at most of the state-supported universities are all positive and welcomed steps toward future enhancements for the innovation economy. Despite these advances, there is a lingering perception that greater progress could be achieved by working more closely together through a unified state-wide vision and consistent implementation strategy. The objective of this study is to identify best practices in the U.S. that could serve as possible models for future efforts.

Research Overview

Three primary channels of research were undertaken during this study. First, 41 Floridians were interviewed, either by phone or face-to-face. Those interviews obtained a cross-section of viewpoints on the current status of Florida's competitive position in the innovation economy. The interviews focused on the individuals' personal perceptions and opinions on the challenges and opportunities facing Florida's diversifying into a more innovation-based economy. Twenty of the interviews were conducted with funding sponsors of the study, while 21 were conducted with

stakeholders who are involved on a day-to-day basis working within the innovation economy. The interviewees crossed three distinct segments – traditional economic developers, university-based technology commercialization officials and private sector innovation-based company representatives.

The second line of research involved investigating policies, programs and incentives of other states, regions and communities that are structured to enhance development of their respective innovation and knowledge-based economies. The number of existing programs is too extensive to claim a definitive survey of them all. States and programs were selected based on one or more of the following criteria:

- Recommended by an interviewee.
- Cited as a best practice by recognized authorities at organizations such as the Kauffman Foundation and the State Science & Technology Institute.
- Addressed a perceived gap in Florida's innovation support system.
- Appeared to be transferable to Florida given the components of the program and the realities of Florida's business climate and geography.
- Known to Boyette Levy through our involvement in the global economic development community.

Programs were identified and screened through the above criteria, and preliminary research was conducted on more than 50 identified programs.

Thirty-one of those programs were selected for interim review and 16 were selected to be incorporated into the final report. Some “programs” are not actually specific programs, but summaries of a type of initiative that contained too many variations to select just one example.

Thirdly, seven states were selected to benchmark against Florida using 14 different metrics that are acknowledged to be relevant to innovation economy

economic development. The selection of those states and the data points benchmarked is discussed below.

Interview Synopsis

The results of the interviews are critically important for many reasons. Not only do they provide insight into current effectiveness of Florida's innovation-based initiatives, they begin a process of defining gaps in the system and building a coalition of support across the lines of the three representative groups. This latter collateral benefit of the interview process could well provide the greatest long-term impact of the overall project.

Interview Synopsis - Innovation Economy Defined

Before moving too deeply into the study it was important to define “innovation” and correspondingly an “innovation-based economy.” The terms technology-based, knowledge-based and innovation-based are frequently used interchangeably. For the purpose of this project, “innovation-based” was selected.

Although a few respondents narrowly defined “innovation economy” to be based on the research and development aspects of science and technology, the majority viewed it as broadly encompassing not only technical inventions, but also improvements in process. It was also clear that although some industry sectors are most commonly associated with the innovation economy (e.g. BioSciences); the innovation economy is not a collection of target industries, but as one interviewee stated “can exist across most any industry sector, since it is more about the enabling technology behind the products within the sector.” It was the clear majority opinion that innovation applies to all industries and not just limited sectors, including “business model innovation.”

Many interviewees related innovation to companies “preparing for global competition.” “Creating value through inventions and improvements” was frequently mentioned as the reason innovation is so

important to Florida's economy. It was acknowledged that talent and human resources is a critical component and therefore an integral aspect of an innovation economy. The spirit and culture of entrepreneurs was also frequently mentioned, as were high-value, high-wage jobs when describing an innovation economy. One interviewee summarized the connection between jobs, value and global competitiveness by saying "if Florida companies cannot continue to develop new products, processes and materials through creative research and development, then Florida will not be able to successfully compete for the high-value jobs of the future." In short, one respondent summarized this point as "taking bright ideas and creating wealth from them by doing things differently, better and faster than before."

A proposed definition for "innovation economy" for this project that is consistent with the majority of interviewees is the creation of value through the adoption and exploitation of new ideas throughout the economy.

INNOVATION ECONOMY

The creation of value through the adoption and exploitation of new ideas throughout the economy

Interview Synopsis - Strengths and Weaknesses

Many interviewees felt that Florida is faced with the challenge of continuing to transition from a historically low-cost Southeast state that competed with other southern states to an economy that competes globally for talent, ideas and discoveries. The reality of Florida's economic history and incumbent power structure being derived from agriculture and real estate development has resulted in a culture that is not as supportive of education and innovation as that of many competitive states.

Innovation economies are built around the people that fuel its growth through their individual and collaborative creative thinking. Florida possesses a quality of life that is appealing to many individuals. Maintaining this attractive environment will be critical to future success, but it will not alone guarantee Florida's ability to transition and diversify as needed.

The most often cited weakness of Florida is its human capital and talent development. Almost every interviewee mentioned the current lack of availability of skill sets in critical disciplines and an inadequate public education system to produce the needed talent for the future. Although an in-migration of talent will continue to be important, companies cannot sustain significant growth and bear the cost of relocating most of its critical staff. The universities and community colleges must produce the engineering and technical graduates, but the high schools have to provide enough qualified students for a successful pipeline of talent.

Many interviewees also felt that Florida's size and diversity are both a strength and a weakness. Its size dictates the fragmentation that exists and the "City State" economies manifest both positive and negative attributes. Despite the recognition that economies ignore political boundaries and evolve along regional lines, many of the interviewees view the lack of state-level coordination and support as an inherent weakness. Despite the positive results of the intra-state competition, the overall effect is sub-optimization of the state's resources and assets.

A lack of start-up and early-stage capital was frequently mentioned as a weakness. It was noted, however, that several recent legislative initiatives which have been passed have not yet been fully implemented, e.g. Opportunity Fund. Those tools combined with the apparent willingness of established venture capital (VC) firms to invest in Florida given the right opportunities led many of the interviewees to view the trend as favorable. They stressed, however, that Florida is really just beginning to get started and

has a great deal of catching up before it can slow its continued efforts.

Another weakness cited was the general lack of legislative patience to develop a thoughtful set of solutions and then “allow them the time to pay off.” The belief that there could be any short-term magic solution to “jump starting an innovation economy is a fallacy.” This ad hoc and inconsistent approach to diversifying Florida’s economy was frequently cited as a primary impediment to progress. Organizations and

institutions that are funded and charged with developing an innovation economy will have to be given the time and flexibility to pursue the chosen strategy long enough to determine if it is making a difference.

