



**21ST CENTURY
FUND**

10

TH REPORT
to the Indiana General Assembly



21ST CENTURY RESEARCH & TECHNOLOGY FUND

FY 2010-2011

TABLE OF CONTENTS

3	LETTER FROM THE LEADERSHIP
4	21FUND OVERVIEW
5	21FUND KEY INITIATIVES
10	21FUND AWARDS FY10-11
11	SBIR/STTR AWARDS FY10-11
13	SUCCESS STORIES

APPENDIX A

APPENDIX B

This report is available online at 21fund.org

LETTER FROM THE LEADERSHIP

Dear Legislator,

We are happy to provide this report of the activities of the Indiana 21st Century Research and Technology Fund (21Fund) between July 1, 2010 and June 30, 2011.

National economic conditions continue to restrict lending and the availability of high-growth capital. Indiana's entrepreneurs have found it increasingly difficult to access the capital needed to develop new technologies and grow. With nearly 80 percent of all new jobs expected to come from small businesses, the 21Fund continues to explore new ways to attract essential entrepreneurial resources to the state.

This year, the 21Fund announced its INVEST Indiana Initiative (Appendix A). This initiative is designed to attract new resources and increase access to capital for Indiana entrepreneurs. More specifically, the 21Fund commissioned the creation of a new, statewide entrepreneurial network to engage private sector investors and regional stakeholders to encourage the creation and support of high-growth companies.

The INVEST Indiana Initiative will also expand upon the 21Fund's investment and service capacities to engage nontraditional sources of capital and provide early-stage ventures with access to experienced entrepreneurs for assistance. Through these efforts, the 21Fund seeks to attract new investment partners and to work with local stakeholders to cultivate a robust entrepreneurial environment throughout the state.

These activities are in addition to the 11 new 21Fund investments, totaling \$7.95 million, made during the last fiscal year and the 30 awards, totaling \$2.12 million, which match federal Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) program awards to Indiana companies. Despite these challenging times, 21Fund investments have attracted substantial federal and private sector matching funds on a 4 to 1 basis for these activities.

E. Mitchell Roob, Jr.
Secretary of Commerce



E. Mitchell Roob, Jr.
Secretary of Commerce

21 FUND OVERVIEW

During the reporting period, the 21Fund made investments in 11 Indiana companies totaling \$7.95 million through its direct awards program. These awards were initially matched by private and federal capital sources on a 2:1 basis. As these businesses develop, considerable further matching investment is expected, and the accompanying leverage ratios, inclusive of follow-on funding, are projected to far exceed the 21Fund's historical leverage ratio of 2.3:1 and its average ratio of 4:1 for investments since 2009.

In addition to the above awards, 30 matching awards were made to Indiana companies that have won federal Small Business Innovation Research federal awards. These awards have historically attracted substantial federal and private sector matching funds at a 4:1 ratio. All awards are set forth in Appendix A.

Last year the Ball State University Center for Business and Economic Research, headed by Dr. Michael Hicks, conducted an independent analysis of 21Fund processes and outcomes. Near-term outcome measures indicate that from 1999 to 2009 strategic investment of \$265,310,154 by the 21Fund has engaged approximately \$1 billion dollars in the development of the State's high-technology sector. Based upon that investment, the analysis estimates that over 11,000 near-term jobs have been created at a cost of about \$14,000 per job and that the 21Fund's impact on the State's real GDP has been \$427 million. An executive summary of this report is provided in Appendix B and a copy of the full report is available online¹.

Consistent with the external review, the 21Fund has continued its effort since 2006 to institute best practices to increase the 21Fund's historic leverage ratio. This year the 21 Fund announced its INVEST Indiana Initiative. This initiative commenced several key reforms outlined in *Accelerating Growth: Indiana's Strategic Economic Development Plan* designed to maximize private sector participation in early-stage ventures and to provide 21Fund awardees with experienced entrepreneurial assistance in addition to capital. Further, the 21Fund has actively sought to attract new resources for Indiana entrepreneurs and to spur regional entrepreneurial initiatives. The announcement of the INVEST Indiana Initiative is set forth at Appendix A and its key components are explained in this report.

¹Comprehensive Examination of the Performance of the Indiana 21st Century Research and Technology Funds, Prepared by the Center for Business and Economic Research at Ball State University (September 2010). Available at www.21fund.org/uploads/21stcenturyBSUFullReport.pdf

21 FUND KEY INITIATIVES

IMPLEMENTING BEST PRACTICES

From 1999 to 2009, the 21Fund made 452 awards totaling \$265 million and attracting additional capital of nearly \$610 million for technology-based economic development in Indiana.

In 2009, the Ball State University Center for Business and Economic Research, headed by Dr. Michael Hicks, conducted an external review of the 21Fund and determined that the 21Fund's \$265 million direct investment impact provided for the creation of an estimated 11,000 jobs¹ in Indiana since 1999. The study found that the 21Fund's award review process is state-of-the-art compared to its peers, including its narrow industry focus and its scientific and business plan peer review. The Ball State study further concluded that the 21Fund's 2006 shift in focus towards more probable commercialization activities and the development of an entrepreneurial ecosystem was consistent with the best practices in the field for this time period and would increase the long-term economic impact of the 21Fund.

