Iowa Innovation Council
“Laying the Foundation”

January 25, 2010

Richard A. Bendis
President and CEO - Innovation America
“Tomorrow is the most important thing in life. Comes into us at midnight very clean. It's perfect when it arrives and it puts itself in our hands. It hopes we've learned something from yesterday.”

-John Wayne
Iowa’s Future is Determined By the Present
Realities, Opportunities & Innovations for the Next Decade

• Continued fiscal difficulties
• Sorting out of the capital markets
• More opportunities for entrepreneurship
• China as a potential market if consumers spend
• Reshaping of manufacturing
• New tech frontiers (e.g., alt energy, climate change)
• Continued growth of open innovation
• Workforce issues among the U.S. and global populations
“If a man empties his purse into his head, no man can take it away from him. An investment in knowledge always pays the best interest.”

--Ben Franklin
Knowledge Economy: Definitions & Terminology

- Knowledge is the confident understanding of a subject, potentially with the ability to use it for a specific purpose.

- Knowledge economy is based on creating, evaluating, and trading knowledge.

- Innovation is the creation and transformation of knowledge into new products, processes, and services that meet market need.
Goals of Innovation-Based Economic Development

*Intervene at the margins of private sector investment flows of capital (financial and intellectual) to:*

- Address economic transition
- Capture the benefit of investments in research and development, higher education
- Build entrepreneurial cultures
- Help existing industries modernize
- Diversify both rural and urban economies
- Develop global innovation network
Implementing a New Innovation Paradigm

- Willingness to deviate from traditional and parochial perspectives
- Encourage public investment and risk taking
- Developing trust through collaboration
- Ensuring the paradigm is responsive to partners’ missions
- Building consensus of all constituents through education, participation, and positive outcomes
- Move from technology-based economic development to Innovation-Based Economic Development
Government’s Role in S&T

- Long term vision and planning
- Identify gaps and trends in science, technology and innovation
- Be a catalyst through strategic investments and partnering
- Develop a balanced and flexible research and development investment portfolio
- Encourage private sector innovation
- Establish performance-oriented innovation-based economic development strategy and implementation plan
The Role of Academia

Knowledge Integration

Knowledge Creation

Resource Investment

Education Research

Continuous Learning and Innovation

Knowledge Transfer

Innovation America
The Role of Industry: Wealth Creation

Capitalism is a Process of Creative Transformation

“The interaction of technological innovation with the competitive marketplace is the fundamental driving force in capitalist industrial progress.”

Joseph A. Schumpeter, 1942
Public/Private Partnership

- Progress is promoted by strong industry, government and university leadership
- Sustained by dynamic public/private partnerships
- These leaders create new, responsive models of governance
# Traditional ED vs. Innovation-Based ED

<table>
<thead>
<tr>
<th>Traditional ED</th>
<th>Innovation-based ED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural resources</td>
<td>Specialized talent</td>
</tr>
<tr>
<td>Highways / Rail</td>
<td>Networks, information</td>
</tr>
<tr>
<td>Proximity</td>
<td>University research / professors</td>
</tr>
<tr>
<td>Costs</td>
<td>Market understanding</td>
</tr>
<tr>
<td>i.e. PHYSICAL</td>
<td>i.e. KNOWLEDGE</td>
</tr>
</tbody>
</table>

- **Competitive Basis**
  - Natural resources
  - Highways / Rail
  - Proximity
  - Costs
  - i.e. PHYSICAL

- **Key values / offerings**
  - Business parks
  - Incentives
  - Access to research
  - Workforce competencies
  - Lifestyle

- **Lead Organization**
  - Chambers / EDCs
  - Innovation intermediaries, Economic developers
What is an Innovation Intermediary?

• An Organization at the Center of the region’s, state’s or country’s efforts to align local technologies, assets and resources to work together on advancing Innovation.
21st Century Innovation Intermediary

Connectivity of Key Human & Institutional Players

Leverage & Alignment of Funding & Resources

Innovation

Research & Marketing of the Strengths of the Innovation Economy

Programs

Commercialization

Direct Investment

Angel Capital

SBIR Programs

Technology Mining / Intellectual Property Programs
Innovation Road Map For Iowa

- Asset Mapping
- Battelle Report (Cluster Analysis)
- Innovation Economic Development Organizational Analysis & Matrix
- Innovation Benchmarking (Peer 2 Peer)
- Innovation & Entrepreneur’s Resource Identification
- Gap Analysis (programs & services)
- Public Policy recommendations
- Organizational leadership/staffing
- Economic Impact Analysis
- Program portfolio/implementation
- Recommended organizational structure, governance, budget, & funding sources
- Battelle Report (Cluster Analysis)

IOWA
POPULATED PLACES
- 160,000 - 499,999
- 35,000 - 99,999
- 24,999 and less
- State capital

Cedar Rapids
Sioux City
Fairfield
Des Moines

TRANSPORTATION
- Interstate limited access highway
- Other principal highway
- Railroad

PHYSICAL FEATURES
- Streams
- Lakes
- Highest elevation in state (feet) 1,670
- The lowest elevation in Iowa is 480 feet above sea level (Mississippi River).
Iowa Innovation Road Map Elements

1. Asset Mapping
2. Cluster analysis (Battelle Report)
3. Innovation Benchmarking (Peer 2 Peer)
4. Innovation and Entrepreneurship resource identification
5. Innovation Economic Development organizational analysis and matrix
6. Gap Analysis (programs & services)
7. Public policy recommendations
8. Recommended organizational structure, governance, budget, and funding sources
9. Organizational leadership and staffing
10. Program portfolio/implementation
11. Economic Impact Analysis
Iowa Innovation Intermediaries

• Iowa Department of Economic Development (IDED)
• IDED Innovation and Commercialization Division
• Entrepreneurial Development Center, Inc. (Cedar Rapids)
Strengthening The Entrepreneurial Support Structure

Source: Battelle 2006 Entrepreneurship Recommendation
"Scale up level of support for Iowa's entrepreneurship support programs based on performance"
Battelle determined that there were six major needs, that, if addressed, would greatly improve the environment for entrepreneurship in Iowa.