Following is a list of strengths and weaknesses derived from the interviews. The strengths were mentioned as assets that will contribute to future efforts, while the weaknesses are viewed as deficits that must be addressed in order to be successful. *(Note: All are listed alphabetically.)*

Interview Synopsis	
Strengths	Weaknesses
Ability to attract talent	Ad hoc and inconsistent state-level support
Accessibility of universities	Availability of certain skill sets
Corporate partnerships with many universities	Gaps in early-stage funding
Culturally diversified	Inadequate K-12 education system
Florida Venture Forum	Inadequate private sector support for innovation initiatives
Focused curriculum of many community colleges	Lack of engineering and technical graduates
Hidden talent	Legislative impatience
Overall quality of life	Non-supportive culture for education and technology
Recent collaboration among universities	Over-reliance on government
Significant pool of talent	Regional fragmentation
State’s community colleges	Student-faculty ratio highest in the nation
State’s university system	Technology community too dispersed
	Tradition as a “low cost” state
	Tuition lowest in the nation
	University funding 73 percent of national full-time employee average

Interview Synopsis – Opportunities and Challenges

The challenges and opportunities are corollaries of many of the above mentioned strengths and weaknesses. The common theme most often mentioned when asked “what are the major challenges facing Florida’s ability to compete in the innovation economy?” was the state’s cultural resistance to taking the necessary steps to build an innovation economy. This was summarized by one respondent as **“inertia is the biggest impediment.”** The general sentiment is that the vast majority of 17 million Floridians are not connected to the innovation economy.

The current quality of K-12 education has far reaching effects, not only on the students it produces, but on the image of the state and its ability to recruit individuals and companies. Several respondents felt that addressing the K-12 education system is the single greatest challenge to long-term success with one saying Florida “must shore up education and do it quickly with dramatic changes.” One respondent summarized the education challenge as “smart companies hire smart people and they want their kids to go to good schools.”

Modifying the current economic development model to reflect the need to focus more on innovation and entrepreneurs was frequently mentioned. Many interviewees recognized the need to continue recruiting companies to fill some of the gaps in the state's economy, but stated a **strong need for economic development organizations to add an equally aggressive focus on supporting innovation-based entrepreneurs.** This new model was usually described as a system of locally and regionally-based programs and services supported and enhanced by state-level policies, funding and collaborative facilitation. In addition to modifying the current economic development model, the measurements of success will also have to be addressed. It was often noted that since wealth creation is the objective of innovation, this metric should be considered in determining the long-term success of future efforts.

Despite the weaknesses and challenges mentioned above, a significant majority of those interviewed felt there is now a "window of opportunity" for Florida to make significant progress in this area. Some even said it is "now or never" and believe that as other economies transition, Florida has a chance to reposition itself among the innovation leaders, but that the window will last 10 years or less.

A significant majority of interviewees believe that strong support of universities is the best and most direct path to creating an innovation economy. The current baseline of university research in Florida is about \$1.5 billion in research, comparable with Georgia and in the same range as North Carolina at \$1.8 billion (note that additional statistics on baseline research and other areas are found in the Comparative Data Analysis). This indicates an emerging critical mass to succeed. Increased state support of research and commercialization as well as availability of funding for companies being created around the discoveries are simultaneously a challenge and an opportunity.

Although "huge gaps" in early-stage funding were cited as a challenge, the venture capital markets appear poised to invest in Florida. One interviewee stated, "The world is ready to invest in Florida once we demonstrate that we have enough companies worthy of investment with management know-how and leadership..."

The other area of opportunity for Florida lies within the quality of life still prevalent in the state. Many interviewed believe that an attractive quality of life drives the development of the innovation economy since innovation depends on individuals with location choice. Despite many of the areas of current concern, Florida still offers a great quality of life versus many of its competitive states.

Many references were made to California and how Florida's greatest challenge is to find a way to adapt and diversify its economy to a higher cost and higher value. Many contest this goal, but some see Florida's potential as becoming innovation's "California of the East." The recent establishment of the Florida operations of the California-based research institutes, such as Scripps, Burnham, SRI International, and Torrey Pines, were cited as an indicator of this potential. These alone, however, will not ensure transition of the economy. Policy makers, elected officials and private sector leadership will have to recognize the reality of where Florida as a state stands vis-à-vis its competition and commit to the difficult choices that will be required to fund a pathway to success.

The lack of legislative patience was also cited as a weakness of Florida's. Although budget and fiscal constraints have to be reconciled, one could conclude that the recently completed 2008 Legislative Session continued the ad hoc approach to building an ecosystem for innovation. Programs that were recently created, e.g. Centers of Excellence, had funding reduced or withdrawn. A summary of the opportunities and challenges derived from the stakeholder interviews are below. *(Note: All are listed alphabetically.)*

Interview Synopsis	
Opportunities	Challenges
Attractive quality of life	Adapting to higher cost environment
Concept gaining momentum	Addressing diverse geographic needs
Positive baseline of University R&D	Building synergies between regions
Recent legislation – Opportunity Fund, Florida Research Consortium, Commercialization Institute	Improving K-12 education
Recent R&D institute locations	Inadequacy of university resources
Timing – “now or never”	Inertia
VC markets poised to invest in Florida	Lack of innovation culture
	Modifying economic development model
	Providing a consistent business climate
	Recognizing wealth creation as success measurement

Interview Synopsis – Perceived Gaps

Perceived gaps in Florida’s support infrastructure for innovation-based companies could also be viewed as a weaknesses or challenge. Although Florida has competitive jobs-based economic development incentives, e.g. Qualified Targeted Industry Tax Refund (QTI), it was frequently cited by interviewees that, although appreciated, those incentives do not make a substantial impact on a small innovation company’s ability to grow. It was stated that emerging innovation-based companies need funding or access to funds that will offset upfront costs, which QTI does not do. These funds could be provided as investments of state dollars or investment of private dollars facilitated through better organized angel and venture capital networks – both were cited by interviewees as gaps that need to be addressed in Florida. The needed funding should support continued R&D and/or testing to further company growth. In order to affect the growth of these companies, the state needs “relevant” assistance. The Florida Research Commercialization Grant Program that failed to pass in the recent Legislative Session was designed to meet this need.

This deficiency is not unique to Florida, but Florida is behind other state’s efforts to address such funding gaps. One interviewee responded, “I am not a big government fan, but the state needs the grants to help fund the gap to get technology that is showing promise to the commercialization stage. Pennsylvania

started its Ben Franklin Fund 20 years ago and it took 10 years before it started to show results.”

The Innovation Fund was mentioned frequently as a positive development. It was noted; however, that this fund was used mostly for large-scale projects and that some of the fund should be set aside for projects that range from \$10 to \$20 million in total investment, with the Innovation Fund supporting a portion of those costs.