In line with the Ball State recommendations, the 21Fund reviewed best practices to encourage private sector participation in technology-based commercialization activities and to monitor post-award investment activities. Consistent with national leaders in this area, the 21Fund instituted a venture development organizational model that provides seasoned entrepreneurial assistance to 21Fund awardees and commissioned the creation of a state-wide investor and entrepreneurial network to make available angel investment and other forms of non-traditional capital to more Indiana entrepreneurs.

Further, the 21Fund adopted a regional approach to its efforts with a particular focus on Indiana's distressed regions.² Indiana is comprised of regional economies, and regional efforts to encourage and support entrepreneurship will create the best entrepreneurial ecosystem. In short, Indiana entrepreneurs, regardless of their location, must have access to the necessary entrepreneurial resources to grow their ventures.

These changes promise to increase the economic impact of the 21Fund by attracting new resources for entrepreneurs, encouraging private sector follow-on or co-investments, and engaging regional partners to assist new ventures. These changes have already improved the 21Fund's leverage ratio from 2.3:1 from 1999 to 2007 to nearly 4:1 with the goal of approaching the national standard of 10:1. As an example, a 21Fund investment in SCALE Computing has attracted a leverage ratio of over 13:1 since our award in 2009 as a result of these changes.

²Indiana has 15 federally designated economic districts, which represent 8 geographic regions that collectively qualify as a distressed regions by the United States Economic Development Administration standards.

21 FUND KEY INITIATIVES

In today's economic environment, Indiana entrepreneurs must prove and commercialize their new high technology products and services despite the widening "valley of death" market financing gap.³ By leveraging the 21Fund, Indiana will establish an entrepreneurial ecosystem that maximizes private sector participation and provides Indiana's most promising ventures the assistance and capital they need to grow here in Indiana.

ATTRACTING NEW RESOURCES

In 1999, the General Assembly established the 21Fund to serve as a catalyst for innovation in order to transform our State's economy. Recognizing that approximately 80 percent of job growth occurs through small businesses, the 21Fund expanded its activities since 2006 to encourage the commercialization of Indiana's innovative concepts, particularly through high-tech entrepreneurial ventures.

To diversify Indiana's economy and encourage job growth, the 21Fund must assist Indiana entrepreneurs in finding the resources necessary to accelerate their growth. In doing so, the 21Fund looks to leverage its resources to attract additional financial and human capital for entrepreneurs by maximizing private sector participation and developing lasting partnerships.

Encouraging Investor and Entrepreneurial Networks

In March of 2011, the 21Fund announced an initiative to create a state-wide entrepreneurial and investor network. This network is designed to coordinate and support the activities of local financial resources, particularly angel investors, and to increase the access of entrepreneurs to experienced business leaders and investors in their respective industries.

This network is managed by Elevate Ventures, Inc., a state-wide venture nonprofit development organization. Elevate Ventures provides, at reduced cost, technical and business development analysis capacity for the purpose of identifying and supporting local deals. Elevate Ventures assists the formation of angel groups within regions as necessary and provides matching funds to augment capital in distressed areas.

³Federal Fund Proposal Targets Valley of Death, The Wall Street Journal (April 2009). Available at [//blogs.wsj.com/venturecapital/2009/04/13/federal-fund-proposal-targets-valley-of-death/](http://blogs.wsj.com/venturecapital/2009/04/13/federal-fund-proposal-targets-valley-of-death/). Lawrence Murphy & Peter Edwards, Bridging the Valley of Death, Innovation America (July 2004). Available at www.innovation-america.org/bridging-valley-death. Reuters, Investment Bucks for the 'Valley of Death', CNBC (April 2008). Available at www.cnbc.com/id/24111460/Investment_Bucks_for_the_Valley_of_Death.

21 FUND KEY INITIATIVES

Developing New Regional Resources

With the support of The John S. and James L. Knight Foundation, the Surdna Foundation, the United State Economic Development Administration, and local economic development organizations, the 21Fund has served as a catalyst for the Northern Indiana Jumpstart Initiative. This initiative conducted by Jumpstart, Inc., a nonprofit venture development organization based in Northeast Ohio, seeks to establish regional entrepreneurial action plans to support venture development functions regionally. Jumpstart, along with its partners, anticipates securing resources from national funders for these programs to match regional and state cost-share commitments. Elevate Ventures, on behalf of the 21Fund, will provide services and funding to these regions as a part of the 21Fund's commitment to this effort.

The 21Fund continues to work with Jumpstart and the United States Economic Development Administration on strategies to expand this initiative to other regions in Indiana and hopes to secure a more formal partnership in the coming year.

