GROWING INNOVATION CLUSTERS IN THE UNITED STATES

Building and Branding Clusters: Lesson’s From KTEC and Innovation Philadelphia

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President and CEO
Innovation America
June 3, 2009
“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
Goals of Innovation-Based Economic Development (IBED)

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 economy
- Job Creation
The Role of the Public Sector

- A healthy, educated public
- Job creation, economic health, and Knowledge Worker development
- World leadership in STEM (science, technology, engineering and mathematics) and innovation
- Improved environment quality and sustainable development
- Harnessed information technology
- Enhanced national security
Government’s Role in S&T

• Long term vision and planning
• Identify gaps and trends in science and technology environment
• Be a catalyst through strategic investments and partnering
• Develop a balanced and flexible research and development investment portfolio
• Encourage private sector innovation
• Establish performance-based research and development
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<td><strong>Key Values/Offerings</strong></td>
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<td>Access to research</td>
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<td><strong>Lead Organization</strong></td>
<td>Chambers / EDC’s</td>
<td>Innovation intermediaries, Economic developers</td>
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</tbody>
</table>
Human Connectivity

Communications networks have the ability to transform economic, political, and social relationships on a global scale.

• In the past, organizations strategized to gain **COMPETITIVE** advantage.
• The emphasis in the future will be to gain **COOPERATIVE** advantage.
• A core competency needed in individuals, organizations, and regions alike is **CONNECTIVITY**.
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
Cluster Innovation Connectivity

Cultivation - Collaboration

Capital - Careers

Commercialization

Greater Philadelphia Region
IBED....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
Clusters of Innovation

- Concentrate knowledge assets
- Host globally competitive firms
- Create high-wage jobs
- Attract scarce global talent and Investment
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.
Past, Present and Future of Kansas Science and Technology
Kansas Strategic Technology Cluster Assessment and a Plan for the 21st Century

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.

Published by The Kansas Technology Enterprise Corporation
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.”
## Strategic Assessment Framework

### Analytical Framework

#### Economic Context
- Growth in US Exports
- US Sectoral Growth Projections

#### Federal Programs
- Advanced Technology Program Awards
- SBIR program awards

#### State Programs
- University/Industry Research Centers
  - Patent awards to US Universities
  - Growth in R&D Specific Technologies at US Universities

#### Research Universities
- Research & Development, specific technologies, at US firms
- Level of spending on R&D, specific technologies
- Venture Capital investments in sectors related to critical technologies
- Number of patents to US inventors, by technology area

#### Industry
- Venture capital investments in Kansas
- Number of patents to Kansas inventors, by technology area

### Opportunity Indicators

- Presence of Centers of Excellence in critical technology areas
- State ARMF program awards by technology area
- Research Awards by technology area
- Growth rates for research by critical technology area
- Departmental research

### Capacity Indicators

- Level of Kansas exports, sectors related to critical technology areas
- Kansas employment in sectors
- Kansas’ shares of the nation’s firms in sectors related to critical technologies
- SBIR program awards to Kansas firms by technology area
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.
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.
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.
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<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. |

www.kansasbioauthority.org  
http://nabc.ksu.edu/content  
www.niar.wichita.edu  
www.sitaks.com
Innovation Philadelphia’s Mission

A Public/Private Partnership created to:

Grow the Wealth and Workforce of the Greater Philadelphia Global Innovation Economy
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
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
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.
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**
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 Region: 11-County Aggregate; Cluster Analysis by Output

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

- Aerospace & Defense
- Medical Devices
- Printing & Publishing
- Analytical Instruments
- Textiles
- Transportation
- Foods
- Other Manufacturing
- Creative Services
- Tourism
- Business Services
- Distribution
- Financial Services
- Biotech
- Education
- Pharmaceuticals
- Chemicals
- Health Care
- IT-Software

U.S. Industry Output Growth Forecast 2002-2007 Annualized Growth %
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

Meeting 1
Strategic Commitments

Meeting 2
Business Plan

Meeting 3
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

**Business Process IT - Software**

Relates to the design, development, implementation, and operation of critical information systems and knowledge-delivery

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**How**
- Coordination of a regional industry, academia, customers, and entrepreneurial-driven initiative that ensures cutting-edge research and development is linked to emerging forms of knowledge systems.