A lack of incentives for projects of this size was noted as a gap in the system. The other deficiency of the Innovation Fund mentioned by interviewees was the inability of smaller communities to provide the required dollar for dollar match to access the funds. This requirement is seen as exacerbating the split between the larger urbanized regions of the state and the mid-sized cities or rural areas. Although funds were not appropriated for the Innovation Incentive Fund in the 2008 Legislative Session it is hoped this incentive will be reinstated in the future. In preparation, modifications to the Fund criteria should be considered.

Human capital continues as to be a gap in the system. Several interviewees felt that “raw material,” i.e. ideas and discoveries, is being produced in the state, but that the “greatest need is to recruit CEOs, bankable CEOs to take companies from \$3 to 4 million to \$20 million.”

Physical infrastructure also continues to be a gap. The lack of wet lab space available for lease throughout the state was mentioned by virtually every respondent involved with biotechnology. Several noted that wet lab space is being planned around the state, but that it is not yet in place to benefit companies in need. Growing companies stated they have to have the space, are willing to pay market rate and will move to another state that makes it available if that is what it takes to be successful.

The final “gap” that was mentioned by numerous respondents was the lack of an organized, statewide “support infrastructure” for innovation-oriented start-up companies.

One interviewee stated the fact that “the state does not support a network of assistance providers surprised me.” Others observed that some regions have developed a model that embraces entrepreneurs around certain clusters and that those best practices should be developed regionally, and then spread around the state. *(Note: All are listed alphabetically.)*

Interview Synopsis
Perceived Gaps in Innovation Continuum
Bankable CEO talent
Biggest gap is funding and particularly with early stage
Funding that will offset costs of R&D and/or testing
Innovation Fund – More should be used for smaller projects
Innovation Fund – Smaller communities’ inability to meet state match requirement
Recognition of importance of creating and growing innovation-based companies
Statewide organized support infrastructure
Wet lab space

Interview Synopsis - Innovation as a Priority

Different respondents date the history of Florida’s effort to build an innovation economy to different times. Some go back almost 20 years while others start with the Scripps, Burnham, SRI International,

and Torrey Pines projects, with several picking points in between. Virtually 100 percent of the interviewees acknowledged that significant work and progress has been made, with a clear majority citing the need to do more at what they consider to be a critical juncture in the state’s development cycle.

Interview Synopsis
Innovation as a Priority – Representative Responses
The effort has been appropriate with real progress in the last few years.
The effort has not received enough attention. If we want to be competitive we need to catch up. We are making progress, but we are still behind.
Timing is critical. The soft economy gives us an opportunity to be more creative and focused. The state needs a strategy.
Florida is heading in the right direction. How fast we will get there remains to be seen, but we are doing a lot of the right things.

There was no agreement on how widely accepted the need to diversify the economy around innovation is in the public eye, or even the level of awareness of what the state currently has in place. All felt the issue is

now getting more recognition than before, but felt the test is whether or not the support goes beyond “lip service” and gets the level of actual support it requires.

Interview Synopsis
Current level of Support for New Initiatives - Representative Responses
The population seems on board.
I don't see a ground swell, but it is time to get a higher level of public awareness.
The topic is catching on – the Governor's Innovation Pyramid is an indicator.
Leadership in the state is starting to “get it.”
The private sector is poised to support.

Clearly the group of interviewees is biased toward more state involvement and support of innovation economic development. They are also a representative group that is aware of the competitiveness of this effort and what it takes to succeed. Most would like to see a more clearly defined and coordinated strategy that recognizes the importance of the respective regional economies and supports their development through a consistent set of policies, programs and incentives. Most all respondents sharing this opinion felt that the state has developed a good platform and should now take advantage of it, acknowledging that “we are getting started, but with a very fragmented system.” The coordinated strategy should include all regions, as well as rural areas and contain a strategy for each constituent group.

Interview Synopsis - Chief Science Adviser

In the review of benchmarked state programs that follows, many states have created positions that could be characterized as a “Chief Science Adviser.” In many respects, the Florida Research Consortium is designed to fill this role, but its mandate and funding is not as far reaching as exist in many competitive states. The exact title takes many forms, but the overall portfolio of responsibility is similar – to ensure innovation-based economic development efforts are based on sound science, are championed within state government and are coordinated throughout the state. As noted, above, Florida's approach to this challenge is fragmented not only geographically, but within state government as well. The question asked was whether or not Florida should have this functional position, regardless of the title.

Interview Synopsis
Need for a Chief Science Adviser - Representative Responses
Yes, assuming he or she has authority and/or an advisory board with direct access to Governor.
Yes, assuming he or she has no authority and is just an adviser.
No, would just be another layer of bureaucracy.
No, there is an advantage to various organizations negotiating results.
Yes, somebody at a high-level should have responsibility for innovation.
Yes, a Scientific Evangelist at that level would be great.

Interview Synopsis - Additional Comments

At the conclusion of each interview, the interviewee was asked if he or she had any thoughts that were not

captured by the questions. Several of these responses were incorporated into the above categories, but others were not.

Interview Synopsis
Final Comments of Interviewees
Supporting start-ups is important and states and regions must increase their efforts in this area, but we do not have enough critical mass to stop attracting the medium and larger firms. Our future depends on it.
The state must focus on building its clusters.
Florida's size and geographic diversity, like California's, requires more research universities to meet the demands and opportunities of the innovation economy.
The state should allow its institutions and organizations to be more flexible, with outreach programs and structures to make quick decisions. The FHTCC matching grants program works well and should be duplicated throughout the state.
Whatever state programs may result from this effort, decentralize, decentralize, and decentralize.
How do you recruit foreign technical talent? Eighty percent of applicants are Chinese/Indian. Someone needs to be looking at how companies can recruit and secure these foreign nationals. Even with in-state students from local universities, the vast majority are foreign nationals.
Florida can sustain, and an innovation economy demands, more research institutions.
A plan and continuity of the plan tied to resource allocation is needed. The plan should come from the Governor and be bold and huge. The state needs to be strategic and proactive.
Several large, nationally known companies are asking "why are we wasting resources in Florida." These companies are making conscious decisions to hire and locate tech people out-of-state or avoid investing in the state altogether. With the current state of education and supply of talent, the state cannot support a large-scale technology company.
Technology development should be the third leg of the state's economic stool.
Whatever programs are developed, please don't make the application for the benefit too painful. Small business won't pursue if the costs are too high.
Baby boomers are continuing to retire in Florida and represent our "hidden talent pool." There should be some way to identify those that are interested in staying active and involved through investment or management.
Existing Florida industries are underutilized. Using vendor lists, economic developers should be able to make a case for an increased presence of those suppliers.
People need to look internationally (e.g. Ireland) to see what can be done with very good public policy – education, tax base, and economic development.
Innovations happen at the intersections of technology (where ideas bang into one another). Creation of any ecosystem that helps interaction between business and higher education would be good.
The state needs an engine for creating innovation.
The state should ask itself if it is doing enough to make an actual difference toward a structural change of the economy, more innovation and wealth creation, and, if not, do more.