1. In-depth support and mentoring from people with experience in starting and growing companies.
3. Help in increasing sales and introducing products into new markets.
4. Access to capital at all stages of development.
5. Efforts to strengthen the culture for entrepreneurship in Iowa.
6. Greater opportunities for networking with other entrepreneurs and university researchers.
Iowa Innovation and Commercialization Programs

• Entrepreneurial Development
  o Iowa Demonstration Fund
  o Community Based Seed Funds (RAINSource Capital Template)
    o www.iowaentrepreneur.com
• Iowa Commercialization Services Network
• Management Talent Recruitment Program
• Supply Chain Development
• Networking Fund
• Information Technology Training Program
• Innovation Technology Joint Venture Fund
• Iowa Student Internship Program
Clusters of Innovation

- Concentrate knowledge assets
- Host globally competitive firms
- Create high-wage jobs
- Attract scarce global talent and investment
Implementing a New Iowa Innovation Paradigm

- Willingness to deviate from traditional and parochial perspectives
- Encourage public investment and risk taking
- Developing trust through collaboration
- Ensuring the paradigm is responsive to partners' missions
- Building consensus of all constituents through education, participation, and positive outcomes
- Move from technology-based economic development to Innovation-Based Economic Development
Best Practices in Innovation-Based Economic Development
Best Practices in Innovation-Based Economic Development

Mission: To promote the competitiveness of companies established in Portugal, through the development and the diffusion of a culture and practice of innovation as well as of “resident” knowledge.

Vision: To become a key agent of business innovation in Portugal, by challenging both public and private organizations of the national innovation system (NIS) and by coordinating its intervention with them.
Best Practices in Innovation-Based Economic Development

- $581 million state-funded independent bioscience TBED organization
  - $75.5 million program budget; $3.5 million operating budget
  - 18 employees (8 “deal” people)

- Investment priorities
  - Expand the quantity and quality of bioscience research
  - Focus on the commercialization of bioscience discoveries
  - Foster formation and growth of bioscience companies
  - Position Kansas for international leadership in key clusters
Best Practices in Innovation-Based Economic Development

OCAST helps these hard-working people create technologies that will advance our society, invent new products and discover medical treatments that will save millions of lives.

I2E – A 501(c) (3) private not-for-profit Oklahoma corporation that operates under contract with OCAST to administer the Oklahoma Seed Capital Fund, Oklahoma Technology Commercialization Center and the Technology Business Finance Program.
The Ohio Third Frontier represents an unprecedented and bipartisan commitment to expand Ohio's technological strengths and promote commercialization that leads to economic prosperity throughout Ohio. Designed to build world-class research programs, nurture early-stage companies, and foster technology development that makes existing industries more productive, Ohio Third Frontier creates opportunity through innovation.

"Ohio's $1.6 billion Third Frontier initiative is a comprehensive, professionally run effort to build world-class research capacity, promote interaction between research and industry, and commercialize R&D." – National Governor's Association and Pew Center for the States
Best Practices in Innovation-Based Economic Development

The PIPELINE is the nation’s premier state-sponsored technology entrepreneur fellowship program. PIPELINE is designed to systematically identify high potential technology entrepreneurs and match them with best-in-class training, resources and mentors to facilitate their dynamic growth in Kansas.
USTAR has created a number of research teams at the University of Utah and Utah State University. Spearheading these teams are world-class innovators hungry to collaborate with industry to develop and commercialize new technologies.

Research Teams engage with innovators and entrepreneurs around the state of Utah. Learn to maximize your innovative business potential by collaborating with USTAR in your region, particularly if your product or service matches a USTAR focus area.
Innovative Entrepreneurial Support Initiatives

Y Combinator

- Seed Funding
- A Collaborative work space
- Mentors and Advisors who have "been there and done it" before
- Donated legal, accounting and administrative help to form companies properly
- Introductions to funding sources (including Angel Investors, Venture Capitalists, private investors and public sources of funding)
In the three years after the 1991 recession, Companies of less than 20 employees created 89% of net new jobs while companies over 500 employees created a net of 4%.

Source: Small Business Administration
In the three years after the 2001 recession, Companies of less than 20 employees created 107% of net new jobs while companies over 500 employees eliminated a net of -24%.

Total USA Cumulative Net New Job Creation 2002 to 2005
(In The Three Years After The 2001-2002 Recession)

Source: Small Business Administration
10 Reasons (Some) SME’S Underperform

1. Passion
2. Physical and mental strength
3. Self-doubt
4. Belief
5. Foresight
6. Guts
7. Failure
8. Self-discipline
9. Fairness
10. Integrity
Economic Gardening

• The term Economic Gardening means ‘growing our economy from within.’

• This is accomplished by providing access to technology and business expertise for helping both new and existing small businesses, generally between 10-25 employees, located within a city/region to thrive and grow.

• Economic Gardening works by finding new sales opportunities and expanding upon old ones through the provision of free or low-cost tools and information to small businesses.

• Assistance is also provided in other areas such as market intelligence and general industry information.

• The goal is to assist businesses early on in their development so they remain viable and are prepared to overcome common obstacles.
Examples of Economic Gardening

Longmont Economic Gardening Initiative (LEYI) The City of Longmont will launch the Longmont Economic Gardening Initiative (LEYI) on July 1, 2006, to assist local businesses grow, and create and retain local jobs. The program is designed to meet the needs of Longmont’s small business community by leveraging public and community resources. Any business in Longmont is eligible to participate through a combination of peer counseling, access to research data, data analysis, market analysis, plus competitive and industry intelligence. The initial interview, counseling, research data, and data analysis are free.

We kicked off the project in 1989 with the idea that "economic gardening" was a better approach for Littleton (and perhaps many other communities) than "economic hunting." By this, we meant that we intended to grow our own jobs through entrepreneurial activity instead of recruiting them. The idea was based on research by David Birch at MIT that indicated the great majority of all new jobs in any local economy were produced by the small, local businesses of the community.

