GROWING INNOVATION CLUSTERS IN THE UNITED STATES

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

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

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President and CEO
Innovation America
June 3, 2009

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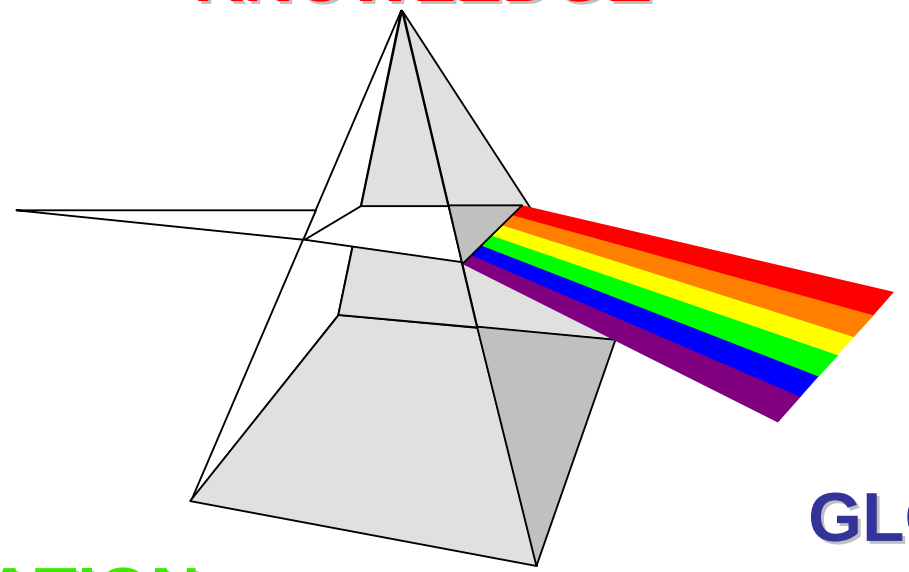
Innovation Economy

KNOWLEDGE



INNOVATION

GLOBAL COMPETITIVENESS

“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

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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

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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

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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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Traditional ED vs. Innovation-based ED

	Traditional ED		Innovation-based ED
Competitive Basis	Natural resources Highways / Rail Proximity Costs	→	Clusters Specialized talent Networks, information University research / professors Market understanding
	i.e. Bricks/Mortar		***i.e. KNOWLEDGE***
Key Values/Offerings	Business parks Incentives	→	Access to research Workforce competencies Lifestyle
Lead Organization	Chambers / EDC's	→	Innovation intermediaries, Economic developers

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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**.

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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

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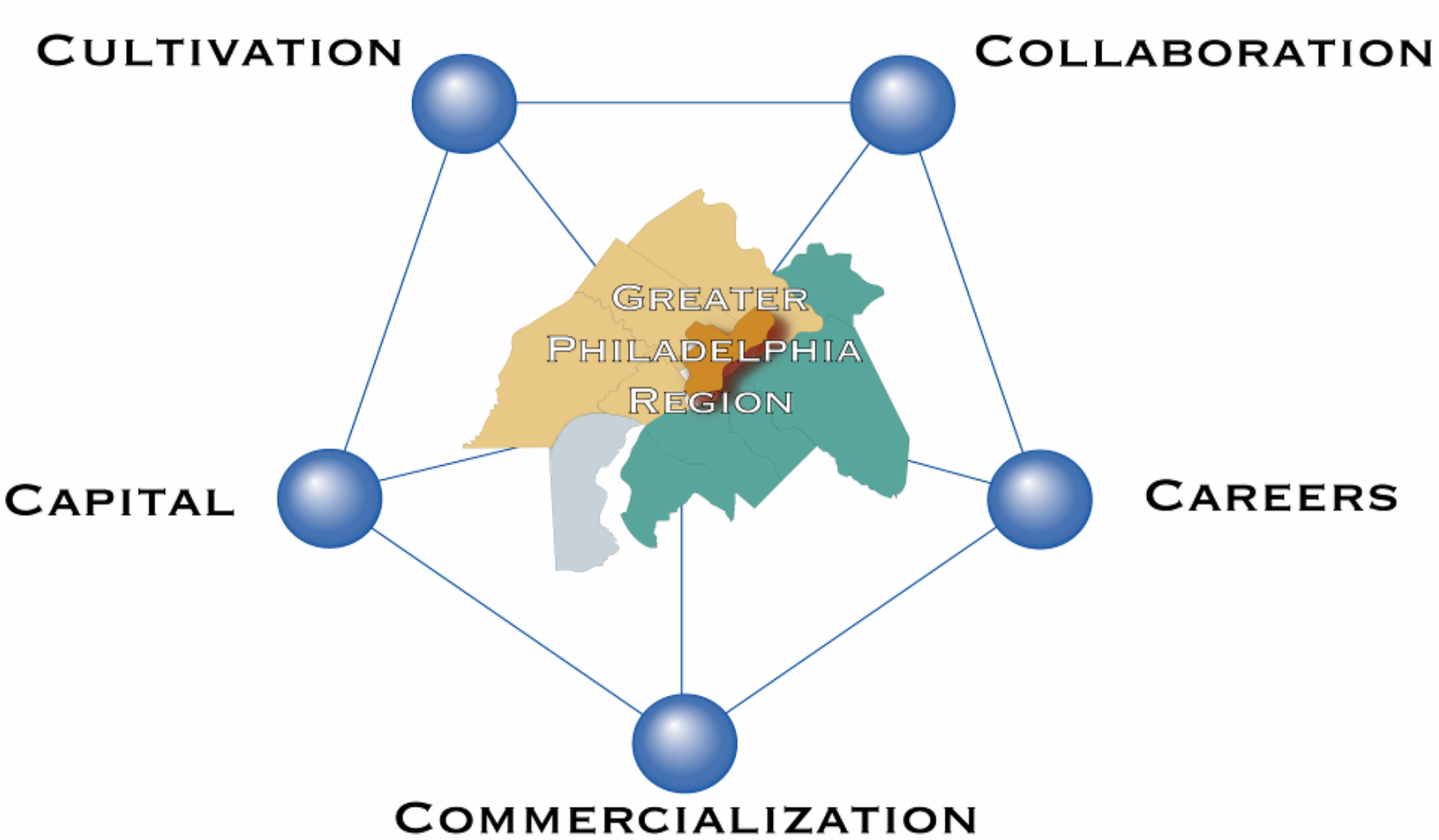
Cluster Innovation Connectivity



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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

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Clusters of Innovation

- Concentrate knowledge assets
- Host globally competitive firms
- Create high-wage jobs
- Attract scarce global talent and Investment

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Kansas Technology Enterprise Corporation

www.ktec.com

KTEC Mission:

"To create, grow and expand Kansas enterprises through technological innovation."

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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

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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.