Comparative Data Analysis

Based on the information gained through the interview process, programs reviewed and Boyette Levy's expertise, seven states were selected to benchmark with indicators that are acknowledged as factors determining a state's ability to develop its innovation economy. The states were California, Texas, New York, Pennsylvania, Ohio, Georgia and North Carolina. The reviewed data included 2004 Total Research and Development (R&D), Change in Total R&D from 2003 to 2004, R&D Per Capita, Academic R&D, Industry R&D, Federal R&D, Small Business Innovation Research Contracts, Scientist and Engineering PhDs Awarded, Patents Issued, Venture Capital Investment and Professional, Technical and Scientific Employment.

Some who view this report may already know but for the broader audience this report confirms that Florida

ranks below the benchmark states in most of the criteria that is acknowledged as relevant to an innovation economy. Of the 14 benchmark metrics, Florida ranked above its fourth place population position in only one – total change in R&D spending by percentage from 2004 to 2005. Considering Florida's economic history vis-à-vis the other states, this data should not be viewed as a criticism of past performance, but rather the reality facing the state as it plans for its future. Conversely, the positive trends indicated by the one-year increase in overall R&D spending and Venture Capital funding should not instill excessive confidence. Florida is assured success as it develops its innovation economy. Although these two positive indicators are welcomed and applauded, the trend lines have not continued long enough to alter the state's position relative to the benchmarked states.

Florida's Rankings Against the Seven Benchmark States	
Metric	Florida's Rank (out of eight)
Population and GSP	4
Total R&D – 2005	7
Total R&D increase by percentage 2004 to 2005	3
Total R&D increase by dollars 2004 to 2005	6
R&D per capita	8
Academic R&D	7
Industry R&D	7
Federal R&D	6
SBIR Contracts	6
Scientist & Engineering PhDs Awarded	6
Patents	8
VC Investment Dollars	5
VC Number of Deals	7
Professional, Technical and Scientific Employment	5

Benchmark Programs

Success or failure in developing a vibrant innovation-based economy is not dependent on any single factor, program, policy or incentive. Rather, it is frequently the result of a continuum of factors, programs, policies, and incentives that create an ecosystem that provides as many ingredients of success as possible. A realistic acknowledgement of the state or region's current status along the innovation development spectrum also greatly impacts prescribed actions and relevant benchmark initiatives.

The programs selected are both representative of initiatives Florida should consider, as well as illustrative of what competitive states have done in order to increase their likelihood of success in this field. The list of covered programs is by no means a definitive one, since the numbers and variations are almost infinite. Programs will address the following categories:

- Statewide Innovation Development Models
- R&D Tax Credit Programs
- Research and Commercialization Programs
- Angel Funding Programs
- Venture Funding Programs
- Pension Fund Investment Programs
- Local Programs

Statewide Innovation Development Models

States approach the organization of their innovation and technology-based economic development efforts differently. As the competition for research, capital and innovation-oriented companies increase between states, many that have not approached innovation in a collaborative and strategic fashion are doing so now. Some aggregate under a Department of Commerce or equivalent organization, while others create stand-alone agencies to manage these functions. Both models can and do work. Below are five representative successful state-led development models and one newly launched initiative in Missouri:

North Carolina Board of Science and Technology

In 1963, the North Carolina General Assembly established the North Carolina Board of Science and Technology (the Board) to encourage, promote, and support scientific, engineering, and industrial research applications in North Carolina. The Board works to investigate new areas of emerging science and technology and conducts studies on the competitiveness of state industry and research institutions in such fields. The Board also works with the General Assembly and the Governor to put into place the infrastructure that keeps North Carolina on the cutting edge of science and technology.

Initially, the Board focused on persuading firms to locate in North Carolina, particularly if they needed professionally trained people and scientific and engineering support. Eventually, the Board's emphasis evolved to building North Carolina's research and education base. Currently, the Board continues these efforts and others to ensure that science and technology play an important role in promoting the economic growth and development of the state. The Board is a division of the North Carolina Department of Commerce and is managed by an Executive Director with its members appointed pursuant to enabling legislation.

Past projects of the board include the North Carolina School of Science and Mathematics, the North Carolina Biotechnology Center, the Technology Development Authority, the North Carolina Research and Education Network, and the North Carolina Aquaculture Program.

Ohio Third Frontier Commission and Project

The Third Frontier Commission was created by the Ohio General Assembly in 2003 and is responsible for allocating funds appropriated by the General Assembly to support the programs of the Third Frontier Project. Members of the Third Frontier Commission include the Director of the Ohio Department of Development, the Chancellor of the Ohio Board of Regents, the Governor's science and technology adviser, and six regional commissioners appointed by the Governor. The Commission also has a 16-member advisory board made up of leaders from industry, academia and government.

The Third Frontier Project, a 10-year, \$1.6 billion initiative, is Ohio's largest commitment to expanding high-tech research capabilities and promoting innovation and company formation. The overall mission of the Third Frontier Project is to build world-class research capacity in the state, support early-stage capital formation and the development of new products, and finance advanced manufacturing technologies to help existing industries increase productivity. The Third Frontier Project offers a comprehensive set of programs that support research, commercialization, information technology infrastructure, training, and job creation.

One program of note is the Entrepreneurial Signature Program (ESP) which provides grants to a single, non-profit organization in each of the six regions of Ohio with the goal of significantly increasing entrepreneurial commercialization outcomes in technology-based sectors that offer the best economic development prospects for the region. Each ESP represents a coordinated network of services and providers to assist entrepreneurs and small tech-based companies in the region.

Fiscal Year 2007 marked the mid point of the 10-year Third Frontier Project, and more than \$637 million has been awarded to companies, universities, and economic development organizations throughout the state. The Third Frontier Internship program also awarded internships valued at \$3,000 each at Ohio companies to more than 900 students to learn about career opportunities and the practical application of technology.

Oklahoma Center for the Advancement of Science and Technology

The Oklahoma Center for the Advancement of Science and Technology (OCAST) was established in 1987. It is funded by state appropriations and governed by a board of directors with members from both the private and public sectors. In June 2006, OCAST was charged with the responsibility of administering the newly-created \$150 million Economic Development Generating Excellence trust fund (EDGE Fund), created for the purpose of increasing private and public applied research and development, technology transfer and technology commercialization in Oklahoma.

OCAST manages several different programs toward fulfilling its stated mission "to foster innovation in existing and developing businesses." The programs provide general assistance, research grants, commercialization grants, seed funding, internships and sector-specific initiatives.