**Why**
- Today, business process software affects virtually every aspect of an organization, ranging from the lower-level clerical work to top-level executive decision-making. Understanding the needs of the consumer and the industry is critical to success.

**Regional Assets**
- The Philadelphia Region is abundantly rich in companies like SAS, Siemens, Union and Lockheed Martin in addition to other high-tech firms, making it a hub for innovation and investment.

**Outcome**
- The Global Node is a leader in the field of large-scale integrated software systems.

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**Evidence-Based Medicine**

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

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

**Why**
- The U.S. is fast recognizing that life science will make more possible personalized medicine care than at the beginning of the 21st century. The science is so advanced that it is leading to new treatments and results.

**Regional Assets**
- In addition, the federal government’s transition to evidence-based medicine provides a $100 billion budget for 2007 that will encourage substantial spending on system integration between different areas.

**Outcome**
- Global Hub: Greater Philadelphia is the world-wide “home” for the development of the 21st Century health care system. From adult males to young patients, the region establishes a fully-integrated life science solution allowing patients to utilize new medicine care哪儿.

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**Chemicals, Polymers, Coatings and Advanced Fibers**

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

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**How**
- The $1 billion chemical industry has found new applications: coatings for microelectronics and nanomaterials, water-based resins for paints, and elastomeric, rubber-like materials for coating, adhesives. While other regions outside the region, we boast about the vast users of electronics, consumer products, and industry alliances and manufacturing in the Greater Philadelphia region.

**Why**
- For example, the Philadelphia Region is one of the regions where the microchip industry is located on the edge of electronics. By increasing overall capacity on computer chips without ever increasing emissions, and making up to 30% less usable work done on every computer chip, the region can become a regional leader.

**Regional Assets**
- Kabir & Haas, DuPont, BEI, Acme, Johnson-McCone, AI/PA/Chemicals, Chemical Heritage Foundation, PM Corporation, Preston Center for Photonics and Nanomaterials (PCON), Synfuel Corporation-Display, and Lehigh University are examples of companies that are expanding their presence in the Greater Philadelphia Region.

**Outcome**
- Global Node: The global electronics and textile industries are growing expotentials into Greater Philadelphia. Research units and companies in the textile industry are setting new standards for the environmental and industrial conditions.

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**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

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

**Why**
- From music to museums and from graphics art to digital media, our Region has abundant assets.

**Regional Assets**
- COMCAST/TEC, film industry, museums, Knowledge Industry Partnerships, Kogos Arts Union, University of the Arts, Photo Digital Research Labs, The Philadelphia Arts New Media Association are all located in the Greater Philadelphia Region.

**Outcome**
- Global Node: Greater Philadelphia has been benefited from the first cultural legacy of the people industry in the early 2000s. Greater Philadelphia has a unique focus on new media and film production and content development, along with the invention of innovative industries.

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**The Targets of Opportunity**

**Breakthrough Research on Cancer in the 21st Century**

The application of knowledge to prevent, detect, diagnose, and treat cancers

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**How**
- Create a regional “cancer core” strategy, which in a result, becomes a globally prominent approach and lead to a world-class cancer treatment centers. Emerging technologies, like stem cell and gene therapy could lead to the development of effective new therapies.

**Why**
- We have the infrastructure already – we need a strategy that supports the next move in where the National Cancer Institute drives research and programs.

**Regional Assets**
- Fox Chase, Penn, Temple, Thomas Jefferson, The Walter Institute, Cardiac Institute and a host of other resources.

**Outcome**
- Global Node: Greater Philadelphia receives worldwide recognition as a “Cancer Core Region.”

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**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.

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**How**
- University-based research and industry collaboration that identifies a specific niche in either electronics, medical, or energy/construction sectors that differentiates the leader Philadelphia region for activities.

**Why**
- The work of Ben Franklin Technology Partners and others is developing a national strategy for nanotechnology. In the region, nanotechnology is estimated to have a significant impact on the economy in the coming years.