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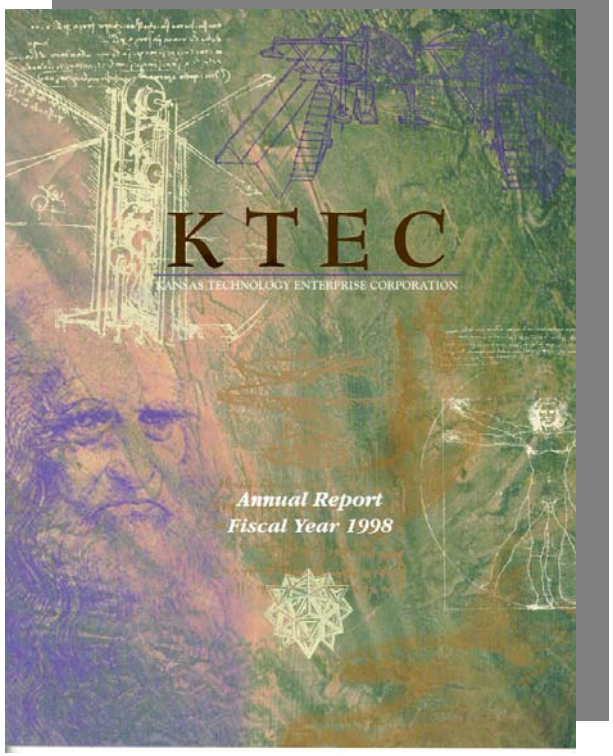
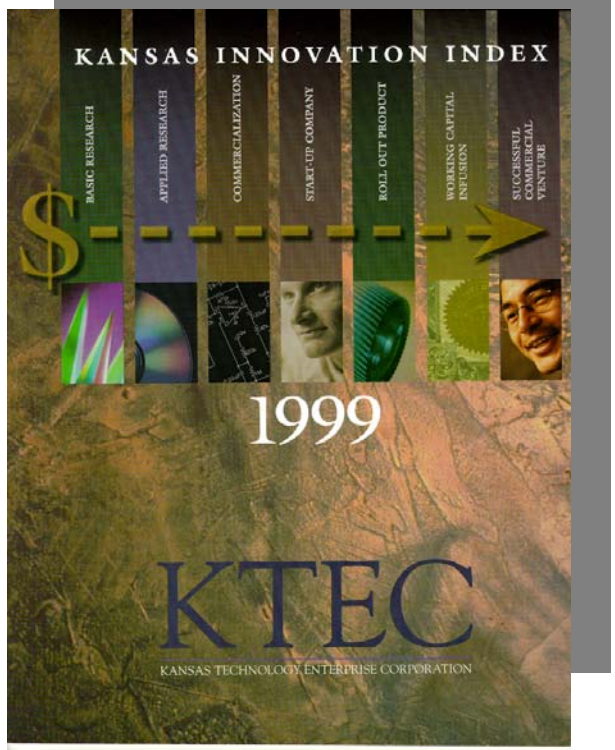
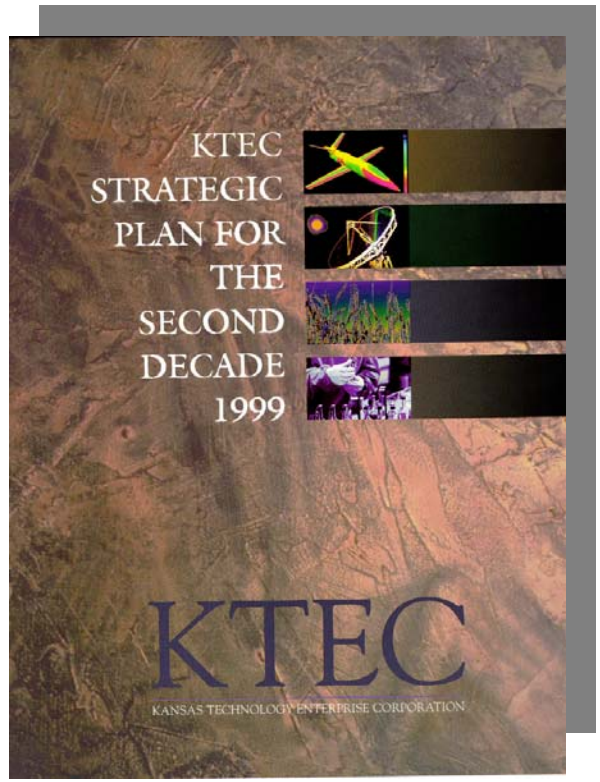
Past, Present and Future of Kansas Science and Technology







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.

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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.”

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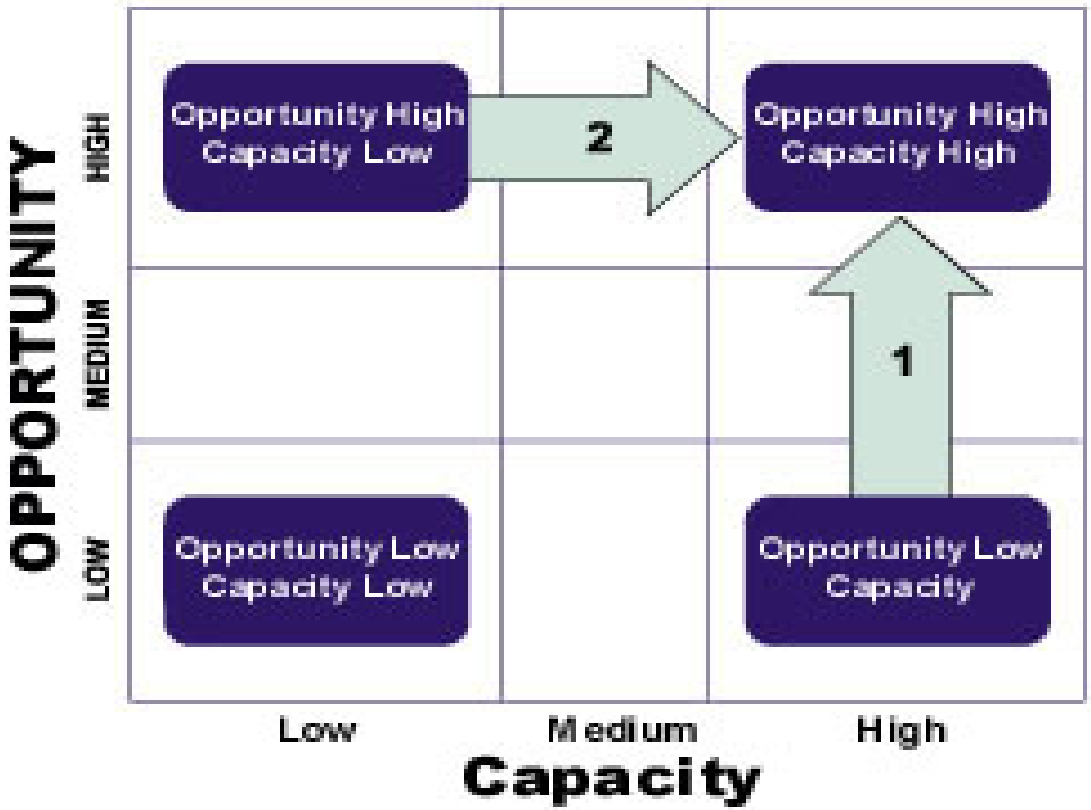
STRATEGIC ASSESSMENT FRAMEWORK

Analytical Framework	Opportunity Indicators	Capacity Indicators
Economic Context	• Growth in US Exports • US Sectoral Growth Projections	• 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
Federal Programs	• Advanced Technology Program Awards • SBIR program awards	• SBIR program awards to Kansas firms by technology area
State Programs		• Presence of Centers of Excellence in critical technology areas • State ARMF program awards by technology area
Research Universities	• University/Industry Research Centers – Patent awards to US Universities – Growth in R&D Specific Technologies at US Universities	• Research Awards by technology area • Growth rates for research by critical technology area • Departmental research
Industry	• Research & Development, specific technologies, at US firms • Level of spending on R&D, specific technologies • Venture Capital investments in sectors related top critical technologies • Number of patents to US inventors, by technology area	• Venture capital investments in Kansas • Number of patents to Kansas inventors, by technology area

Linking Opportunity With Capacity

- **Standardized rating system**
- **Determine level of capacity and opportunity for critical technologies**