Since 1987, OCAST has invested \$151 million in Oklahoma research, development, technology commercialization and manufacturing modernization and, with this funding, has attracted nearly \$2.6 billion in private investments and federal funding. There are several "success stories" of OCAST backed companies, with Novazyme Pharmaceuticals being the most recognized. In 2001, it was acquired by Genzyme Corp. in a sale estimated to be \$225 million with the research arm continuing to be headquartered in Oklahoma City.

**Pennsylvania Technology Investment Office
(Ben Franklin Technology Partners)**

Pennsylvania's technology development strategy is coordinated by the Technology Investment Office (TIO) of the Department of Community and Economic Development and governed by the Ben Franklin Technology Development Authority. The Ben Franklin Authority is appointed by the Governor and chaired by the Secretary of Community and Economic Development. The program operates under the name Ben Franklin Technology Partners (BFTP), which celebrated its 25th Anniversary in 2007.

The mission of the TIO and BFTP is to facilitate growth and competitiveness through a comprehensive set of initiatives including funding, partnerships and support services. The TIO also plays a significant coordinating role to ensure that the numerous other technology-based economic development groups and initiatives are working collaboratively.

The mission of the TIO is to serve as a catalyst for the growth and competitiveness of Pennsylvania companies through technology-based economic development (TBED) initiatives including funding, partnerships and support services. The goal of the TIO is to ensure that the variety of TBED organizations and initiatives located throughout the Commonwealth are working collaboratively to fully leverage the wealth of research, capital resources, and support services available to build a comprehensive infrastructure that supports company growth.

A recent independent study indicated a substantial return of taxpayer dollars by the BFTP. From 1989 to 2001, BFTP boosted the state's economy by \$8 billion and helped to create 93,105 jobs. In addition, during the same period, every public dollar invested by BFTP yielded nearly \$23 of additional state income. In addition to the return on investment of state funds, many innovative technologies and scientific discoveries have resulted from BFTP support.

Georgia Research Alliance

The Georgia Research Alliance (GRA) was established in 1990 and is a model public-private partnership between Georgia universities, business and state government. The program focus areas are:

- Eminent Scholars - For each scholar, GRA invests \$750,000 for an endowment, an amount that the research university matches in private funds on a minimum 1-1 basis. GRA also makes investments in developing the world-class research laboratories the scientists need.
- Centers of Research Excellence – Many Centers are led by Eminent Scholars and involve collaboration across universities and with private industry. GRA's funding is often in the form of matching funds to attract federal and private research grants.
- Commercialization – VentureLab is GRA's signature technology commercialization program. Launched in 2002, VentureLab helps build high-growth companies around laboratory discoveries at GRA's partner universities. VentureLab seeks out university-based research innovations, evaluates their commercial potential, and provides resources to address the management, market and technology risks that come with new ventures. Each participating university has an active technology incubator with which VentureLab partners. GRA also makes competitive investments, Industry Partnership grants, in R&D projects conducted jointly by university faculty and Georgia-based companies.

GRA is a proactive, synthesizing and facilitating organization that works with six Georgia research universities. Each of its programs and initiatives are customized to meet the requirements of the opportunities they are designed to exploit. GRA operates as an independent not-for-profit governed by leaders from industry and academia. GRA does not receive state funding for investments in research, but its operations are funded through foundation and industry contributions.

GRA has a demonstrated track record of success. Since 1990 they have recruited 58 Eminent Scholars; established 24 Centers of Research Excellence; leveraged \$2 billion in federal and private research; served 100 plus corporations by university partnerships; created 125 companies and 4,000 plus jobs.

Missouri “Grow Me State” Initiative

The “Grow Me State” initiative began as a research project to gain a better understanding of the state’s capital formation needs. The December 4, 2007, revised report titled “Missouri’s Need for Risk Capital: An Assessment and Recommendations,” suggested that the state’s capital formation strategy should be guided by seven principles:

1. Missouri’s capital formation strategy must recognize and respond to the competition it faces from other states for private capital.
2. Missouri’s capital formation strategy should focus on the pre-seed and seed stages of capital formation.
3. Missouri’s capital formation strategy should leverage money from other sources.
4. Missouri’s capital formation programs should connect innovators, entrepreneurs, businesses, investors, scientists, and marketing experts.
5. Missouri’s capital formation strategy must be embedded in a strategy for stimulating the creation of high-quality start-ups in Missouri.
6. Missouri must make a long-term commitment to both capital formation and innovation.
7. Missouri must measure the results of its capital formation programs.

As a result, the “Grow Me State” Steering Committee recommended a Statewide Blue Ribbon Panel of leadership from key technology employers and financiers be formed to guide the state in the creation of a five-year Technology Based Economic Development Strategy to capitalize on existing strengths.

As stated previously, many interviewees felt the fragmentation of this effort in Florida should be addressed. The model programs above represent a comprehensive combination of policy development, funding initiatives, support services and partnership coordination.

Enterprise Florida is charged with and addresses many of those functions, but is not mandated or staffed to provide a comprehensive approach. When Enterprise Florida was established, the organization contained many of those functions, but rather than

evolve them to better address the Florida marketplace, the division was eliminated.

Because of Florida’s geographic size and regional diversity, it would be difficult and ill-advised to provide the support services from the state-level. However, providing coordinated policy development, management of state-level programs as a wholesaler to the regions and communities while providing competitive grant funding to help establish local efforts where they have yet to develop would contribute greatly to developing a statewide ecosystem necessary to support an innovation-based economy.

R&D Tax Credit Programs

A wide range of R&D Tax Credits are available throughout the United States. An estimated 41 states have enacted some type of tax credit policy to enhance research and development. Since 1982, the emerging consensus among states is that the benefits of R&D exceed the profits companies earn on their R&D investments. These additional benefits are due to “spillover effects” of the new inventions that multiply their benefits to society many times over.

R&D activities and the resulting innovation is clearly becoming the theme of economic development throughout the United States. States with some type of R&D Tax Credit have increased as follows: 1982 – 1; 1992 – 14; 2002 – 31; 2006 – 41. There are many variations in how states have enacted their respective R&D legislation. As of 2006, there were 28 states

with legislation providing credits related to the incremental increases in R&D investments. Of those 28 states, 19 use the Federal Tax Formula to determine the incremental increase while nine have developed their own formulas.

“States that do not offer tax incentives to R&D investments face an increasing risk of losing R&D activities to states that offer such incentives...especially if those states are nearby.”

**– Daniel J. Wilson, Federal Reserve
Bank of San Francisco, 2007**

Florida does not currently have an R&D tax credit and a legislative proposal for a Florida R&D credit did not pass this year.