Leveraging State Resources

As a result of the Small Businesses Job Act, the IEDC, 21Fund and Elevate Ventures partnered to secure \$34.3 million from the United States Department of the Treasury to encourage early-stage, high-growth investments in Indiana. As a result of this funding, additional resources will be available for 21Fund programs. More specifically, the 21Fund will encourage the formation of angel groups through a state-wide angel network and will provide piloting programs to attract new funding for independent seed or angel funds. Most of the resources will simply be used to provide additional 21Fund investments until market conditions become more favorable to early-stage ventures.

ENCOURAGING ENTREPRENEURSHIP IN INDIANA'S REGIONS

Indiana's small businesses, corporations and universities develop innovative concepts and technologies that fuel Indiana's economy. While each region has its unique innovation strengths, regional resources are often insufficient to encourage the commercialization of innovations or to meet a specialized local need. By identifying more innovation opportunities and fostering a dynamic entrepreneurial environment, regions can increase the "deal-flow" of new ventures. To create this increased deal-flow, regions require access to intensive, high-quality venture development services.

As previously discussed, the 21Fund partnered with Jumpstart, the United States Economic Development Administration, The John S. and James L. Knight Foundation, the Surdna Foundation, and local economic development organizations to establish regional entrepreneurial action plans for

21 FUND KEY INITIATIVES

Indiana's northern regions. Elevate Ventures, a nonprofit organization governed by a geographically diverse board, has committed to provide venture development services to these Northern Indiana regions. Thanks to the continued support of the General Assembly in 2011, the 21Fund is now working to establish a formal relationship with Jumpstart and the United States Economic Development Administration to expand this initiative to Indiana's other regions.

The 21Fund has also encouraged the formation of local angel groups through the commissioning of a state-wide investor and entrepreneurial network. This network, managed by Elevate Ventures on behalf of the 21Fund, will seek to engage investors and entrepreneurs in regions that are otherwise not likely to have the deal flow, investor concentration, and service provider capacity to support these entrepreneurial efforts. These activities will increase deal flow by identifying available innovation resources for commercial development. This sharing of resources within and between regions of the state is called a 'Supra-regional approach'.

In sum, these efforts aspire to target a fundamental challenge faced by nearly all distressed or rural regions that seek to transform their economies by deploying resources in support of entrepreneurship and innovation: the lack of a consistent, high-volume source of quality deal flow that fits within a particular market, technology, industry, or phase of commercialization. The low volume and the unpredictable nature of the deal flow make it almost impossible to justify an investment in the costly and specialized resources necessary to advance deals to the market, capitalize on the regional economic impacts stemming from entrepreneurship, and spur the creation of new deal flow by stimulating the regional entrepreneurial ecosystem. Each region must be provided an opportunity to participate in economic progress based on innovation or face a future of stagnation or decline.

ENGAGING AND DEVELOPING INDIANA'S ENTREPRENEURS

By matching local and regional entrepreneurs with likely company development prospects, the 21Fund's venture development initiatives will bring essential management expertise to emerging companies. In addition, local, regional, and state-level technical expertise can be identified and engaged. Finally, by increasing the visibility of Indiana innovation opportunities, it will be possible to attract experienced talent or place Indiana graduates into Indiana companies, reversing the brain or talent drain.

The 21Fund, through Elevate Ventures, will provide a myriad of services to first and second stage entrepreneurs to assist in accelerating the growth of these companies to further the Indiana economy. These services include assistance from experienced and successful entrepreneurs-in-residence or similar advisors (EIRs) who will spend approximately one day a week (8 hours) with

21 FUND KEY INITIATIVES

companies that receive 21Fund support. Given the present funding challenges confronting early stage companies, the EIRs will identify methodologies and strategies for early-stage entrepreneurs to validate product and service offerings in order to recruit and scale customers' interest. Assistance offered by EIRs includes building budgets around key personnel, developing strategic business development partners, evaluating and structuring sales infrastructure, and developing customer pilots or implementations. These EIRs will likely come from across the US and have remarkable depth of experience in their respective verticals.

In addition to the person-to-person interactions embodied in the EIR process, the 21Fund has undertaken more strategic information aggregation activities designed to clearly define the structure of the State's 'innovation network', particularly the skills and capacity of the people and organizations that populate this network. This effort began 7 years ago as a result of a Central Indiana Corporate Partnership grant to the 21Fund. More recently, the IEDC has supported the creation of INdure, the Indiana Database of University Research Expertise.

No state has yet fully characterized its innovation network; the personal, intellectual, institutional, and communications elements that support the entire technological innovation process. However, informatics tools, for the first time, exist that permit highly granular characterization and visualization of all of the elements of Indiana's Innovation System and their interactions. Such a representation is not limited to individual product, service, or process sectors. In reaching across all technologies, this representation enhances particularly those activities that occur between sectors, the most fruitful venue for new commercial success. The 21Fund intends to expand INdure, including identification of students engaged in technology and business development projects, and implement this knowledge into its regional entrepreneurial developmental activities.