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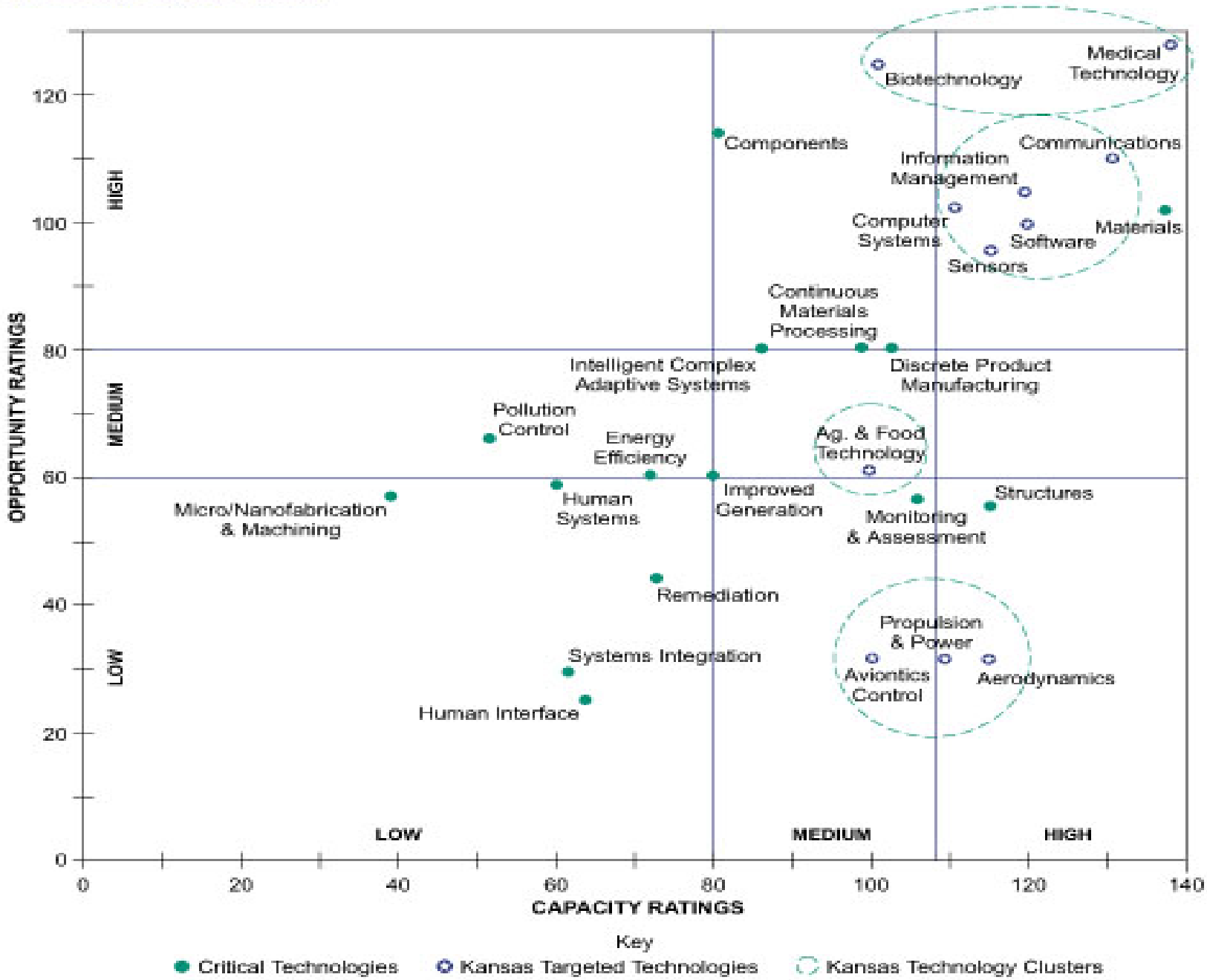

The technology areas with high levels in both categories represent logical targets for investment activity.Other technologies which may not have scored as well may be so important to Kansas' economy as to also warrant consideration.

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

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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.

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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.

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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.

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KTEC Program Structure

Board of Directors

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)
- EPSCoR

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)

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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The Kansas Experience - 2009

CLUSTER	ORGANIZATION	OUTCOMES
Human BioSciences	**Kansas BioScience Authority (KBA)** www.kansasbioauthority.org	•$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)** http://nabc.ksu.edu/content	•$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)** www.niar.wichita.edu	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)** www.sitaks.com	Advocate for Kansas' software and information technology sector to help Kansas' software and IT companies grow and succeed.

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Innovation Philadelphia's Mission

A Public/Private Partnership created to:

Grow the Wealth and Workforce of the Greater Philadelphia Global Innovation Economy

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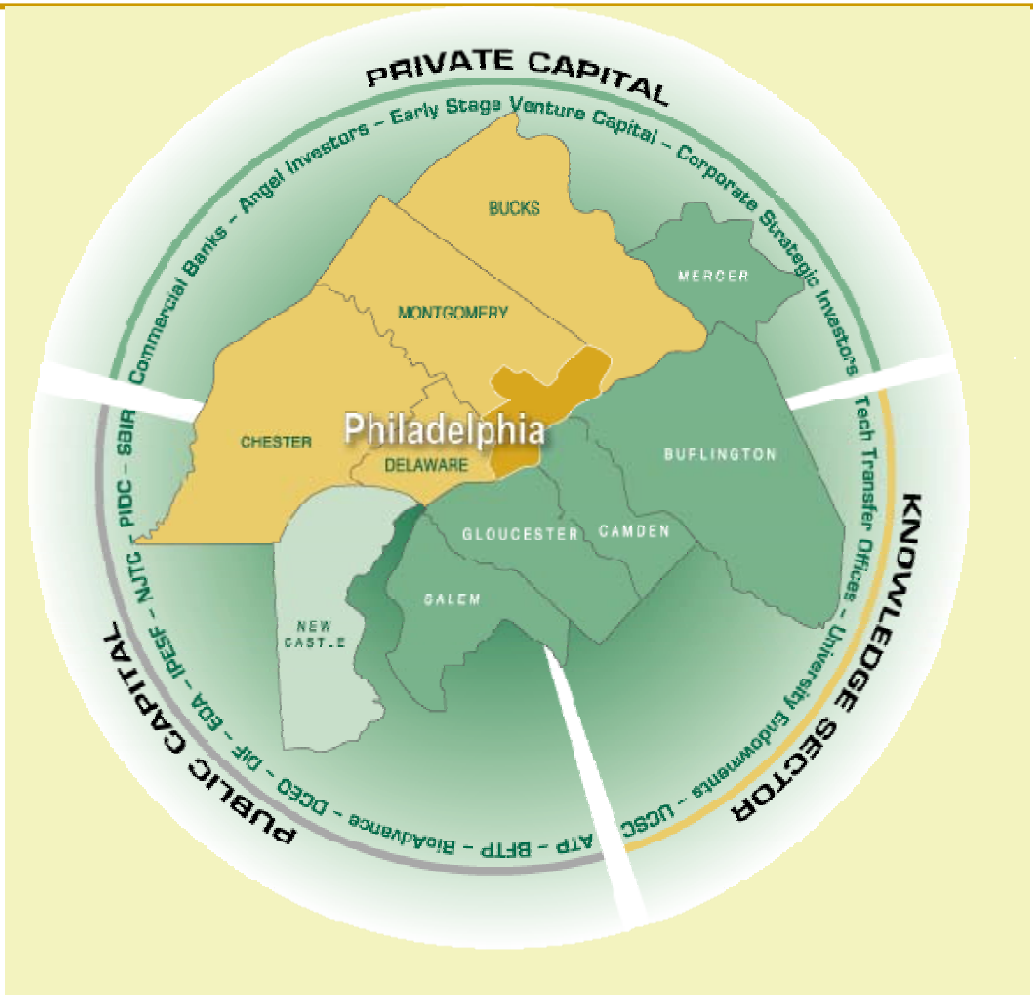
Leveraging the Resources of the Greater Philadelphia Region