Maryland R&D Tax Credit

The Maryland Research and Development Tax Credit program was enacted during the 2000 session of the Maryland General Assembly and subsequently amended to require the Department of Business and Economic Development (DBED) to submit a report to the Governor and General Assembly on the applicants certified for the R&D income tax credits and the amount of credits approved. DBED is responsible for administering the certification process.

The Maryland Research and Development Tax Credit Program includes two separate, but related, tax credits. One credit is calculated on a firm’s average level of research; the other credit is calculated on a firm’s increase in R&D expenditures over previous years.

- **Basic R&D Tax Credit:** This credit is three percent of eligible R&D expenses that do not exceed the firm’s average R&D expenses over the last four years. However, if the total amount of credits claimed by all firms exceeds \$3 million, then the Basic R&D tax credit will be prorated. Moreover, if there is money left over from the Growth R&D tax credit allotment, then this money will be added to the \$3 million.
- **Growth R&D Tax Credit:** This credit is 10 percent of eligible R&D expenses that exceed the firm’s average R&D expenses over the last four years. However, if the total amount of credits claimed by all firms exceeds \$3 million, then the Growth R&D tax credit will be prorated. Moreover, if there is money left over from the Basic R&D tax credit allotment, then this money will be added to the \$3 million.

The unused credit carry-forward has been reduced from 15 years to seven years. The \$3 million cap was set based on the lack of reliable information on the potential applications. The basic R&D credit was 7.5 times oversubscribed and the growth credit was 6.1 times oversubscribed. These limits reduced the *effective rate* for the basic credit to 0.4 percent and the *effective rate* for the growth credit to 1.63 percent. This R&D Credit is included to demonstrate the repercussions of estimating and capping the available pool of credits.

Pennsylvania R&D Tax Credit Assignment Program

The Pennsylvania Research and Development Tax Credit (R&D Tax Credit) Assignment program was established to assist the growth and development of technology-oriented businesses, particularly small start-up technology businesses. Since many small businesses in the early stages of development are not yet profitable and do not have significant tax liability, they have not bothered to apply for the available R&D Tax Credits for which they were eligible. With this R&D Tax Credit Assignment program, technology businesses can now sell unused R&D Tax Credits on the open market to help advance and grow the business.

The R&D Tax Credit program is a key component of the economic stimulus program to assist Pennsylvania's home-grown technology businesses to grow and produce jobs and other economic benefits. The actual R&D Tax Credits are issued or approved by the Pennsylvania Department of Revenue. Businesses that have not used all or part of their issued R&D Tax Credits within one year after the R&D Tax Credits were approved by the Department of Revenue may apply to the Pennsylvania Department of Community and Economic Development (DCED) for approval to assign their eligible R&D Tax Credits to a "buyer" – another taxpayer that can then use the purchased credits to offset up to 75 percent of its own tax liability with the purchased credit.

The amount of the credit is 10 percent of the company's increased R&D expense over a base period. The total cap of the credit program is \$15 million, with individual credits being pro rated accordingly. Up to 20 percent of the total pool is set aside for small businesses. Credits may be carried over for a maximum of fifteen (15) taxable years.

Note that elements of the R&D Tax Credit programs that apply to individual investors' personal income tax liability will not be modeled in Florida. It was mentioned in the interview process that Florida should consider making credits available to individual investors by enabling them to apply the credit toward their cumulative Florida tax liability as determined by the sum of a basket of personal tax obligations, primarily personal property and sales tax.

Research and Commercialization Programs

Through Florida's nine Centers of Excellence, six "Innovation Fund" Research Institutes and the recently established Institute of Commercialization for Public Research, the state has made significant progress in creating the foundation for primary and applied research. Note that the Centers of Excellence initiative was not funded this year.

Once a promising discovery is made and a company is formed, additional funding is required to prove the concept has market potential and further development toward commercialization. These funding needs are generally met through Federal grants, private pre-seed and seed funding and/or state research grants.

The types of grant programs vary from state to state. Some are designed to match Small Business Innovation Research (SBIR) Phase I or Phase II grants, while others are independent of the Federal grant program. Leveraging the due diligence infrastructure of the Federal SBIR program not only increases the efficiency of the state evaluation process, it increases the potential volume of Federal R&D funding coming into Florida by meeting a critical Federal award factor. The proposed Florida Research Matching Grant Program that failed to pass in the recent legislative session would have provided significant assistance to fledgling Florida technology companies.

Indiana's 21st Century Research and Technology Fund (21 Fund)

Created by the Indiana General Assembly in 1999 and brought under the leadership of the Indiana Economic Development Corporation (IEDC) in 2005, Indiana's 21 Fund focuses on entrepreneurial ventures that have demonstrated a market potential for commercialization of innovative technologies. The 21 Fund has set aside 20 percent of its budget for an SBIR Program Office, created to support companies that are applying for or have received federal SBIR awards.

To qualify for a grant, each company must propose a technology idea or business plan that demonstrates innovation and clear commercialization intent. The 21 Fund awards grants to companies based on proposal reviews completed by science and technology researchers and experts in economics from across the country. To guarantee that the grant is invested in Indiana and companies grow their businesses in the state, grants require mandatory repayment of funds in certain circumstances.

The Phase I Matching Program has been expanded to support later stage commercialization activities of Phase II SBIR/ Small Business Technology Transfer (STTR) awardees. In fiscal year 2006-07, the 21 Fund awarded 17 grants totaling \$16,303,695; and during the 2005-07 bienniums, the 21 Fund awarded 38 grants totaling \$42,254,599. Through these awards, the 21 Fund has demonstrated a dramatic shift toward primarily supporting small, entrepreneurial companies with 90 percent of the \$42.3 million awarded directly to small companies.

Ohio Research Commercialization Grant Program (ORCGP)

The Ohio Research Commercialization Grant Program (ORCGP) provides grants to improve the commercial viability of technologies developed through federal Small Business Innovation Research (SBIR), Small Business Technology Transfer (STTR) and Advanced Technology Program (ATP) research and development projects. The goal of the grant program is to improve the ability of small technology companies to assess and realize the commercial potential of research projects and to promote the competitiveness of such companies through the augmentation of federal research and development funding. The program also supplements SBIR Phase II awardees by funding commercialization activities which are not allowed under the SBIR programs.

The Third Frontier Commission awards grants of up to \$350,000 to eligible companies that submit a proposal for consideration. Twenty-six organizations have been awarded a total of \$8,614,308.00 and 37 grants through this program. In 2008, the Third Frontier Commission plans to award up to \$2 million in grants.