Florida Economic Gardening Institute and Partners Unveil GrowFL to Cultivate Growth Companies Statewide. Program Targets Second-Stage Businesses Offering Sophisticated Tools and Elite Staff.
Innovative Small Business Facts

- Innovative small business have generated 60 to 80 percent of net new jobs annually over the last decade
  - Employ 30 percent of high-tech workers, such as scientists, engineers, and computer workers
- SME’s produce 13 times more patents per employee than large patenting firms
- Small Companies are a key source of innovation by themselves and for Large Companies

Source: Small Business Administration

Innovation Capital Facts

- Proof of Concept, Start-up, and Seed stage companies lack investment support
- Most Seed stage firms need investments of $500K - $2M
- The average venture capital investment today is $8.3M

Source: PriceWaterhouseCoopers – MoneyTree©
## Innovation Intermediary Commercialization Structure

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Technical</th>
<th>Market</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proof of Concept</td>
<td>Technology Concept Analysis</td>
<td>Market Needs Assessment</td>
<td>Venture Assessment</td>
</tr>
</tbody>
</table>

### Development Phase

<table>
<thead>
<tr>
<th>Feasibility</th>
<th>Technology Feasibility</th>
<th>Market Study</th>
<th>Economic Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Engineering Prototype</td>
<td>Strategic Marketing</td>
<td>Strategic Business Plan</td>
</tr>
<tr>
<td>Introduction</td>
<td>Pre-Production Prototype</td>
<td>Market Validation</td>
<td>Business Start-Up</td>
</tr>
</tbody>
</table>

### Commercial Phase

<table>
<thead>
<tr>
<th>Full Scale Production</th>
<th>Production</th>
<th>Sales and Distribution</th>
<th>Business Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maturity</td>
<td>Production Support</td>
<td>Market Diversification</td>
<td>Business Maturity</td>
</tr>
</tbody>
</table>
Innovation Paradigm Shift

PROOF OF CONCEPT
(Technological Feasibility)
“It Works!”

PROOF OF RELEVANCE
(Market Pull)
“I’ll Buy It!”

economic value creation

- margin
- cost of capital
+ organic
+ m&a

return on invested capital
The Business Plan Funnel

100 business plans come in

10 are a good fit and promising — they get a close look

Extensive due diligence

1 gets funded
Reduced Angel Activity
• Angel Investors reduced their investments by over 26% in 2008
• Availability of investment capital among angels decreased dramatically by 40% in 2008

Venture Funding Moving Downstream
• The average investment by venture firms last year was $8.3 million per investment and only about 4% of the capital went to early-stage companies.
• First Quarter of 2009 was the worst quarter in 12 ½ in terms of total capital invested by venture firms

State TBED Budgets Decreasing
• 44 states have budget deficits
## Innovation Capital Valley of Death

### “VALLEY OF DEATH”

<table>
<thead>
<tr>
<th>Stage</th>
<th>POC / Pre-Seed</th>
<th>Seed/Start-Up</th>
<th>Early</th>
<th>Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Founders</td>
<td>Angel Groups, TBED, SBIR, Seed Funds</td>
<td>Venture Funds</td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>$25K</td>
<td>$100K</td>
<td>$500K</td>
<td>$2,000K</td>
</tr>
</tbody>
</table>

"Funding Gap" and "Secondary Funding Gap" are indicated in the diagram.

---

**Innovation AMERICA**

**IOWA life | changing**
REDUCED ANGEL ACTIVITY

- Angel Investors reduced their investments by over 26% in 2008
- Availability of investment capital among angels decreased dramatically by 40% in 2008

VENTURE FUNDING MOVING DOWNSTREAM

- The average investment by venture firms last year was $8.3 million per investment and only about 4% of the capital went to early-stage companies
- First Quarter of 2009 was the worst quarter in 12 ½ in terms of total capital invested by venture firms

STATE TECH-BASED ECONOMIC DEVELOPMENT

- Budgets decreasing
U.S. Innovation Intermediaries' Best Practices

☆ Ben Franklin Technology Partners (BFTP, 1982)
  http://www.benfranklin.org/

☆ Kansas Technology Enterprise Corp. (KTEC, 1987)
  http://www.ktec.com/

☆ Innovation Philadelphia (IP, 2001)
  http://www.innovationphiladelphia.com/

☆ Oklahoma Center For The Advancement Of Science And Technology
  (OCAST, 1987) http://www.ocast.state.ok.us/

☆ UCSD Connect (1985)
  http://www.connect.org

☆ First State Innovation (2007)
  www.firststateinnovation.org
National Best Practices, Common Attributes

- Longevity
- Bipartisan Support & Champions
- Independent Organizations
- Continuous Reinvention
- Private Sector Involvement
- Understand Return On Investment
- Sustainability In Funding
- Accountable
- Innovative
- Effective Leadership
“It is not the strongest of species that survive, nor the most intelligent, but the ones most responsive to change.”

–Charles Darwin
Technology Investment
Pennsylvania’s Industry Clusters

- Biotechnology
- Nanotechnology
- Manufacturing
- Energy
- Support Services
- Telecommunications / Information Tech.

Collaboration

Innovation

Workforce

Capital
Pennsylvania’s Innovation Intermediary

Mission

The mission of the Technology Investment Office is to serve as a catalyst for growth and competitiveness for Pennsylvania companies and universities through technology-based economic development (TBED) initiatives including funding, partnerships and support services.

Our Goal

- The goal of the Technology Investment Office 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 sources, and support services available to build a comprehensive infrastructure that supports company growth.