3 states
11 counties

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

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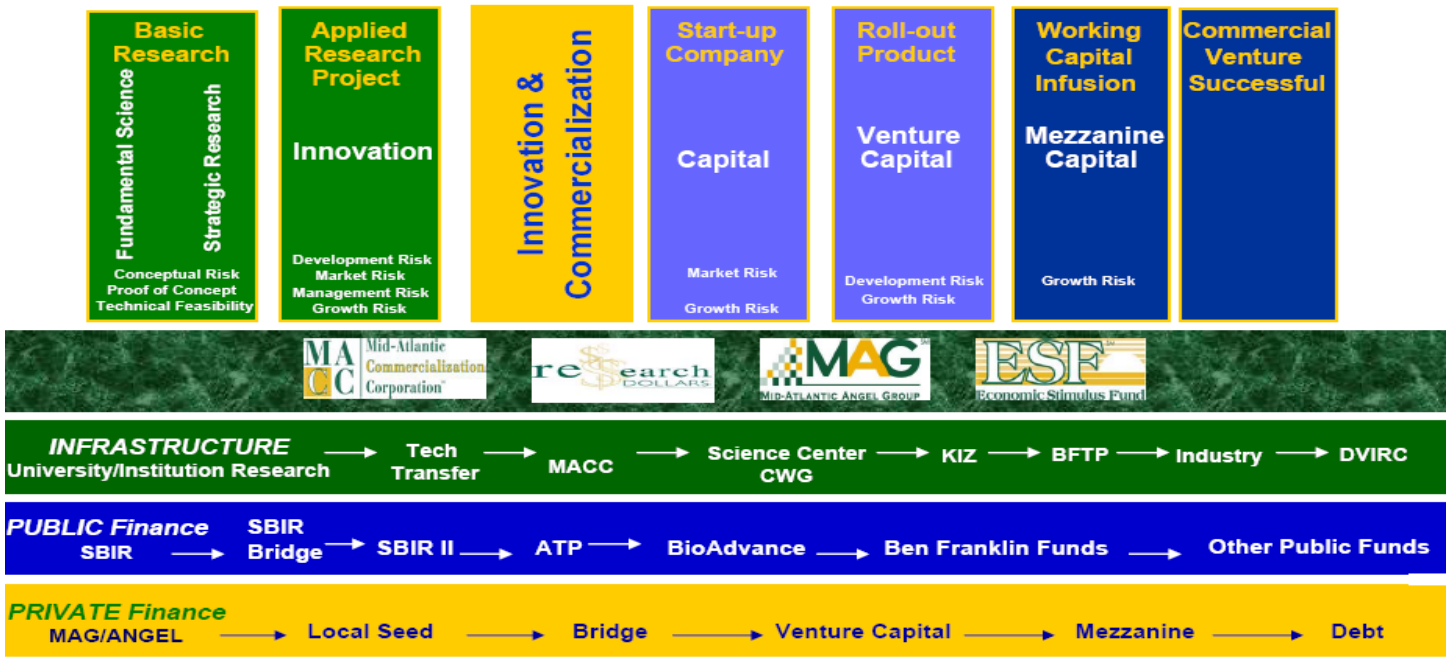
How Innovation Philadelphia Started

- 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



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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

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IP
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PHILADELPHIA
LOCAL INNOVATION...GLOBAL REALIZATION
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 forsee now."
>
> – Harry S. Truman

IP innovation PHILADELPHIA

SEAL OF THE CITY OF PHILADELPHIA

GREATER PHILADELPHIA CHAMBER OF COMMERCE
Get involved. Get results.

Executive Summary

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.

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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**