Wisconsin Technology Bridge Grants

The Wisconsin Technology Bridge Grants program was introduced in 2003 by Governor Jim Doyle as part of the state's Grow Wisconsin initiative. Technology Bridge Grants provide assistance to small Wisconsin businesses experiencing severe financial hardship while awaiting a decision on Phase II or other funding applications. Funds granted under this program may only be applied to necessary costs directly related to maintaining research and basic business operations until the company's follow-on funding or federal grant application is approved or denied.

Eligible companies must have fewer than 100 employees and must have received early-stage financing from the federal government or from some other source. Companies are selected to receive bridge grants based on criteria such as the amount of economic impact the company will have in the state and the likelihood that the company will successfully commercialize technology.

Angel Funding Programs

As established Venture Capital firms increase their funding minimums and shift funding to later investment rounds, Angel networks and funding is becoming more and more important to the growth cycle of innovation-based companies. One unknown Venture Capitalist was heard to say, "Florida has more Angels than anywhere except Heaven." This could well be a true statement, but locating them and convincing them to invest in Florida-based opportunities is another matter.

The growth of the Florida Venture Forum and several maturing Angel investment groups around the state is a testament to the progress Florida has made in this area over the past ten years. Although these investment groups should continue to be locally and regionally based, many states have benefited from the networking and information sharing resulting from a state-level coordination program.

Wisconsin Angel Network

The Wisconsin Angel Network (WAN) was formed in January 2005 to serve as an umbrella organization to provide services and resources to the early-stage investing community. WAN seeks to build early-stage capital capacity throughout Wisconsin and increase the number and amount of equity investments in Wisconsin's entrepreneurs. The organization, which is operated by the Wisconsin Technology Council, does not operate a fund or make recommendations on potential investments.

WAN serves as a clearinghouse for resources for both investors and entrepreneurs. For potential investors, the organization offers tools to help establish an angel network, sample term sheets, and research reports on angel investing. Entrepreneurs can receive assistance with raising capital, applying for grants and loans, creating a presentation for a potential investor or developing a thorough and well-organized business plan, devising a marketing plan, and networking. WAN's website hosts a deal-flow pipeline, which includes more than 60 executive summaries from entrepreneurs seeking funding.

Venture Funding

Virtually every interviewee mentioned the need for more venture funding in Florida, though most differed on the most critical factors that could be addressed to increase it. In general, there is a three-way split between those who think the major challenge is a shortage of one of the following: investment capital, fundable deals or fundable management teams. With the exception of the first quarter of 2008, Florida's share of VC funded projects has been decreasing. It is too soon to determine whether or not the trend is turning.

The imminent launching of Florida's Opportunity Fund that was established by the Legislature in 2007 and is currently being formed will be a welcomed addition to Florida's innovation efforts. The program is a fund-to-fund co-investment program that will

attract the attention and capital of out-of-state VC firms.

Pension Fund Investment Programs

A number of states use state controlled and managed pension funds as a tool to increase available risk capital. Although the primary obligation of these funds is the fiduciary responsibility to their beneficiaries to generate a reasonable rate of return, these states have determined that investing in emerging and growth companies in their states and regions can be compatible with generating returns. Two examples of such efforts are the New York State Common Retirement Fund's In-State Investment Program and the Oregon Investment Fund. The recently completed Florida 2008 Legislative Session

produced similar legislation authorizing the State Board of Administration to invest up to 1.5% of its portfolio in technology and growth investments. The two programs below were included due to the timing

and uncertainly of this bill becoming law, as well as to reiterate that the primary consideration for such funds continues to be appropriate risk-adjusted returns.

New York State Common Retirement Fund's In-State Investment Program

In 1999, the New York State Legislature passed legislation calling on the Common Retirement Fund (CRF) to invest \$250 million in New York companies. By 2003, the CRF had committed \$104 million to the In-State Private Equity Investment Program. Between 2003 and 2006, the CRF has added \$321 million and now has a total of \$425 million committed to 15 funds. Since the CRF requires its investment partners to put up their own money and raise other funds, the total pool of capital currently available is \$750 million.

The In-State Investment Program is designed to stimulate New York's economy but also complies with prudent risk management practices. New York State Controller Allan G. Hevesi was quoted as saying, "Although the program, which the Legislature had the vision to create in 1999, has provided significant economic benefits to the State's economy, my primary objective is to obtain an appropriate risk-adjusted return comparable to what would be available for other investments with similar characteristics. It is first and foremost an investment program. The fiduciary responsibility of the Comptroller's office is always paramount."

The May 2006 CRF status report indicated that it has invested \$145 million in 64 companies, resulting in a total of \$920 million invested. The program has also resulted in out-of-state companies agreeing to locate in New York in order to access the funding.

Oregon Investment Fund

In July 2003, the Oregon State Legislature created the Oregon Investment Council ("OIC") to design and implement a \$100,000,000 program that encourages the growth of small businesses within the state of Oregon. The OIC invests in all State of Oregon funds, including the Oregon Public Employees Retirement Fund and the State Accident Insurance Fund. The OIC's statutory mandate is to achieve the highest return possible on its investments.

To accomplish this mandate the OIC chose to develop a fund of funds, the Oregon Investment Fund ("OIF"). This fund, which is capitalized by funds from the OIC, has committed capital to private equity and venture capital funds that in turn invest in companies located primarily in the state of Oregon, as well as the Pacific Northwest region. In addition, a percentage of the assets of the OIF may be invested directly into operating companies alongside the OIF's private equity and venture capital managers.

The OIF seeks to build successful, innovative enterprises for the benefit of its investors. In addition, OIF facilitates partnerships among the private equity community in Oregon and between entrepreneurs in the state.

Locally-Based Programs

Most of the analysis and programs have focused on state-level initiatives that enable local innovation-based development. Components of some of the reviewed programs provide both framework and funding for regional organizations and efforts that meet the state criteria. Since the state-level programs

are dependent on state action, an effort is being summarized to provide programmatic examples of initiatives that could be started locally without state support.

Littleton, Colorado – Economic Gardening

In 1987, Littleton, Colorado, faced economic development challenges with a shift away from “hunting” to what was called “economic gardening.” Littleton pursued this strategy through significant research and development of training programs and real-time information that is made available to its entrepreneurs. The program, which has evolved over time by dropping training programs determined to be ineffective, is not a specific model of programs and services. It is, however, indicative of an attempt to build a culture of innovation-based entrepreneurialism that can serve as a guide to others.

The objectives of the program are to create a culture and environment that is conducive to supporting innovation and entrepreneurs throughout the economy. Research revealed that a close connection exists between product and process innovation and successful entrepreneurs who create high-growth companies. Littleton identified several key common characteristics of successful entrepreneurs and began addressing each through policies, programs and spending.