Our Customers

- Pre-revenue, emerging and mature technology companies
- Universities engaged in R&D that can be commercialized
- Community organizations focusing on technology infrastructure, training and facilities
- Investment partners
The Four Pillars of Innovation-based Economic Development

- Innovation
- Capital
- Collaboration
- Workforce
- Support Services
Technology Investment

Concept
The idea for the company is hatched

Formation
The company begins to establish itself and its product, hiring employees and winning customers

Growth
The company grows with increased pace

Maturity
The company has an established customer base and flattening growth

Reinvention
The company takes action to seek new market opportunities
Ben Franklin Technology Partners

- Established in 1982 to stimulate economic growth through innovation, entrepreneurship, and the development and adoption of new technologies.
- BFTP operates on a Regional level through four centers strategically located throughout PA, with offices in Pittsburgh, State College, Bethlehem, and Philadelphia.
- Every dollar invested in BFTP yielded nearly $23 of additional income in the state.
- BFTP generated 93,105 job-years at a cost to PA of $3,342 per job-year*.
- The state garnered more than $400 million in additional tax revenue as a direct result of the program, which more than covered the operating costs of the program over the same period.
- BFTP boosted Pennsylvania’s economy by $8 billion.
- Web site – www.benfranklin.org
Kansas Technology Enterprise Corporation

www.ktec.com

KTEC Mission:

“To create, grow and expand Kansas enterprises through technological innovation.”
What is KTEC?

- A quasi-private entity created by legislation in the State of Kansas in 1986
- A holding company which manages a portfolio of programs, investments, subsidiaries & affiliates which operate as for-profit and not-for-profit entities
- An equity or royalty investor in emerging Kansas technology businesses
- 20-member industry-led board of directors comprised of stakeholders representing the legislature, government, universities and the private sector
- In addition to its enabling legislation, KTEC operates under corporate bylaws similar to a private corporation
- KTEC is managed by a professional technology management team
KTEC Goals

• Stimulate creation & **commercialization** of innovative technologies.
• Build a comprehensive **financial network** willing to invest in technology-based businesses at each stage of development.
• Improve the competitive **research & development** capacity of Kansas universities & industry.
• Create new and improved high-wage, **high-skilled job** opportunities.
• Make small-to-medium **manufacturers competitive** in the global economy.
• Create a **Lifelong Learning environment** for the new Knowledge-based economy.
Kansas Strategic Technology Cluster Assessment and a Plan for the 21st Century

Published by The Kansas Technology Enterprise Corporation

Purpose of the Study:
- Technology revolution affecting the economy.
- We must map our course in this new innovation economy.
- Focus our resources on strategic technology clusters in order to compete.
Strategic Technology Cluster Assessment and Plan

Study Methodology:
- Identified four key sets of partners:
  - Private Sector
  - Federal Government
  - Research Universities
  - State Government
- Link opportunity and capacity

Realities:
- Scarce resources
- Global competition

Action:
- Establish a competitive advantage through specialization.
Strategic Technology Cluster Assessment and Plan

**Opportunity and Capacity:**

- Global, national and local opportunities
- Capacity of businesses, government, and research universities in the country
- International and national data on various variables
- Valuation of variable performance.

**External and Internal Environments:**

- The external environment represents “opportunities.”
- The internal environment represents “capacities.”
<table>
<thead>
<tr>
<th>Analytical Framework</th>
<th>Opportunity Indicators</th>
<th>Capacity Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Context</td>
<td>Growth in US Exports</td>
<td>Level of Kansas exports, sectors related to critical technology areas</td>
</tr>
<tr>
<td></td>
<td>US Sectoral Growth Projections</td>
<td>Kansas employment in sectors</td>
</tr>
<tr>
<td>Federal Programs</td>
<td>Advanced Technology Program Awards</td>
<td>Kansas’ shares of the nation’s firms in sectors related to critical technologies</td>
</tr>
<tr>
<td></td>
<td>SBIR program awards</td>
<td>SBIR program awards to Kansas firms by technology area</td>
</tr>
<tr>
<td>State Programs</td>
<td></td>
<td>Presence of Centers of Excellence in critical technology areas</td>
</tr>
<tr>
<td>Research Universities</td>
<td>University/Industry Research Centers – Patent awards to US Universities – Growth in R&amp;D Specific Technologies at US Universities</td>
<td>State ARMF program awards by technology area</td>
</tr>
<tr>
<td>Industry</td>
<td>Research &amp; Development, specific technologies, at US firms</td>
<td>Research Awards by technology area</td>
</tr>
<tr>
<td></td>
<td>Level of spending on R&amp;D, specific technologies</td>
<td>Growth rates for research by critical technology area</td>
</tr>
<tr>
<td></td>
<td>Venture Capital investments in sectors related to critical technologies</td>
<td>Departmental research</td>
</tr>
<tr>
<td></td>
<td>Number of patents to US inventors, by technology area</td>
<td>Venture capital investments in Kansas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of patents to Kansas inventors, by technology area</td>
</tr>
</tbody>
</table>
Linking Opportunity With Capacity

- Standardized rating system
- Determine level of capacity and opportunity for critical technologies
The technology areas with high levels in both categories represent logical targets for investment activity. Other technologies which may not have scored as well may be so important to Kansas’ economy as to also warrant consideration.
The Strategic Study

Results:
• Opportunities and capacities assessed
• Strategic technology areas identified:
  – **Primary Clusters:**
    • Information & Telecommunications/Computing
    • Aviation
    • Value-Added Agriculture & Ag. Biotechnology
    • Human Biosciences
  – **Enabling Clusters:**
    • Nanotechnology
    • Manufacturing Technology
    • Polymers

Next:
• Select policy recommendations
• Develop broad guidelines
Policy Recommendations

Framework and Assumptions:

• Based on diagnostic study of the state, country, or region

• Focused in supporting technological innovation and development.

• Constitute broad guidelines.