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Research Approach

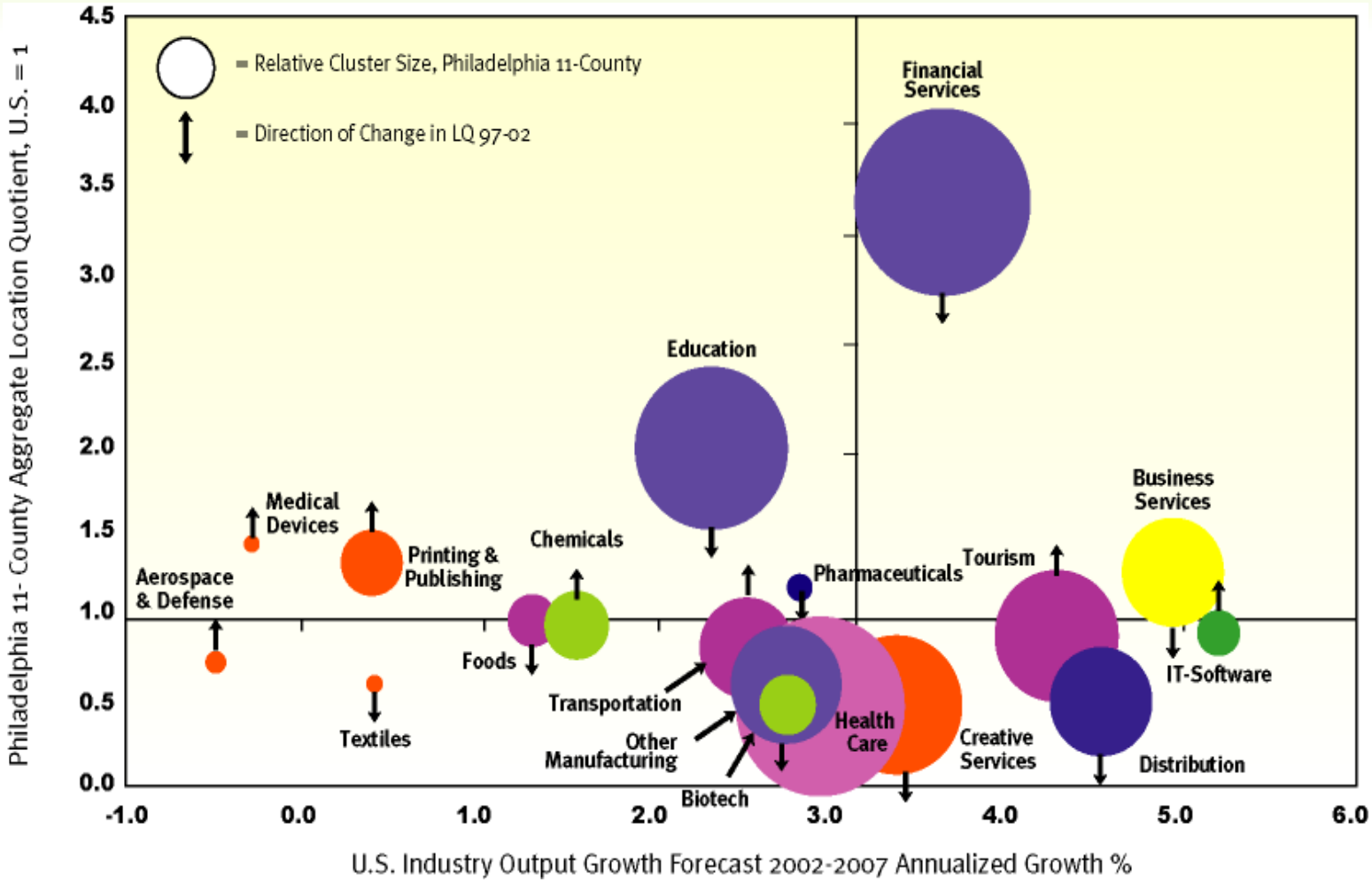
Qualitative

- 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

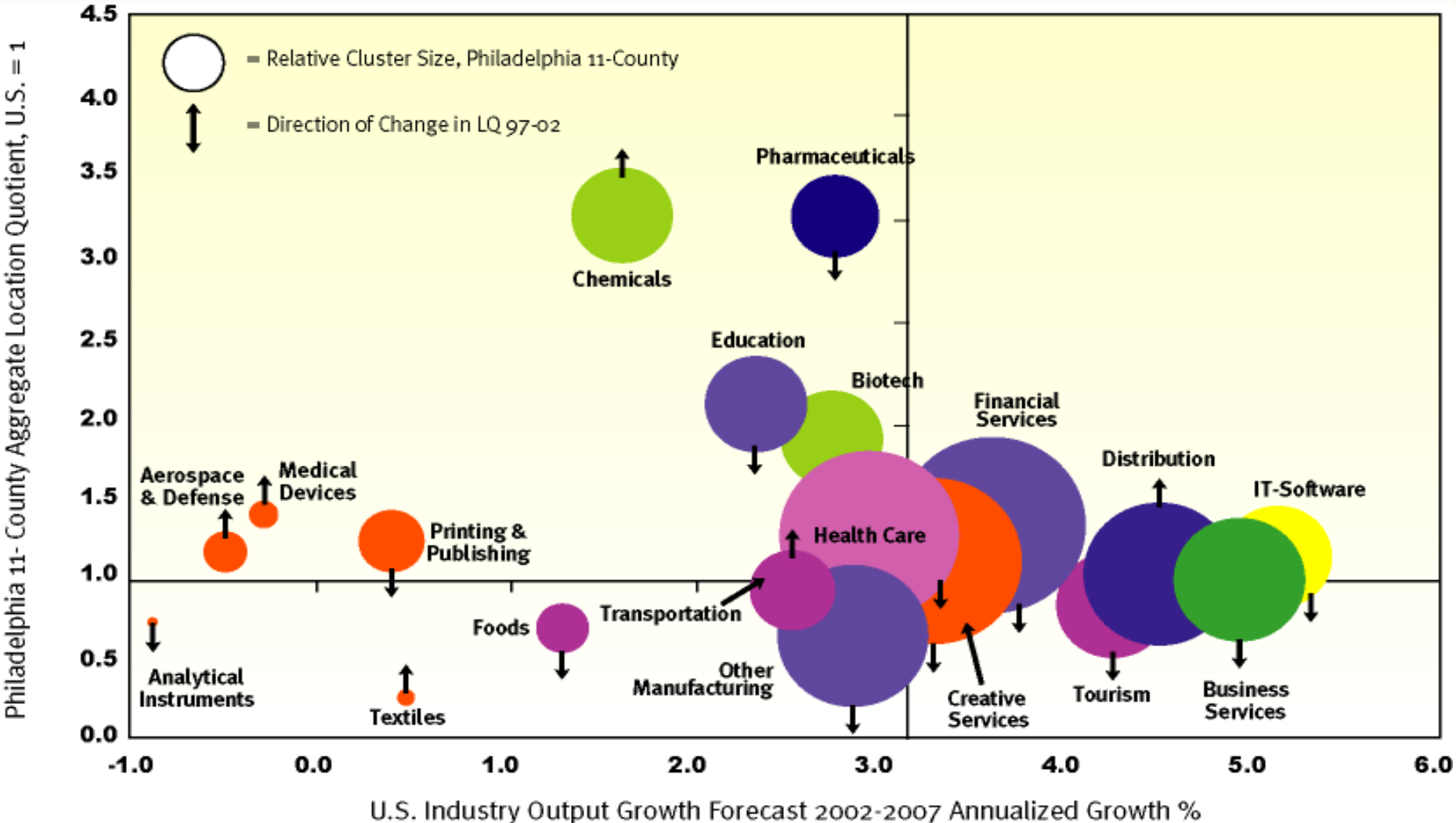
Quantitative

- 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



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

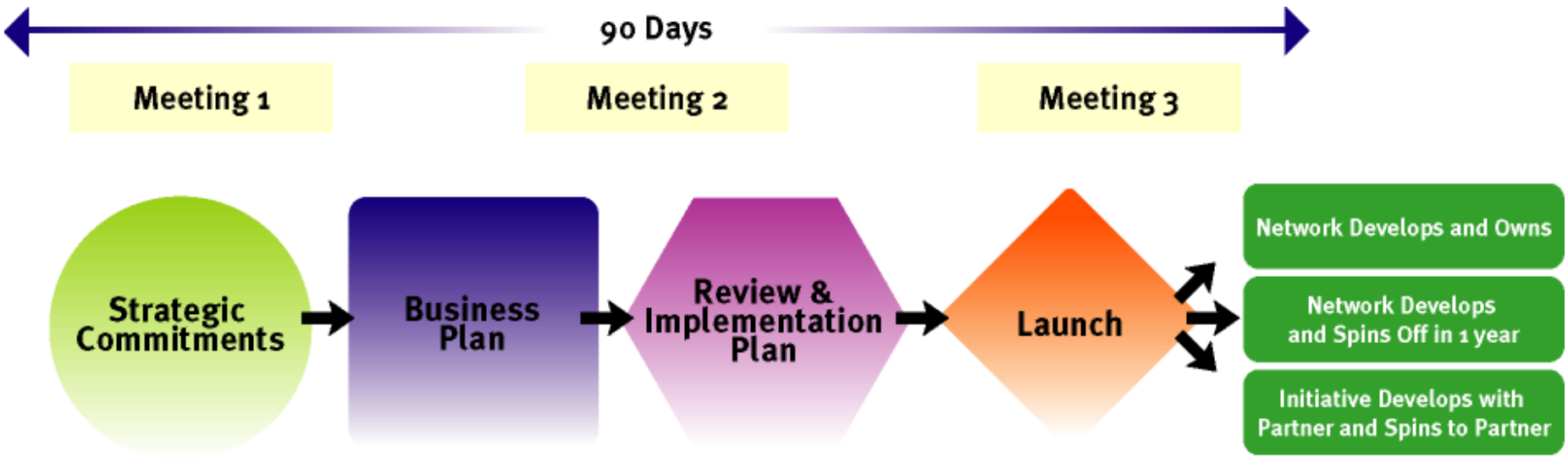
Evidence-Based Medicine	Business Process IT/Software	The Creative Community	Breakthrough Research on Cancer	Chemicals: Polymers, Coatings and Advanced Fibers	Propellers, Propulsion and Rotorcraft	Advanced Materials/ Nanotechnology

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

Next Steps / Hot Teams



Targets of Opportunity

THE TARGETS OF OPPORTUNITY

Business Process IT - Software

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

How	Coordination of a regional industry, academic, customer, and entrepreneurial-driven institute that ensures cutting edge research and development is linked to emerging forms of knowledge systems.
Why	Today, business process software effectively links all aspects of an organization, maximizes the value chain, and efficiently delivers products and services. In the future, research underway in our Region will ensure a corporate knowledge system that is delivered through wireless, voice recognition and other unique technologies.
Regional Assets	The Philadelphia Region is abundantly rich with companies like SAP, Siemens, Unisys and Lockheed Martin among others, to which Corporate America turns to solve complex information systems design and engineering problems or challenges.
Outcome	**Global Node** Greater Philadelphia is a leader in the field of large customized integrated corporate "knowledge systems." **Opportunity –** Gartner DataQuest predicts that this sector will continue to grow by leaps and bounds – worldwide spending on IT products and services is projected to be a $2.5 billion market by 2004.* In addition, the federal government's homeland security initiative has a $38 billion budget for 2003 that will include substantial spending on system integration software and applications.