⁵www.indure.org

21 FUND AWARDS FY10-11

COMPANY	AWARD	MATCHING PRIVATE CAPITAL
Aquaspy	\$ 1,000,000	\$ 4,000,000
Bostech	\$ 1,000,000	\$ 1,000,000
Courseload	\$ 350,000	\$ 950,000
FAST Diagnostics	\$ 1,000,000	\$ 1,500,000
PolicyStat	\$ 500,000	\$ 500,000
Envirosolve Bioenergy	\$ 1,000,000	\$ 3,000,000
Sproutbox, LLC	\$ 1,000,000	\$ 1,500,000
Stray Light Optical Technologies, LLC	\$ 500,000	\$ 500,000
Nano-Rad	\$ 100,000	\$ 200,000
SonarMed	\$ 500,000	\$ 1,200,000
Vocare	\$ 1,000,000	\$ 2,000,000
Total for Fiscal Year 2010-2011	\$ 7,950,000	\$16,350,000

During the reporting period, eleven awards were made to Indiana companies in amounts ranging from \$100,000 to \$1,000,000. These awards were matched by private and federal capital sources 2:1. As these businesses develop, considerable further matching investment is expected. The business focus of these companies is summarized in the Portfolio Summary.⁵

In addition to direct 21Fund awards, 30 matching awards were made to Indiana companies that have won federal Small Business Innovation Research federal awards.

⁵www.elevate-ventures.com/ventures/centers-of-excellence/report

SBIR/SRRT AWARDS FY10-11

ID	Organization	Amount Request	Federal Award Amt.	City	County	Funding Agency
0333	Rubicon Foods, LLC	\$75,000.00	\$90,000.00	Fishers,	Hamilton	NIFA, USDA
0334	Bashpole	\$75,000.00	\$98,897.00	North Webster	Kosciusko	DARPA
0336	Techshot	\$75,000.00	\$99,963.73	Greenville	Floyd	DoD
0337	ProCure Treatment Centers	\$75,000.00	\$129,018.00	Bloomington	Monroe	NIH
0338	Communication Disorders Technology, Inc	\$75,000.00	\$99,991.00	Bloomington	Monroe	NIDCD/NIH
0339	Technology Service Corporation	\$75,000.00	\$99,959.00 Including option	Bloomington	Monroe	Office of Naval Research
0340	PCKA	\$75,000.00	\$99,997.82 Including option	West Lafayette	Tippecanoe	Naval Sea Logistics Center
0341	Glytrix Inc.	\$75,000.00	\$195,046.00	West Lafayette	Tippecanoe	NIH
0342	Logical Semantics	\$75,000.00	\$148,180.00	Indianapolis	Marion	NIH, NLOM
309 OPTION	Wolf Technical	\$30,172.00	\$119,636.00	Indianapolis, IN	Marion	US Army
0343	Microfluidic Innovations LLC	\$75,000.00	\$124,992.00	West Lafayette	Tippecanoe	NIH/NIBIB
0344	Evacus Technologies LLC	\$75,000.00	\$110,135.00	Evansville	Vanderburgh	NIH
0345	My Health Care Manager, Inc.	\$75,000.00	\$139,066.00	Indianapolis	Marion	NIH
0346	Engine Research Associates, Inc.	\$75,000.00	\$98,927.00	Fort Wayne	Allen	Naval Air Warfare Center- Aircraft Division
0347	Euclid Diagnostics LLC	\$75,000.00	\$394,453.00	Crown Point	Lake	NIH
0348	Rimedion, Inc.	\$75,000.00	\$223,172.00	Indianapolis	Marion	NIH, National Heart, Lung and Blood Institute
0349	M4 Sciences	\$75,000.00	\$98,892.00	West Lafayette	Tippecanoe	US Army
0350	Logical Semantics	\$75,000.00	\$135,215.00	Indianapolis	Marion	NIH
0351	Advanced Process Combinatorics Inc.	\$75,000.00	\$143,462.00	West Lafayette	Tippecanoe	NIH/NIBIB
0353	Techshot	\$75,000.00	\$394,453.00	Greenville	Floyd	NCI

SBIR/SRRT AWARDS FY10-11

ID	Organization	Amount Request	Federal Award Amt.	City	County	Funding Agency
0354	Nanovis	\$75,000.00	\$210,755.00	Columbia City	Whitley	NCI
0355	LewTech	\$69,993.00	\$69,993.00	Fort Wayne	Allen	Navy
0356	Smart Systems Technologies, Inc.	\$74,967.98	\$99,753.00	Noblesville	Hamilton	Air Force Research Lab
0357	Lono, LLC	\$75,000.00	\$149,141.00	South Bend	St. Joesph	University of Note Dame
0358	Omega Micro Technologies	\$69,999.58	\$69,999.58	West Lafayette	Tippecanoe	Navy/SPAWAR
0359	Lite Machines Corp.	\$75,000.00	\$100,000.00	West Lafayette	Tippecanoe	NASA
0360	PCKA	\$75,000.00	\$99,996.00	West Lafayette	Tippecanoe	US Department on Energy
0361	SkySight Technologies	\$75,000.00	\$80,000.00	Fort Wayne	Allen	Navy
0362	Candent Technologies	\$75,000.00	\$78,410.00	Greenfield	Hancock	Navy
0363	Enabling Energy Systems	\$75,000.00	\$100,000.00	Crown Point	Lake	MSU
TOTAL		\$2,120,164.58	\$3,901,546.31			