• Each state, country, or region must adjust and prioritize policies according to its individual context.
Policy Recommendations

Objective:

- Improve competitiveness of key industrial sectors.
- Strengthen the state and country’s R&D capacity.
- Integrate technology policies into overall economic development plans.
- Promote development of strategic sectors.
- Establish business conditions attractive to domestic and foreign investment in strategic technologies.
Policy Recommendations

**Desired Results:**

- Stimulate creation and commercialization of strategic technologies.
- Foster productive interrelationships and linkages among the state and country’s institutions.
- Establish institutional arrangements to improve effectiveness of public investments in R&D.
- Expand and disseminate information and knowledge about technological innovation.
- Promote state and national consciousness about the importance of technology clusters.
- Create new, high wage, high skilled job opportunities to avoid “brain-drain.”
- Make small and medium sized enterprises become more competitive.
- Build a financial-technical network willing to invest in and support technology-based enterprises.
- Provide incentives for foreign and domestic investment.
Board of Directors

KTEC Program Structure

KTEC Staff

Federal Initiatives and Partnerships

Research
For Inventors, Entrepreneurs and University & Industry Scientists

- Advanced Manufacturing Institute (AMI)
- Kansas Polymer Research Center (KPRC)
- Information Technology & Telecommunications Center (ITTC)
- Higuchi Biosciences Center (HBC)
- National Institute for Aviation Research (NIAR)

Investments
For Inventors, Entrepreneurs and New & Existing Companies

- Small Business Innovation Research (SBIR) Awards
- SBIR Bridge Funding
- State-Sponsored SBIR
- Applied Research Matching Fund (ARMF)
- ACE-Net
- Ad Astra Funds I & II
- Kaw Holdings (KIC)
- Wichita Ventures (WTC)
- Manhattan Holdings (MACC)
- Prairie Investments
- Quest Ventures
- KU Medical Center Research Institute Pre-Seed Fund
- Alliance for Technology Commercialization

Business Assistance
For Inventors, Entrepreneurs, Scientists and New & Existing Companies

- Kansas Innovation Corporation (KIC)
- Mid-America Commercialization Corporation (MACC)
- Wichita Technology Corporation (WTC)
- Mid-America Manufacturing Technology Center (MAMTC)
- Capital for Manufacturers (CFM)
- Information Research Corp. (IRC)
- Kansas Integrated Commercialization Information Network (KICIN)
- Intern Program
- Business Residency Program
- Inventor Development Assistance Program (IDAP)
ICC’s Expand the Life Cycle

Investment Grade Technologies

Applied Research Project

Innovation
• Development Risk
• Market Risk
• Management Risk
• Growth Risk

Innovation and Commercialization Corporations
Independent 501(c)(3) not-for-profit
Independent Board of Directors
President with commercialization experience
For Profit Seed Capital Funds

• Business Plan Consulting
• Financial Expertise
• Management & Operations Consulting
• Marketing & Sales Strategies
• Guidance in Accessing Financing
• Training
• Market Research
• Due Diligence
• Technical Review

Laboratory & Office Space

General Incubator Services

Start-up Company
• Market Risk

Seed Capital
• Market Risk
• Management Risk
• Growth Risk

Quality Investments

$
There is concrete evidence that KTEC’s efforts are improving the entrepreneurial climate in Kansas, which was ranked 8th in Nation for “Gazelle Jobs” - according to the 2008 State New Economy Index. Rapid growth “Gazelle” companies account for 80% of new jobs created.

The New Economy Index also ranked Kansas a “Top Mover” in “Fastest Growing Firms.” Through our direct equity investments and business assistance, KTEC has helped Kansas experience a large increase in the number of “fast growing firms” (i.e. those with growth exceeding 200% over 4 years). These firms provide a strong base for the state’s current and future growth.
Come Home to Kansas Initiative

- #1 issue for bioscience and IT companies is talent recruitment

- Garmin, LSI Logics, Perceptive Software, etc.

- KTEC & partners launched www.comehometokansas.com to address issue

  Site shows thousands current technology job openings, plus strong cluster of recognizable companies in Kansas

- Software crawls internet to match people with career opportunities
The Kansas Experience

Organizational Lessons:

• A clear articulation of the problem is critical.
• A “champion” for the S&T-economic policy process.
• The development of a public-private partnership must be a priority from an early stage.
• Programs must be targeted at critical bottlenecks.
• Institutional innovation must reach outside of traditional bureaucracies.
• The return to Science and Technology investments takes time to grow.
<table>
<thead>
<tr>
<th>CLUSTER</th>
<th>ORGANIZATION</th>
<th>OUTCOMES</th>
</tr>
</thead>
</table>
| Human BioSciences                | Kansas BioScience Authority (KBA)                              | • $581m Fund  
• Build world-class research capacity, growth of bioscience startups, expansion of the state’s bioscience clusters and facilitate industrial expansion and attraction. |
| Value-added Agriculture and Ag Bio | National Agricultural Biosecurity Center (NABC)                | • $500m Research Center  
• Focused on protecting America's agricultural infrastructure and economy from endemic and emerging biological threats. |
| Aviation                         | National Institute for Aviation Research (NIAR)                 | 24 year-old research and tech-transfer center established to advance the nation’s aviation industries that may benefit from aviation-related technologies. |
| Information and Telecommunications & Computing | Software and Technology Association of Kansas (SITAKS) | Advocate for Kansas’ software and information technology sector to help Kansas' software and IT companies grow and succeed. |
Kansas BioScience Authority (KBA)

- $581 million state-funded independent bioscience TBED organization
  - $75.5 million program budget; $3.5 million operating budget
  - 18 employees (8 “deal” people)

- Investment priorities
  - Expand the quantity and quality of bioscience research
  - Focus on the commercialization of bioscience discoveries
  - Foster formation and growth of bioscience companies
  - Position Kansas for international leadership in key clusters

- KBA is governed by an 11-person board of directors comprised of local and national leaders in industry and academia
  - Standing investment committee; all investments subject to board approval
How the Fund Works

Set Baseline Tax Revenue for Bioscience Companies (NAICS) and Research Institutions

Measure Actual Incremental Growth in State Bioscience Taxes

Baseline to State General Fund

Increment of Growth to Bioscience Fund

Kansas Bioscience Authority
Fund Programs & Repay Bonds

Repeat annually for 15 years
KBA’s Investment Tools

- Kansas Bioscience Eminent Scholars
- Kansas Bioscience Rising Stars
- Kansas Bioscience Matching Fund
- Bioscience Centers of Innovation
  - Heartland BioVentures
  - Kansas Bioscience Growth Fund
  - Kansas Bioscience R&D Vouchers
  - Kansas Bioscience Attraction and Retention
    - (SME Programs)

Partners in Bioscience Growth
What is Unique About PIPELINE?