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 researcher, the pharmaceutical and device producer, the medical institution, the doctor, and the patient with access to knowledge bases of protocols, best practices, genetic analysis, and drug delivery regimes.
Why	The U.S. is fast recognizing that life science will make possible more personalized health care in the future by taking a more comprehensive and integrated approach to linking prevention, diagnosis, response, and overall management of patients and illness.
Regional Assets	Greater Philadelphia is unique in being home to academic research, pharmaceutical and life science industries, health care providers and the Delaware Valley Healthcare Council, major employers, and health care-related insurance companies.
Outcome	**Global Hub** Greater Philadelphia is the world-wide "home" for the development of the 21st Century health care system. From public policy to physician practice, the Region establishes a fully-integrated life science solution that for the very first time reduces health care costs. **Opportunity –** In addition to the scientific and humanitarian progress that would be marked by creating better medicines, there is a tremendous potential economic incentive. A recent study conducted by the Milken Institute concluded that reducing deaths attributed to cancer and heart related issues could result in savings of approximately $95 trillion."

THE TARGETS OF OPPORTUNITY

Chemicals: Polymers, Coatings and Advanced Fibers

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

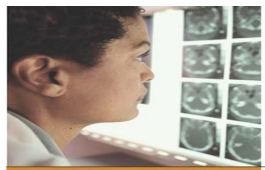
How	The 'old' chemical industry has found new applications: coatings for microelectronics and nanoelectronics, smart coatings, catalytics, fuel cell membranes and fibers for apparel. Rather than serving markets outside the Region, we must attract the next wave of electronics, consumer products, and industry alliances and manufacturing to the Greater Philadelphia Region.
Why	For example, the Philadelphia Region is the center where the microchip industry comes to solve the challenge of their new product – *how do we increase storage capacity on computer chips without them overheating and burning up?*
Regional Assets	Rohm & Haas, DuPont, W.L. Gore, Johnson Matthey, ATOFINA Chemicals, Chemical Heritage Foundation, FMC Corporation, Princeton Center for Photonics and Optoelectronic Materials (POEM), Sarnoff Corporation-Display Technology. All are located in the Greater Philadelphia Region.
Outcome	**Global Node** The global electronics and textile industries expand operations into Greater Philadelphia; research units and vendor supplier chains establish a physical, permanent presence in the Region. **Opportunity –** The market for chemical coatings and fibers is entering what could be an exponential expansion. The use of technology in extreme industrial and environmental conditions requires an unprecedented level of protection for these new technologies. With regionally-based companies such as DuPont and Sarnoff working together on developing organic light-emitting diode (OLED) display panels, the Region could become a major player in what is estimated to be a $3 billion market by 2007.

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 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/QVC, film industry, museums, Knowledge Industry Partnership, Graphic Arts Union, University of the Arts, Penn-Digital Design Research Lab, The Philadelphia Area New Media Association—all are located in the Greater Philadelphia Region.
Outcome	**Global Node** Denver greatly benefited from the first consolidation of the cable industry in the early 1980s. Greater Philadelphia has a similar chance through movies and film production and content development, along with the infusion of creative ideas into traditional services. **Opportunity –** The growing creative community coupled with technological developments in entertainment and communications could translate into significant economic benefits. PricewaterhouseCoopers has predicted that the Global Entertainment and Media Industry will reach $1.2 trillion by 2005. The Region has an opportunity to establish a leadership position in digital media science, technology and entrepreneurial services.



THE TARGETS OF OPPORTUNITY

Breakthrough Research on Cancer in the 21st Century

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

How	Create a 'regional' cancer strategy, which as a result, becomes a globally prominent approach and best practice for several near-term breakthrough discoveries. This leads to the attraction of the next generation of world-class researchers and investment.
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 Wistar Institute, Coriell Institute and a host of other resources including Wyeth and the larger biotechnology firms are all concentrated on ending cancer in our lifetimes.
Outcome	**Global Node** Greater Philadelphia receives world-wide recognition as a "Cancer Cure Region." **Opportunity –** Cancer not only is a heart-wrenching disease that invades so many lives, it is a huge drain on economic resources. In 2000, cancer caused more than 550,000 deaths in the United States and cost this country $156.7 billion. Last year, the estimated number of new cases of cancer was estimated to reach 1.3 million. Greater Philadelphia has the tangible and intangible assets necessary to help combat this deadly and costly disease, and emerge as a leader in this high-profile battle.

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, medical, or energy-environment sectors that differentiates the Greater Philadelphia Region for activities underway in California, Texas, New York and other competitors.
Why	The work of Ben Franklin Technology Partners and others in developing a regional strategy for nanotechnology affords us an opportunity to determine how we can best link these efforts with work being done on advanced materials by corporate and industry interests. We must acknowledge that Albany, New York, Texas, California, and Portland, Oregon are all highly organized, but significantly focused on converting their research into immediate market opportunities.
Regional Assets	Ben Franklin Technology Partners, Pennsylvania State University, Princeton University, University of Pennsylvania, Drexel University and Boeing represent the core of university/industry collaboration.
Outcome	**National Node** Recognition by *Small Times Magazine* as a national nanotechnology niche leader. **Opportunity –** This enabling technology has tremendous upside that is still being ascertained. Ultimately, nanotechnology will become an integral piece of the puzzle across a wide variety of industry sectors. The National Science Foundation (NSF) conservatively predicts a $1 trillion global market for nanotechnology in a little over a decade.

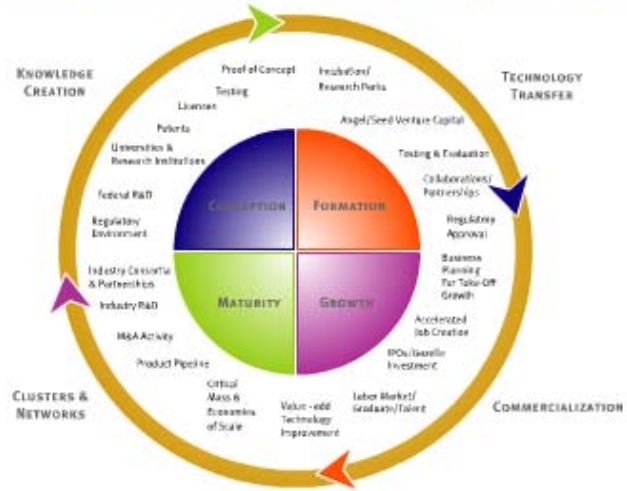
Critical Ingredients of Success:

- 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

Visit www.GreaterPhillyRoadMap.com

GREATER PHILADELPHIA 2010

Background | Road Map | Targets of Opportunity | Trust Teams | Hot Teams | Goals | Public Forum | News | Regional Partners



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 web site 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

The Targets of Opportunity: Churn Indicators

Five Prime Targets of Opportunity

"3 Active Clusters"

Transforming Biomedical Research	Chemical Industries	The Creative Economy	Nanotechnology	Business Process, Technology and Software

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

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The Philadelphia Experience - 2009

CLUSTER	ORGANIZATION	OUTCOMES
Transforming Biomedical Research	Select Greater Philadelphia www.selectgreaterphiladelphia.com University City Science Center www.sciencecenter.org Delaware Valley Innovation Network 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 Mid-Atlantic Nanotechnology Alliance (MANA) 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 AMERICA	Innovation Philadelphia (IP) Global Creative Economy Convergence Summit 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
An IP Investment Fund