SUCCESS STORIES

While the present status of your 21Fund is most simply described in terms of the future, it is nonetheless essential to understand the motivations and impacts of the 21Fund's past activities. Below we summarize some of the positive outcomes of the State's highly leveraged investments in early stage Indiana technology-based businesses.

ENDOCYTE

Founded in 1996 to exploit the commercial potential of folate-targeted drug therapy and diagnostics, received its first 21Fund award in 2001. A subsequent award in 2004 supported exploration of folate-anti-cancer drug development. Folate-targeting delivers drugs and diagnostic labels to cells over-expressing the folate receptor. Many prevalent, and difficult to treat solid tumors over-express folate receptors, including: ovarian, non-small cell lung, colorectal, kidney, endometrial, and others. In support of its R&D activities, including clinical trials, Endocyte has raised several hundred million in venture rounds and an IPO. Its initial therapeutic and companion diagnostic drug pair (EC145 and EC20) are now in Phase III trials. Endocyte has grown to a staff of about 65, located in the Purdue Research Park in West Lafayette, IN.

MARCADIA BIOTECH

Founded in 2005 as PhySci Pharmaceuticals, to develop a novel glucagon analog and related diabetes medicines. It received an award from the 21Fund in mid-2006. Subsequently, it received a major infusion of funds from 5AM Ventures and Frazier Healthcare. In December 2010 Roche acquired Marcadia in a transaction valued at up to \$537 million.

PARAPRO

PapraPro received a \$2.1 million award from the 21Fund in mid 2007 to accelerate the clinical trials needed for FDA regulatory clearance. In May 2011 the Medicaid Drug Utilization Review Board recommended ParaPro's drug, Natroba, to treat head lice. All clinical trials demonstrated Natroba's superiority over existing treatments, particularly since Natroba kills eggs as well as mature lice. In January 2011 the FDA approved Natroba for head lice treatment, and distribution of the drug to pharmacies across the country has been accomplished.

SUCCESS STORIES

SCALE COMPUTING

Founded to reduce storage costs, increase customers' control, and make managing information storage much more convenient. Scale's Intelligent Clustered Storage (ICS) is a multiprotocol, unified and easily scalable technology that brings enterprise-class file and block-level services to the SMB. Offered on a growing, multi-density, multi-tier, interchangeable line of truly clustered, non-controller-based StorageNodes, ICS represents the next shift toward third-generation storage. Available on both the Scale StorageNodes and IBM's System X servers, ICS reduces costs, increases control and makes storage management more convenient. A \$2 million award from the 21Fund in April 2009 positioned Scale for rapid growth, including raising \$26 million via two venture funding rounds in March and November of 2010. 2010 sales were \$10 million, and employee count is over 100, from 20 in 2009. In 2009 Scale was listed as #16 in America's Most Promising Companies: Where Are They Now? (Forbes.)

ENVIROSOLVE

EnviroSolve provides energy-efficient solutions to key environmental challenges, particularly involving high-intensity livestock facility waste streams. Elevate Ventures, the IEDC, and the Indiana Department of Agriculture developed and implemented a strategic funding plan that leveraged federal funding sources.

AUTOMATION & PROCESS CONTROL INTEGRATION (APCI) OF SOUTH BEND

APCI received an award of \$1.3 million in June 2009 in support of the development of a full-scale working prototype linear friction welder (LFW) and related commercialization activities. In addition to these funds, the 21Fund provided management and technical expertise that helped position APCI for critical automotive, petrochemical, and aerospace markets. APCI and IBC Materials & Technology, a Lebanon company, teamed to capture an Air Force SBIR award. APCI is now actively involved with major industry customers.

APPENDIX A

STATE ANNOUNCES NEW ENTREPRENEURSHIP INITIATIVE

WINONA LAKE, Ind. (March 3, 2011) - Joined by state and local economic leaders, the Indiana Economic Development Corporation today unveiled its INVEST Indiana initiative designed to attract new resources and increase access to capital for Indiana entrepreneurs. Through resources from Indiana's 21st Century Research and Technology Fund (21Fund), the IEDC will create a new, statewide entrepreneurial network to engage private sector investors and regional stakeholders to encourage the creation and support of high-growth companies.