- Statewide: “Big City” with Smaller Communities bonding across state
- Top talent--focused on smaller group/high growth SME’s
- Immersion Experience
- Entrepreneur focused
- Ecosystem Building

“PIPELINE is the next step in the evolution of entrepreneurial capacity building.”
Dan Berglund, President and CEO, SSTI
Tell Me More

- Statewide
- Technology Portfolio
- Fellowship Basics - Immersion
  - Selection
  - Modules
  - Mentors
  - Peers
  - Networks - state and national
  - Innovator of the Year
  - Alumni Program
Intangibles

- Knocking Down Silos
- SME’s & Entrepreneurs Engage
- Rural Opportunity
- Raises Visibility of All Resources
- Aggressive Ecosystem Building
Innovation Philadelphia’s Mission

A Public/Private Partnership created to:

Grow the Wealth and Workforce of the Greater Philadelphia Global Innovation Economy
Innovation Philadelphia: Leveraging the Resources of the Greater Philadelphia Region

3 states
11 counties

- **Pennsylvania**: Bucks, Montgomery, Philadelphia, Chester, Delaware
- **New Jersey**: Mercer, Burlington, Camden, Gloucester, Salem
- **Delaware**: New Castle
Economic Development

- Economic Development is like a three-legged stool:
  - Attraction
  - Retention
  - Grow Your Own (Innovation Philadelphia’s focus)
- TBED requires patience and persistence, continuity and consistency.
- Working with early-stage companies takes time.
- “If it worked in Philadelphia, it can definitely work in Iowa!”
How Innovation Philadelphia Started

- Blank sheet of paper
- Need for an **Innovation Intermediary**
- Gap analysis of all Regional-based economic development and investment programs
- SWOT analysis of all organizational programs, boards, and funding
Innovation Philadelphia’s Strategic Goals

• Increase the **INVESTMENT** in knowledge-based companies
• Increase the **KNOWLEDGE** Economy workforce
• Foster and **LEVERAGE** Regional **COOPERATION** to Accelerate Technology **COMMERCIALIZATION** and Wealth Creation
• **BRAND** and market the Greater Philadelphia Region
• Promote **SUSTAINABLE** economic development
• Increase the Number of **INNOVATION-BASED COMPANIES** in the Greater Philadelphia Region
Innovation & Entrepreneurial Index

Is our glass half empty or half full?
Churning the Greater Philadelphia Innovation Economy

A Roadmap for Regional Growth

“You can always amend a big plan, but you can never expand a little one. I don’t believe in little plans. I believe in plans big enough to meet a situation which we can’t possibly foresee now.”

— Harry S. Truman
Why Was a Road Map Needed?

• Greater Philadelphia was at an economic crossroads – and at risk of losing our status as a top tier city.

• **Many plans had been created. We don’t need another plan, rather an umbrella strategy** that acts as a multiplier to leverage disparate and often competing economic activities into a comprehensive Regional effort.
  
  • To develop a comprehensive understanding of Regional opportunities as well as an understanding of scenarios in which we can realistically leverage critical ‘ingredients’ for the Regional innovation ‘recipe’.

  • To **challenge the perception that the Region merely used to be a center of innovation, intellect, commerce, and culture.**

• Now is the time to act. There is a unique convergence of circumstances and timing that is creating a window of economic opportunity for the entire Region over the next 5-10 years. If we don’t act now the window will close – potentially forever.

• **WHEN WE ACT TOGETHER.........WE WIN**
What Was Needed?

- The Greater Philadelphia Region’s innovation economy must include critical mass of technology-based industries.
- Strong research infrastructure capable of generating new ideas & nurturing them through early-stage development.
- Academic community has to leverage investment.
- Eliminate “capital gap” for early investments.
- Change “brain drain” to “brain gain” & create world-class lifelong learning environments.
- Greater coordination & collaboration among industry, government, academic, & non-profit organization involved in economic development initiatives.
- Create public policy and programs that stimulate business innovation and growth.
Research Approach

Qualitative
- One-on-One Interviews (150+ conducted)
- Forums/Group Format with 8 Regional Organizations
- Two Online Regional Mindset Surveys (2600 recipients/800 responses)
- University Innovation Inventory

Quantitative
- Review of Prior Regional Reports and Studies
- RAND RaDiUS Data on Federal Funding of R & D
- Private Sector R&D Spending
- Venture Capital Investment Data (GrowThink Research)
- Patents and Citations Analysis
- Global Technology Trends and Market Assessment
- ES202 Regional Cluster, Wages, Employment, Revenue Data
- Inventory of Regional Post Baccalaureate Skills Programs in Support of Science and Technology
Philadelphia County: Cluster Analysis by Output

- Relative Cluster Size, Philadelphia 11-County
- Direction of Change in LO 97-02

U.S. Industry Output Growth Forecast 2002-2007 Annualized Growth %
Philadelphia Region: 11-County Aggregate; Cluster Analysis by Output
The Targets of Opportunity – Churn Indicators

The Seven Prime Targets of Opportunity for Regional Innovation and Growth

| Evidence-Based Medicine | Business Process IT/Software | The Creative Community | Breakthrough Research on Cancer | Chemicals: Polymers, Coatings and Advanced Fibers | Propellers, Propulsion and Rotorcraft | Advanced Materials/ Nanotechnology |

Projected Regional Outcomes With Successful Road Map Implementation

- Increased Connectivity Accelerating Churn and Wealth Creation
- Increased Employment and “Brain Gain”
- More Spinouts from Industry and Universities
- New Global Partnerships and Global Innovation Image
- Increased Public, Private and Direct Foreign Investment
- Product and Market Expansion
- New Vendor Supplier Networks
Road Map Implementation

Phase One
Regional Analysis of Capacity to Innovate and Cluster Opportunities

Phase Two
Design Road Map and Implementation

Phase Three
Launch Initiatives, Create Sustainable Implementation, Report on Performance/Progress

Next Steps / Hot Teams

90 Days

Meeting 1

Meeting 2

Meeting 3

Strategic Commitments

Business Plan

Review & Implementation Plan

Launch

Network Develops and Owns

Network Develops and Spins Off in 1 year

Initiative Develops with Partner and Spins to Partner
The Targets of Opportunity

The Creative Community

The convergence of graphics, art, music, communications, film and digital media into both content creation and delivery, impacting design, architecture and engineering services.