ResearchDollar$ Fund

Innovation Partnership

MAG Mid-Atlantic Angel Group

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Commercialization

MAC Mid-Atlantic Commercialization Corporation™

Phoenix IP Ventures

World's Best Technology Network

Bio Advance
Biotechnology Greenhouse of Southeastern Pennsylvania

Ben Franklin Technology PArtners

IP innovation Philadelphia

Science Center

Global & Regional Workforce / Economic Development

KIP Knowledge Industry Partnership

career PHILLY
www.careerphilly.com

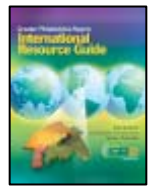
GP2 Greater Philadelphia Global Partners

Creative Economy

DVIN Delaware Valley Innovation Network

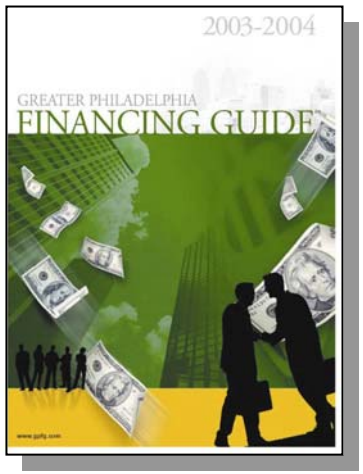
Branding, Research & Marketing

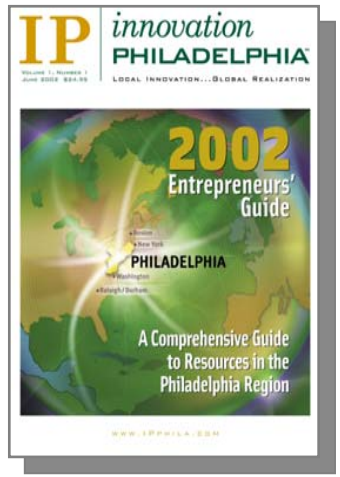





Entrepreneurial Resources





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World's Best Technology Network

Cumulative Funding Per Deal	Cumulative Funding Per Deal	Total Annual Deal Funding Available
Ben Franklin	Up to $750K	$3M
BioAdvance	Up to $1M	$5M
Science Center	Up to $500K	$3M
IP (ESF)	Up to $100K	$500K-1M
MAG	Up to $250K	Up to $1M
IPART & IP SBIR Program	Up to $750K	Up to $13M

- 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 **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

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ACCELERATING THE GROWTH OF THE ENTREPRENEURIAL INNOVATION ECONOMY IN AMERICA

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Hot Off the Presses

Center for American Progress — PROGRESSIVE IDEAS FOR A STRONG, JUST, AND FREE AMERICA

Creating a National Innovation Framework
4-22-09

THE WALL STREET JOURNAL

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

Forbes.com

More Signs of Capital Starvation
4-27-09

PEHUB

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

BioCentury
BECAUSE REAL INTELLIGENCE IS HARD TO FIND™

Into the Valley of Death
4-20-09

San Francisco Chronicle

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

ThomasNet® IndustrialNewsRoom

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

VC exPErts
Private Equity and Venture Capital Expertise

Buzz Article, 5-13-2009

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www.innovationamerica.us

The Funding Gap Deepens

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

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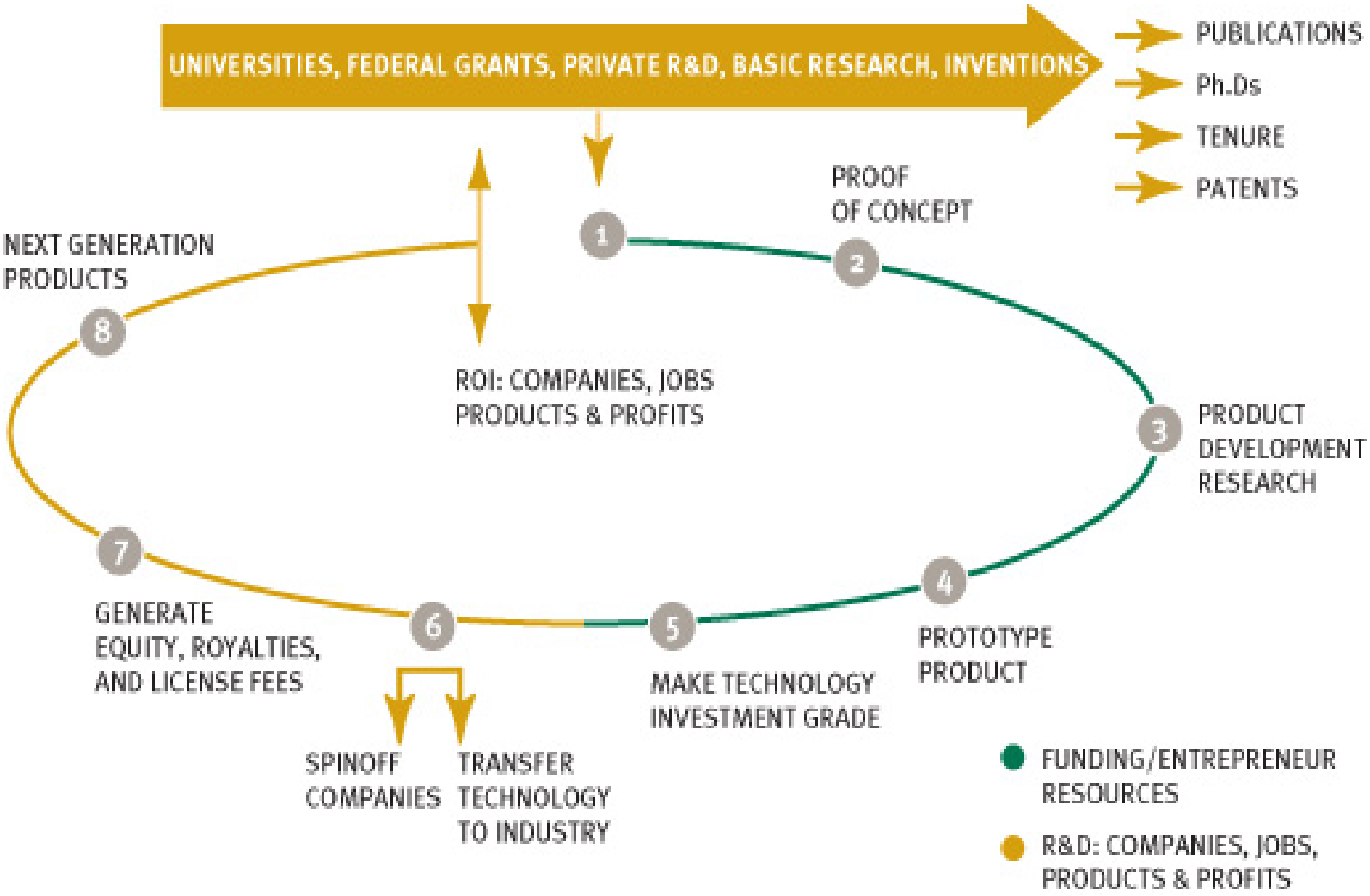
Commercialization Model