**Regional Assets**
- Ben Franklin Technology Partners, Pennsylvania State University, Princeton University, University of Pennsylvania Center for Entrepreneurial Development and Robotics are representative of university/industry collaboration.

**Outcome**
- National Node: Recognition by Small Times Magazine as a national nanotechnology niche leader.
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
Connecting Innovators Through Regional Growth

Innovation remains the key to the Greater Philadelphia Region’s economic future. This website has been created to educate and support the thousands of regional stakeholders that have joined forces in the “Road Map for Regional Growth” initiative. This website has been established to support the stakeholders, drivers, and interested parties of the Greater Philadelphia Region.

The Road Map project is one of the largest and most collaborative growth initiatives ever developed. It represents the broader interests and perspectives of the 11-county (PA-Bucks, Chester, Delaware, Montgomery and Philadelphia; NJ-Burlington, Camden, Gloucester, Mercer and Salem; DE-New Castle) Greater Philadelphia Regional business and civic community, academic and cultural communities, and local agencies and governments. It is sponsored by Innovation Philadelphia, the Greater Philadelphia Chamber of Commerce and the City of Philadelphia, and based on the past...
The Targets of Opportunity: Churn Indicators

Five Prime Targets of Opportunity

**“3 Active Clusters”**

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<th>Chemical Industries</th>
<th>The Creative Economy</th>
<th>Nanotechnology</th>
<th>Business Process, Technology and Software</th>
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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
# The Philadelphia Experience - 2009

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<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  
• $5m WIRED (DOL) grant - 14 county tri-state regional initiative to transform the way in which the region develops its life science talent. |
| Nanotechnology           | Ben Franklin Technology Partners of Southeast PA [www.sep.benfranklin.org](http://www.sep.benfranklin.org)  
Mid-Atlantic Nanotechnology Alliance (MANA) [www.midatlanticnano.org](http://www.midatlanticnano.org)  | Collaboration to develop and position the tri-state region (PA, NJ & DE) as a global hub for the expanded research, development, application and commercialization of nanotechnology. |
| The Creative Economy     | Innovation Philadelphia (IP)  
Global Creative Economy Convergence Summit [www.innovationphiladelphia.com](http://www.innovationphiladelphia.com)  | IP is a non-profit economic development organization that serves 11 counties in SE PA, Southern NJ and DE – Strives to establish the region as a national leader and world-class destination for Creative Economy industries, businesses and talent |
<table>
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<tr>
<th>Investment</th>
<th>Commercialization</th>
<th>Global &amp; Regional Workforce / Economic Development</th>
<th>Branding, Research &amp; Marketing</th>
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<tr>
<td>ESF</td>
<td>MACC</td>
<td>Mid-Atlantic Commercialization Corporation™</td>
<td>KIP</td>
</tr>
<tr>
<td>RESEARCHDOLLAR$ FUND</td>
<td>Phoenix IP Ventures</td>
<td>World’s Best Technology Network</td>
<td>careerPHILLY</td>
</tr>
<tr>
<td>INNOVATION PARTNERSHIP</td>
<td>BioAdvance</td>
<td>Ben Franklin Technology Partners</td>
<td>Greater Philadelphia Global Partners</td>
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<tr>
<td>MAG</td>
<td>innovationPHILADELPHIA™</td>
<td>Science Center</td>
<td>Creative Economy</td>
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<tr>
<td>innovation AMERICA</td>
<td>DV</td>
<td>Innovation Network</td>
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Entrepreneurial Resources
# World’s Best Technology Network

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

- Regional Branding & Marketing
- Common Investment Review Process
- Shared Due Diligence
What Worked For KTEC and Innovation Philadelphia

- **FOCUSED & INTEGRATED** Science & Technology Collaboration for Kansas and the Greater Philadelphia region
- **PRIVATE** Sector Leadership and **COMMITTMENT**
- 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 THE GROWTH OF THE ENTREPRENEURIAL INNOVATION ECONOMY IN AMERICA
Hot Off the Presses