How
Leveraging our innovative and creative human capital as well as leveraging the new concentrations of digital media activities will make the Region a leader in new media discoveries.

Why
From museums and libraries to arts and digital media, our Region has abundant assets.

Regional Assets
COMCAST/DCU, NBCUniversal, WNET, New Jersey Network, Knowledge Industry Partnership, Graphics Arts Alliance, and The New Jersey Film & Media Commission are just a few of the more than 200 media, entertainment and communications-related organizations that make up the Greater Philadelphia Area New Media Alliance—all are located in the Greater Philadelphia region.

Outcome
Global Node
This creative community capitalized on the creative excitement around film production and content development, along with the innovative technology and software companies that are countering the high cost of content development using the advanced digital tools to create content in a new way.

The Targets of Opportunity

Evidence-Based Medicine

The science of improving health care outcomes while reducing health care costs.

How
Evidence-based medicine provides the research, the pharmaceutical and device producers, the medical institution, the doctor, and the patient with access to knowledge bases of protocols, best practices, genetic analysis, and drug delivery regimens.

Why
The U.S. is far recognizing that life science will make possible more personalized health care in the future by taking a more proactive and integrated approach to linking prevention, diagnosis, response, and overall management of patients and illness.

Regional Assets
Global Hub
Europe Philadelphia is the world-wide “home” for the development of the ex-Cavero health care group. From public policy to patient care, the Region establishes a fully-integrated life science solution. Consolidation of public resources and initiatives towards a program that would be enabled by creating a global network for a tremendously aligned medicare system. A novel study conducted by the Biomedical and Healthcare GPO in the US on the costs of hospital networks found in cancer and heart related issues could result in saving up to 8 percent of pharmaceuticals $54 billion.

Outcome
Global Node
Europe Philadelphia receives worldwide recognition as a “Cancer Care Region.”

The Targets of Opportunity

Chemicals: Polymers, Coatings and Advanced Fibers

Advanced chemical coatings and fibers for use in extreme industrial and environmental conditions.

How
The “old” chemical industry has found new applications: coatings for reworkable electronics and nanobioelectronics, optics of coatings, catalysts, fuel cell membranes and filters for air purifiers, rather than sharing returns outside the Region, we must bring the new name of electronic, consumer products, and industry alliances and manufacturing to the longer Philadelphia Region.

Why
For example, the Philadelphia Region is the center where the microchip industry comes to what the challenge of their new product—how do we increase storage capacity on computer chips without degrading their performance and shortening their life?

Regional Assets
Global Node
Europe Pennsylvania’s polymer and textile industry research operates such groups: Philadelphia research sites and vendor supplier chains establish a physical, permanent location in the Region.

Outcome
Global Node
The global automotive and textile industry research operates such groups: Philadelphia research sites and vendor supplier chains establish a physical, permanent presence in the Region.

The Targets of Opportunity

Advanced Materials/Nanotechnology

The branch of engineering that deals with the design and manufacture of extremely small electronic circuits and mechanical devices built at the molecular level of matter.

How
University-based research and industry collaboration that identifies a specific niche in either electronics, biotech, or medical nanotechnology. Our Region has the Greater Philadelphia Region for activities underway in California, Texas, New York and other locations.

Why
The work of Ben Franklin Technology Partners and others in developing a nanotechnology strategy and facilitating the rapid development of nanotechnology products and services in the Region.

Regional Assets
National Node
Recognition by Next Venture Magazine as a national nanotechnology niche leader.

Outcome
Ben Franklin Technology Partners, Pennsylvania State University, Princeton University, University of Pennsylvania, Drexel University and Princeton represent the core of university/industry collaboration.
Critical Ingredients of Success:

- Civic, business, and political leaders willing to sustain Hot Teams and results
- Leadership that acts like ‘civic venture capitalists’
- Individuals willing to hold ‘feet to the fire’ and catalyze collaboration
- Individuals willing to put vital resources towards implementation: time, reputation, financial resources
## The Philadelphia Experience - 2009

<table>
<thead>
<tr>
<th>CLUSTER</th>
<th>ORGANIZATION</th>
<th>OUTCOMES</th>
</tr>
</thead>
</table>
| **Transforming Biomedical Research** | Select Greater Philadelphia [www.selectgreaterphiladelphia.com](http://www.selectgreaterphiladelphia.com)  
University City Science Center [www.sciencecenter.org](http://www.sciencecenter.org)  
Delaware Valley Innovation Network [www.delawarevalleyinnovationnetwork.com](http://www.delawarevalleyinnovationnetwork.com) | • Greater Philadelphia’s #1 industry  
• Science Center QED Proof of Concept Fund  
• $5m WIRED (DOL) grant - 14 county tri-state regional initiative to transform the way in which the region develops its life science talent. |
| **Nanotechnology**               | Ben Franklin Technology Partners of Southeast PA [www.sep.benfranklin.org](http://www.sep.benfranklin.org)  
Mid-Atlantic Nanotechnology Alliance (MANA) [www.midatlanticnano.org](http://www.midatlanticnano.org) | Collaboration to develop and position the tri-state region (PA, NJ & DE) as a global hub for the expanded research, development, application and commercialization of nanotechnology. |
| **The Creative Economy**         | Innovation Philadelphia (IP)  
Global Creative Economy Convergence Summit [www.innovationphiladelphia.com](http://www.innovationphiladelphia.com) | IP is a non-profit economic development organization that serves 11 counties in SE PA, Southern NJ and DE – Strives to establish the region as a national leader and world-class destination for Creative Economy industries, businesses and talent. |
**IP Core Products / Services**

**Investment**
- ESF: Economic Stimulus Fund
- SearchDollars: Partnership
- MAG: Mid-Atlantic Angel Group
- innovation AMERICA