"Homegrown companies drive our regional economies and support necessary community causes," said Kip Tom, managing member of Tom Farms and board member of the Indiana Economic Development Corporation. "We need to make sure that the current innovators of the next Biomet, ExactTarget or Cook have the early-stage support and capital they need to accelerate their growth here versus in Massachusetts, California or even China."

The 21Fund is Indiana's key initiative to support entrepreneurship and innovation and to date, the 21Fund has made over 400 awards to companies since 2006. The INVEST Indiana initiative will expand upon the 21Fund's investment and service capacities to engage new, nontraditional sources of capital and provide new ventures access to experienced entrepreneurs for assistance.

The network and services will be conducted through Elevate Ventures, a new nonprofit commissioned to attract new investment partners and to work with local stakeholders to cultivate a robust entrepreneurial environment throughout the state.

"This public-private model incorporates the best aspects of other national models developed in Cleveland, Pittsburgh and Oklahoma as it engages private and public sector participation and makes Indiana eligible for more resources for entrepreneurs," Mark Becker, executive director of the Northeast Indiana Fund and a member of Indiana's Interim Legislative Study Committee that was presented several concepts to encourage entrepreneurship including this one.

Through Elevate Ventures, state leaders believe that they could attract an additional \$30 million in matching federal and private funding to support entrepreneurial efforts throughout the state with the continued support of the General Assembly.

As an example of the type of impact Elevate Ventures could have across the state, Jumpstart Inc., a nonprofit from Northeast Ohio, recently formed a partnership with the United States Economic Development Administration, the Knight Foundation and the Surdna Foundation to attract \$1.3 million in funding to develop regional entrepreneurial action plans for Indiana's northern regions. Through Elevate, similar partnerships would be developed to produce regional plans for the rest of the state.

APPENDIX A

“Indiana innovators need capital and experienced talent to create sustainable ventures. Today marks the first step in developing a world-class entrepreneurial ecosystem throughout Indiana. We must remain committed to this effort to sustain and grow our communities,” said Toby Buck, chief executive officer of Paragon Medical.

About IEDC Created by Governor Mitch Daniels in 2005 to replace the former Department of Commerce, the Indiana Economic Development Corporation is governed by a 12-member board chaired by Governor Daniels. Mitch Roob serves as the chief executive officer of the IEDC. For more information about IEDC, visit www.iedc.in.gov .



Executive Summary

Comprehensive Examination of the Performance of the Indiana 21st Century Research and Technology Funds

Prepared by the Center for Business and Economic Research
Ball State University | August 2010

Executive Summary

Michael Hicks, Ph.D.
Srikant Devaraj

Indiana's long term prosperity depends greatly upon the fruitful realization of technological innovation into the markets for production of goods and services. Through three administrations—O'Bannon, Kernan and Daniels—the state has supported technology transfer and commercialization through the careful administration of the 21st Century Research & Technology Fund.

This study reviews this Fund, examining its background, appropriate metrics for evaluating the ongoing efficacy of the Fund's investments and its broad characteristics and ongoing adjustments to investment strategies. We outline the connections between the fund and the recipient industries in Indiana, the connections between the Fund and public policy and the aggregate short term effects of this Fund. We follow this analysis with recommendations for Fund management and policymakers. We note at the outset that this study does not report the long-term Return on Investment (ROI) of this Fund. That is not because it is unimportant, but rather because the Fund is not yet sufficiently mature to make such a calculation. This executive summary reviews the major findings of our study.

During the first decade since the 21st Century Fund's inception over \$238 million in funds have been invested in 188 different projects, designed to leverage private sector venture capital, harness the potential of science and technology developed within Indiana, nurture the institutions of technology transfer and harness the power of scientific creativity to better the lives of Hoosiers. Drawing from a broad vision of the General Assembly's legislation beginning in 1999, the Fund has focused investment in those industries targeted broadly by the State of Indiana: advanced manufacturing/engineering, information technology/software development, and life sciences/healthcare. A narrow funding focus is identified as a 'best practice' for state venture capital funds and the concentration of the 21st Century Fund in these sectors is consistent with recommended practices.