Creating a National Innovation Framework
4-22-09

Forbes
More Signs of Capital Starvation
4-27-09

A Federal VC Fund of Funds?
4-13-09

San Francisco Chronicle
Recession Knocks VC Funds to 5 ½ Year Low
4-14-09

PEHUB

Federal Aid Sought for Equity-Backed Companies
4-21-09

BioCentury
Into the Valley of Death
4-20-09

ThomasNet
Health Care Bleeds Small-Biz Finances, 5-12-2009

www.innovationamerica.us
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
Commercialization Model

Universities, Federal Grants, Private R&D, Basic Research, Inventions

1. Proof of Concept
2. Next Generation Products
3. Product Development Research
4. Prototype Product
5. Make Technology Investment Grade
6. Generate Equity, Royalties, and License Fees
7. Spinoff Companies
8. Transfer Technology to Industry

ROI: Companies, Jobs, Products & Profits

Publications
Ph.Ds
Tenure
Patents

Funding/Entrepreneur Resources
R&D: Companies, Jobs, Products & Profits
## 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, SBI R, 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>

"VALLEY OF DEATH"
Innovation Paradigm Shift

PROOF OF CONCEPT

PROOF OF RELEVANCE

- economic value creation
  - margin
  - cost of capital
  - organic
  - m&a

return on invested capital

growth

Financing for Innovation in Crisis

Seed- and early-stage investors and entrepreneurs are struggling more than usual according to a recent survey by the National Association of Seed and Venture Funds.

<table>
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<tr>
<th>Venture Funding</th>
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<td>90% of the already-funded companies can't obtain follow-on funding to get to the next level. Without this follow-on funding, they will die and a generation of great ideas will die along with them.</td>
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<td>75% of the money received by seed- and early-stage venture funds comes from private investors</td>
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<td>70% of the money needed to fill this early stage investment gap is less than a million dollars per company</td>
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<td>60% of early-stage funds aren’t making any new investments</td>
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<th>Entrepreneurial Companies</th>
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<td>75% of the companies investors are putting money into can't leverage that money into bank financing</td>
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<tr>
<td>42% of the companies investors are putting money into have been stripped of their lines of credit</td>
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</tbody>
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NATIONAL INNOVATION FRAMEWORK

Angel Capital Association (ACA)*
Community Development Venture Capital Alliance (CDVCA)*
National Association of Seed & Venture Funds (NASVF)*
American Society of Mechanical Engineers (ASME)*
State Science & Technology Institute (SSTI)*
National Business Incubation Association (NBI A)*
Association of University Research Parks (AURP)*
Association of University Technology Managers (AUTM)*

*Potential national advisory board

Federal Agency (TBD)
National Innovation Jobs Seed Fund
$2 billion fund

National Seed Fund of Funds 50 Seed Funds
$1.8 billion

Innovation Capital Technical Assistance Grant Fund
$200 million

NPPPI
501©3
Not For Profit (Innovation America)

establishes criteria, metrics & best practices

Federal Technology Innovation Programs
SBIR, STTR, TIP, MEP, WIRED, FLC, EPSCoT, EPSCoR, NSF-PFI, NSF-IUCRC, NSF-Eng’g Resource Center, DOE-Ind’l Tech. Program

Innovation Federal Capital Programs
CRA, CDFI, NMTC, NSF, SBIR

Networking, Strategic Planning, Marketing & Branding

Technology, Economic & Workforce Development

Technical Assistance, Education, & Mentoring

Investment

Commercialization

Innovation America

Not For Profit (Innovation America)
Recommendations

- Create a $2 billion dollar National Innovation Seed Fund (NISF) that consists of a Fund of Funds and a Technical Assistance Grant Fund. The Technical Assistance Grant Fund provides entrepreneurial support resources and services to portfolio companies and Fund Managers.

- Encourage the leveraging and coordination of Federal Technology Innovation Programs through a Federal Innovation Partnership with a new administration high-level National Innovation Advisor that has access to the President.

- Create a new Public-Private Innovation Intermediary with a mission to accelerate the growth of the entrepreneurial innovation economy in America and oversee the National Innovation Seed Fund. This intermediary would be a program partially supported by a U.S. federal agency like the Department of Commerce or the Small Business Administration.
Partners in National Innovation Development

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