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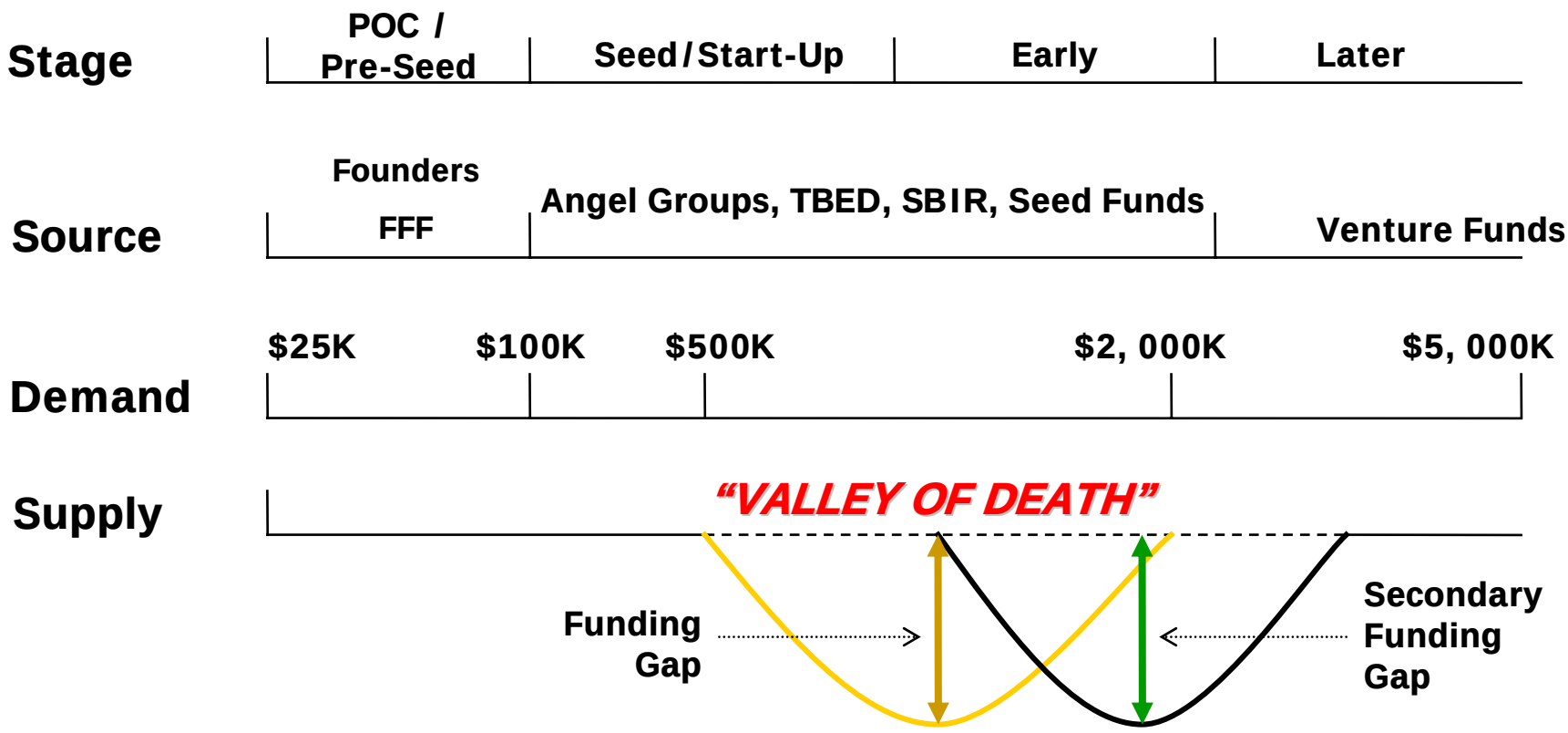
Innovation Capital Valley of Death

"VALLEY OF DEATH"



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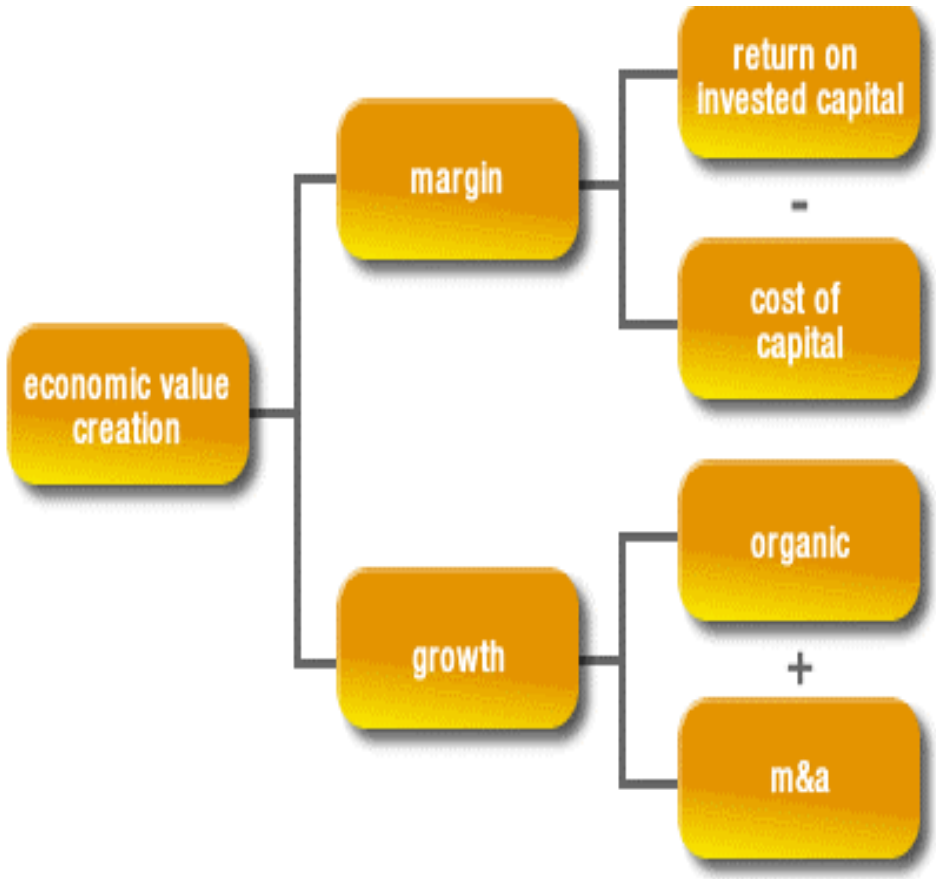
Innovation Paradigm Shift

PROOF OF CONCEPT

PROOF OF RELEVANCE



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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

NASVF® FOSTERING INNOVATION CAPITAL

Venture Funding

- **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.**
- **75 % of the money received by seed- and early-stage venture funds comes from private investors**
- **70% of the money needed to fill this early stage investment gap is less than a million dollars per company**
- **60% of early-stage funds aren't making any new investments**

Entrepreneurial Companies

- **75% of the companies investors are putting money into can't leverage that money into bank financing**
- **42% of the companies investors are putting money into have been stripped of their lines of credit**

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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 (NBIA)*	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

Coordination

NPPPI
501©3
Not For Profit (Innovation America)

establishes criteria, metrics & best practices

Advisory

National Innovation Advisor
Federal Innovation Partnership

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, NISF, TIP, SBIR

- Investment
- Commercialization
- Technical Assistance, Education, & Mentoring
- Technology, Economic & Workforce Development
- Networking, Strategic Planning, Marketing & Branding

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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

ASME
SETTING THE STANDARD

NASVF®
FOSTERING INNOVATION CAPITAL

ACA
ANGEL CAPITAL ASSOCIATION
THE PROFESSIONAL ALLIANCE OF ANGEL GROUPS

SSTI
Strategy for Science, Technology and Innovation

NBIA
National Business Incubation Association

ASSOCIATION OF UNIVERSITY RESEARCH PARKS
Creating Communities of Innovation

AUTM®
The Association of University Technology Managers

Community Development Venture Capital Alliance

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