The initiative has evolved and is currently focused on three critical areas: Information, Infrastructure and Connections. Although Littleton has won several awards for its efforts, it is the first to concede, however, that there is no one model of success and that “success” is never achieved, since the process is long and never ending. Littleton has “succeeded” in bringing attention to itself as it builds an environment and culture with the entrepreneur in mind. In this respect it is proving one of its tenets of success, i.e. success breeds success.

Incubator and/or Accelerator Programs

The terms incubator and accelerator are frequently used interchangeably and in fact, many examples of each provide products and services of the other. There is, however, an evolving distinction between the two. Incubators are more and more viewed as organizations that provide assessment and planning services and facilities for companies in the earliest stage of development, i.e. “incubation.” Accelerators have developed and been labeled for entities that provide a physical location, as well as access to expertise and advice to companies that have already proven their concept, obtained some funding and achieved some level of sales. The facility and attendant support services can be provided on a cost or no-cost basis, and the accelerators can be built on a profit or non-profit platform. The objective is to expedite, i.e. “accelerate” the path to profitability for the client companies.

Florida has several examples of successful incubators that also include services that are associated with accelerators. The University of Central Florida Technology Incubator, the Enterprise Development Corporation of South Florida and the Sid Martin Biotechnology Development Incubator is among many successful examples. The number and variation of incubators across the country are too numerous to randomly select one or two examples to follow as specific models. Each incubator and/or accelerator should be designed based on local economic factors and supported by a network of local expertise. Successful examples can be found that are university oriented as well as those that are community-centric and not tied to a university. There are also for-profit and government supported non-profit centers that have successful track records.

Talent Development

An economy cannot prosper on ideas and innovation alone. It must have a deep pool of creative, talented and goal oriented residents to sustain the growth and potential of the companies throughout the state. Regardless of their size, companies depend on their employees to compete. It is impossible for every

region to have an available supply of talent trained in an industry that is underrepresented in the market. A state and region must respond to the opportunities through increasing their commitment to provide the long-term pipeline of required talent.

The Georgia Intellectual Capital Partnership Program

The Georgia Intellectual Capital Partnership Program (ICAPP), the University System of Georgia's ("USG") economic development program, was developed in 1995 by the Georgia Board of Regents to connect the intellectual resources of Georgia's 35 public college and universities to the state's business community. The primary role of ICAPP is to act as a broker and catalyst to strategically link USG with the state's economic development efforts.

The centerpiece of ICAPP is the ICAPP Advantage Program. This program helps meet company hiring needs through an expedited curriculum designed by a college or university to train knowledge workers. Knowledge workers are defined by ICAPP as persons who generate value for other people by sharing, creating or using ideas; complete a job using intellect and experience instead of machinery; and earn above the Georgia per capita income.

A USG institution may apply for ICAPP Advantage funding to help pay for the costs of instruction, including faculty, equipment, and space. The application for this funding is not available publicly and may not be obtained without a Freedom of Information Act request.

In addition, an ICAPP student may apply for an ICAPP service cancelable loan to help pay for expenses (tuition, books and living expenses), while participating in the ICAPP program. Such loans may range from \$7,500 to \$10,000 and are cancelable up to \$2,500 per year for three to four years if a graduating student joins the company participating in the program or a related company in the targeted industry program.

Although ICAPP has focused on addressing a shortage of nurses since 2004, the structure of the program and its ability to connect universities with economic development projects is the basis for inclusion in this study. The program provides a mechanism for universities to accelerate curriculum development and delivery to companies considering expansion and/or relocation into Georgia.

Conclusion

Florida has made tremendous strides in placing critical building blocks for the development of an innovation economy. The highlights of these efforts over the past five years are:

- Locating the Innovation Initiative Fund projects
- Creation of the Centers for Excellence
- Funding of the Opportunity Fund
- Establishment of the Florida Research Consortium
- Authorizing State Board of Administration to invest in technology and growth companies

These, and more, initiatives have added to the landscape and ecosystem that is required for Florida to compete in the 21st Century economy. There are, however, some fundamental and specific challenges still facing Florida in its quest to diversify its economy.

As Florida transitions from a low-cost operating environment to one more focused on value, it must acknowledge that the states (and countries) it competes with change as well. Although Florida has experimented with various innovation-based programs and policies, the comparative data suggests that Florida must do more than its competitors to close gaps and present a better statistical image of its innovation capacity. Several of these indicators, e.g. Venture Capital funding, are showing improvement, but not to the level where future growth will be self-generating.

Although the need to address the primary and secondary education deficiencies in Florida was frequently mentioned as a glaring weakness of the state's ability to compete, a full investigation of the possible solutions to this challenge was beyond the scope of this study. Boyette Levy does acknowledge the importance of general and technical education across the population, but did not pursue an analysis of the status of Florida's education system or possible

solutions to remedy its clear negative perceptions that persist as part of this study. It must be noted, however, that for the state to truly succeed, education at all levels (primary, secondary, community colleges, and universities) must be a part of the planning and solutions.

Florida's regional diversity is both a strength and a weakness. The diverse, strong regional economies enable Florida to diversify within itself and create sufficient critical mass in a variety of industries. However, the same diversity results in a fragmented and ad hoc approach to innovation-based strategic planning and execution. Despite the existence of state-level strategic planning at Enterprise Florida and other organizations, there is currently not a clearly defined and resourced state-level effort to facilitate and coordinate the development and delivery of enabling programs and services throughout Florida's diverse regions. The statewide fragmented and uncoordinated innovation development model was most frequently mentioned as an existing gap in the system. These comments were not critical of any existing organization, but recognition that the functional responsibilities as they relate to innovation economic development are neither clearly mandated nor funded.

Past ad hoc efforts have encompassed elements of this coordination, but they have either been abandoned or are too narrowly focused to provide the proper balance between planning, execution and state/local partnership. In addition, the ad hoc approach to innovation-based economic development has diminished or eliminated initiatives before they were able to demonstrate success.

The goal is not to create a level of bureaucracy, but to raise the level of awareness and commitment across the state for a thoughtful strategy that creates the environment where individuals and institutions are encouraged to innovate, creating value and wealth for the state as a result. These efforts should continue to be based on regional strengths and delegated down to

the regional level. They should, however, leverage state programs, policies and funding, thereby aligning the diverse regions under a state-wide umbrella of enablers.

Innovation takes place at all levels of society and throughout the public and private sectors. Although this report defines innovation as “*the creation of value through the adoption and exploitation of new ideas throughout the economy,*” it has focused on

technology-based innovation. It is impossible to deny the linkage between well-funded research universities and the vibrancy of an innovation economy. Florida must continue to increase its commitment and support for the universities that create the “raw material” around which companies are formed. In order to compete against the benchmarked states, as well as others, Florida will have to find a mechanism to support the universities that are the cornerstone of their region’s economies.