Figure 1: Industry Share of 21st Century Fund Awards

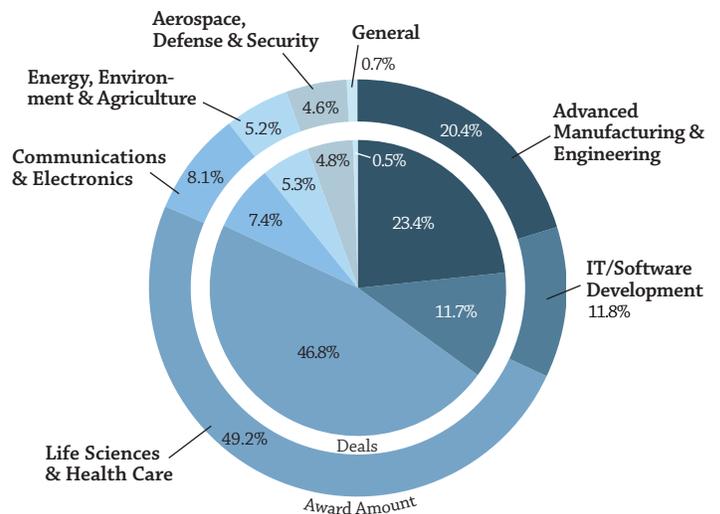
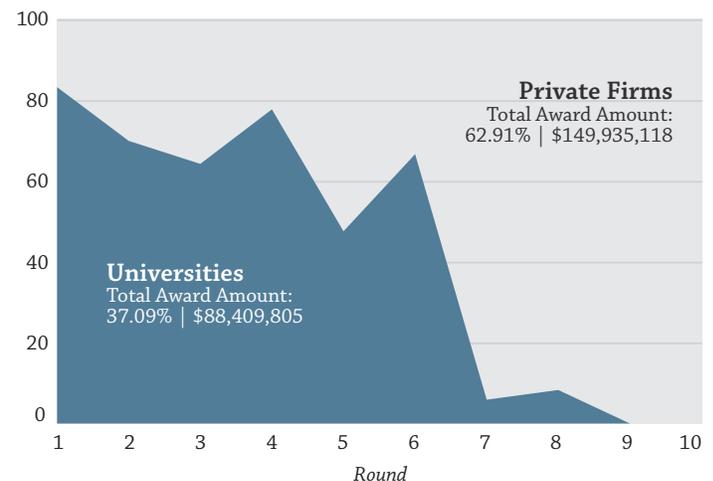


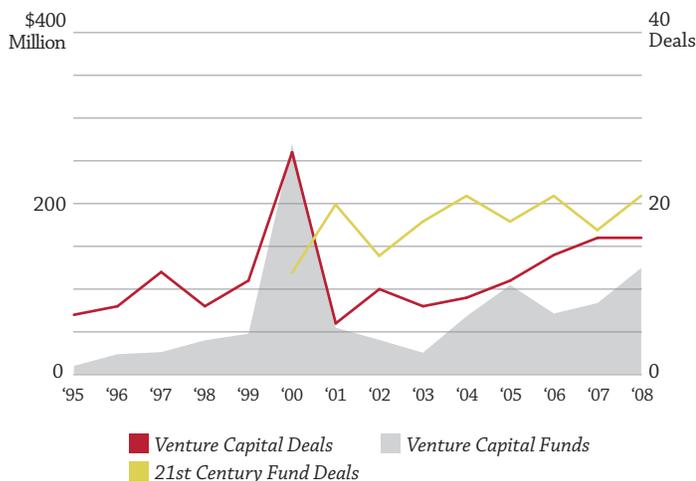
Figure 2: Percent Share of Awards by Recipient Type



Definition of Rounds

R	Year	R	Year	R	Year	R	Year	R	Year
1	1999-00	3	2001-02	5	2003-04	7	2005-07	9	2008-09
2	2000-01	4	2002-03	6	2004-05	8	2007-08	10	2009-10

Figure 3: 21st Century Fund Effect on Venture Capital



Source: State Science and Technology Institute - <http://www.ssti.org/vc/indiana/all.php>

Primary Source: PricewaterhouseCoopers/National Venture Capital Association Money Tree Report

Data: Thomson Financial

The selection of targeted firms within this industry has been guided by evolving best practices in state venture capital funding efforts. Refined over six funding rounds, Indiana’s 21st Century Fund uses a two stage scientific peer review process with an acceptance rate equivalent to the most prestigious scientific journals. In addition, careful scoring of the business essentials prior to Fund investment focuses on assessing the path to effective commercialization of 21st Century Fund investments. The reliance on peer review and entrepreneurial capacity both in the pre- and post- investment period are identified as best practices within state venture capital funds. We find Indiana’s 21st Century Fund to be a market leader in these aspects of state venture capital efforts. An example of the evolving focus on recommended investment strategies has been the Fund’s shifting concentration on investment from basic science and technology towards efforts that are more developed and hence closer to commercialization.

Table 1: Economic Effects of The 21st Century Fund

Round	1	2	3	4	5	6	7	Total 1999-2007
Change in Private Non-Farm Employment	463	1,716	1,348	1,582	2,648	1,729	1,646	11,132
Cost per private sector job	30,233	13,559	10,924	15,720	12,202	12,966	15,766	14,152
Real state GDP (\$millions)	12	65	54	58	105	70	63	427
Real Disposable Personal Income (\$million)	8	43	38	43	77	54	52	315
Population	15	194	314	412	643	718	762	3,058

This shifting prioritization of the Fund’s efforts holds many potential benefits for the Fund. First, this should accelerate the Fund ROI by targeting investments that are closer to actual revenue repayments. Second, this shifting effort directly enhances the commercialization ties between the knowledge generation process at universities and private enterprise. Third, the focus on more commercial opportunities serves as an informational filter for private sector venture capital firms. This reduces the cost of assessing the viability of a potential investment and thus makes Hoosier firms more attractive. Finally, this focus side-steps the concern that state venture capital funds might fall trap to SBIR mills that lack the capacity for eventual commercialization. The shift of the Fund’s focus was evident in the 2003-2005 timeframe. The most visible evidence that these best practice efforts resulted in a policy adjustment appear in the shifting share of awards from universities to private firms.