**Commercialization**
- MACC: Mid-Atlantic Commercialization Corporation
- PhoenixIP Ventures: World’s Best Technology Network
- Innovation Philadelphia
- Bioparc
- Science Center

**Global & Regional Workforce / Economic Development**
- KIP: Knowledge Industry Partnership
- Onebigcampus
- CareerPhilly

**Branding, Research & Marketing**
- Creative Economy
- Delaware Valley Innovation Network
- IP America
- Innovation Network
- Global Innovation 

**World’s Best Technology Network**
## World's Best Technology Network

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Funding Per Deal</th>
<th>Total Annual Deal Funding Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben Franklin</td>
<td>Up to $750K</td>
<td>$3M</td>
</tr>
<tr>
<td>BioAdvance</td>
<td>Up to $1M</td>
<td>$5M</td>
</tr>
<tr>
<td>Science Center</td>
<td>Up to $500K</td>
<td>$3M</td>
</tr>
<tr>
<td>IP (ESF)</td>
<td>Up to $100K</td>
<td>$500K-1M</td>
</tr>
<tr>
<td>MAG</td>
<td>Up to $250K</td>
<td>Up to $1M</td>
</tr>
<tr>
<td>IPART &amp; IP SBIR Program</td>
<td>Up to $750K</td>
<td>Up to $13M</td>
</tr>
</tbody>
</table>

- Regional Branding & Marketing
- Common Investment Review Process
- Shared Due Diligence
Talent is the Currency of the New Economy

“Talented individuals are voting with their feet to live in cities where the work is smart, culture is cool, and the environment is clean.”

The Washington Post
11.09.03
• The first Web site dedicated to the career development of students in the Greater Philadelphia Region.
• Provides Regional students with a search engine designed to help them find Regional job and internship opportunities.
• A calendar of events provides students with a listing of career development and networking activities.
• An advice section contains helpful information for students on the many aspects of their career development.
What Worked For KTEC and Innovation Philadelphia

- FOCUSED & INTEGRATED Science & Technology Collaboration for Kansas and the Greater Philadelphia region
- PRIVATE Sector Leadership and COMMITMENT
- Organization’s function as a BUSINESS
- Successfully manage a technology investment portfolio for ROI
- Operational FLEXIBILITY
- ACCOUNTABILITY with measurable outcomes
- Experienced PROFESSIONAL team
- Focus on the ENTREPRENEUR’S needs
- SUSTAINABLE Funding
Accelerating Delaware’s Entrepreneurial Economy

www.firststateinnovation.org
Mission:

“First State Innovation is a private-sector led 501c3 focused on growing the wealth and workforce of Delaware’s Innovation Economy by attracting, connecting, and retaining high-growth, technology-based businesses in Delaware and the surrounding region, through the productive use of people, ideas and capital”
Delaware’s Pro’s and Con’s

Regional Assessment

Pros
• Patents per worker 3 ½ times the national average
• Regional productivity exceeds national average
• Unemployment lower than the national average
• Cost of living below national average
• Proximity to major markets
• “Chateau” country

Cons
• Middle of pack for venture capital funding but far behind leaders (26th in the nation)
• Relatively few jobs in high growth firms (46th in Gazelle jobs)
• 50th of 50 in new entrepreneurial startups per Kaufmann Foundation
• Programs to train entrepreneurs average at best
• Attitudes toward entrepreneurs
  – Failure not well tolerated
  – Small firms not celebrated
STRATEGY

It is actually quite simple…. 

• FSI connects **People, Ideas and Capital**
2 YEAR MILESTONES:

• Over $1,000,000 raised through public & private grants
• Obtained 501c3 approval in 4 months
• Strong high profile Board has been formed
• Outstanding Advisory Board doing heavy lifting
• Over 50 new entrepreneurial companies in pipeline
• Assembled over 300 Angel Investors poised to invest
• First FSI facilitated deal completed – OrphageniX
• Second FSI facilitated deal completed – Patria Services Corp.
• Aided in launch of 4 additional companies
• Conduct Breakfast Showcase events quarterly
• Sponsored and participated in University of Delaware Knowledge-based partnerships summit
• Launched the FSI website at: www.firststateinnovation.org
• Provide new Delaware Governor with “Roadmap for Entrepreneurial Growth”
• Sponsor major Spring 2009 Summit
• Formalize our 300+ Angels into a focused engine
• Facilitate the launch of 6-9 new companies
• Conduct Breakfast Showcase events every 60 days
• Work closely with the major science-based companies, DSU, UD and Deltech in technology transfer and commercialization
• Plug in closer to the regional economy (Greater Philadelphia Chamber of Commerce, Select Greater Phila, Innovation Philadelphia, NJ & MD incubators)
• Coordinate with national organizations like Council on Competitiveness and SSTI.
• Obtain increased private funding from business community
Intelligent Community Forum

Since 2000…

- Annual Awards program gathering detailed information on communities around the world
- Publishing: *Broadband Economies*, *Top Seven Intelligent Communities of the Year*, *E-Government and Economic Development*
- Annual summit of community and business leaders from countries around the world
- Immersion Lab study tours of Intelligent Communities
- Community Accelerator program
- Intelligent Community Association and Intelligent Community Institutes
Intelligent Communities: Criteria

- Broadband
- Knowledge Workforce
- Innovation
- Digital Inclusion
- Advocacy
- Marketing
Smart 21 Communities of 2010
The Road from Basic Research to Commercialization

...has many complex pieces!
All of the puzzle pieces must come together early in order for the project to have any hope of commercial success.
What’s Next For Iowa?

Today

IOWA

life | changing®

Tomorrow

innovation IOWA

life | changing®

innovation AMERICA
A Call to Action

“Somebody has to do something, and it's just incredibly pathetic that it has to be US.”

--Jerry Garcia of the Grateful Dead

The US is YOU!

innovation AMERICA

IOWA life | changing
Get a FREE subscription to Innovation America’s innovationDAILY newsletter.

Subscribe to:

www.innovationamerica.us