Full evaluation of these potential benefits remains a task for a much later study, following more elapsed time. However, at this time some emerging evidence of these benefits has occurred. In particular, the leveraging of private sector venture capital funds and federal funding appears to be linked to the 21st Century Fund. The most obvious of these is growth in Indiana’s private venture capital funding, which has blossomed in the most recent years.

Federal R&D funding focus has also shifted towards later stage commercialization through the SBIR/STTR grant streams. Indiana’s 21st Century Fund’s alignment of this focus has resulted in a leveraging of roughly four out of five Federal commercialization dollars.

The 21st Century Research and Technology Fund is not intended to perform as a traditional economic development tool. Its size relative to the state’s economy and the focus on commercialization of R&D make it unable, in the short to medium term, to affect the industrial mix of employment, incomes or establishments. However, we have estimated the Fund’s impact on short term job creation in Indiana.

To estimate these impacts, we evaluated the first seven funding rounds, from 1999-2000 through 2005-07. We limit the analysis to this time frame because more recent years of funding are too recent to fully account for the economic adjustments and therefore cannot be assessed with the model. We focus on key economic variables: total and private sector employment, state Gross Domestic Product, incomes and population changes. This was approached differently than most reported economic development impacts. Here we not only estimated the employment effect of the Fund and leveraged private sector funding (\$360 million), we also subtracted both the opportunity cost of the Fund (in terms of lower state spending on other activities) and administrative costs. We did not include the additional value of leveraged Federal R&D spending (\$26 million) in this estimate. These assumptions result in a conservative estimate of the Fund's short term impact on Indiana's economy.

We estimate the impacts using the well known REMI, Inc. regional economic model. Our simulation finds that over the first seven rounds, the 21st Century Funds have boosted private sector employment by roughly 11,132 jobs, more than what would have been otherwise. It is important to note that some of this total job creation has been offset by lower state employment during this period, a necessary opportunity cost of the Funds operations. The cost per private sector job is roughly \$14,000 per job year in initial funding. Though the Fund was not designed to boost short- to medium-term job creation, this cost is only slightly higher than the most effective job creation incentives found in the economic literature. Total state GDP was boosted by \$427 million over this period with real disposable personal income growing by \$315 million. Our simulation results also account for population changes resulting from this level of state expenditure and leveraged private venture capital. The model suggests this boosted state population by a little more than 3,000 persons over this period. Compared to direct economic development incentives, this program ranks as moderately effective, a strong achievement given that is not its goal.

The results of this simulation hearken back to much of the formal research on state venture capital funds. The broadest conclusion mentioned above is that while states can effectively operate such funds, they are not likely to make broad contributions to short-term economic development efforts due to their size and scope.

Summary & Broad Recommendations

Our review of Indiana's 21st Century Research and Technology Fund provides the broadest study of a single fund currently available. Drawing from studies of other state venture capital funds and the academic research on the performance of such funds, we come to several conclusions. First, the Fund appears to be operating on best practices with respect to its narrow industry focus and both scientific and business plan peer review. These practices offer considerable benefit in terms of improving commercialization infrastructure in Indiana. The adjustment of the Fund towards more probable commercialization activities between 2003 and 2005 also represents a significant adjustment in line with the best practices in the field for this time period. Best practice models in today's entrepreneurial ecosystem involve venture development organizations leveraging regional resources, angel outreach programs, centers of excellence, local sources of capital and talent. The 21st Century Fund appears to adjust quickly to adjustments to best practices.

Academic research on state venture capital funds finds that a very long horizon is needed to fully evaluate the ROI of funding efforts. Thus, we are unable to speak definitively to the long term performance of the Fund in its commercialization efforts. However, employing conservative assumptions we find the Fund has contributed over 11,000 jobs and \$427 million in economic activity to the state.

We make several specific minor recommendations regarding expansion and evaluation of the review process, appropriate performance metrics, design and dissemination of data, the marketing and promotion of the Fund, ongoing connections to economic development and public policy efforts and future research timing and questions.



Center for Business and Economic Research

Miller College of Business, Ball State University
2000 W. University Ave.
Muncie, IN 47306
Ph. 765-285-5926
cber@bsu.edu | www.bsu.edu/cber

About the Center

The Center for Business and Economic Research, formerly the Bureau of Business Research, is an award-winning economic policy and forecasting research center housed within the Miller College of Business. CBER research encompasses health care, public finance, regional economics, transportation, and energy sector studies.

In addition to research, we serve as the forecasting element in the Muncie area—holding five state and federal economic forecasting roundtables.