

### Iowa Innovation Council "Laying the Foundation"

January 25, 2010

**Richard A. Bendis** 



**President and CEO - Innovation America** 



#### **Iowan John Wayne Call To Action**



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*"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."



#### **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





#### **Innovation Economy**

# **KNOWLEDGE GLOBAL**

**INNOVATION** 

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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





#### **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

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- 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 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





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#### **Traditional ED vs. Innovation-Based ED**

#### Traditional ED

 Competitive Basis Natural resources Highways / Rail Proximity Costs

i.e. PHYSICAL

#### **Innovation-based ED**

- Specialized talent Networks, information University research / professors Market understanding
  - i.e. KNOWLEDGE

 Key values / offerings

- Business parks Incentives
- Lead Organization

Chambers / EDCs

Access to research Workforce competencies Lifestyle



**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.









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#### **Innovation Road Map For Iowa**



#### **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

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#### **Strengthening The Entrepreneurial Support Structure**

Battelle 2006 Iowa Entrepreneurship Recommendations

"Scale up level of support for lowa's entrepreneurship support programs based on performance"



GROWING IOWA'S ENTREPRENEURIAL ECONOMY:

STRENGTHENING THE ENTREPRENEURIAL SUPPORT INFRASTRUCTURE

Prepared For: Iowa Department of Economic Development

Prepared by: Battelle's Technology Partnership Practice

June 2006

**Battelle** The Business of Innovation





#### **Battelle 2006 Iowa Entrepreneurship Recommendations**

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.
- 2. Access to management talent.
- 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
  - lowa Demonstration Fund
  - Community Based Seed Funds (RAINSource Capital Template)
  - www.lowaentrepreneur.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



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#### **Implementing a New Iowa Innovation Paradigm**







## **Third Frontier**

**Innovation Creating Opportunity** 





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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







- \$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



Partners in Bioscience Growth



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.











## Ohio

Third Frontier

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



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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.

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#### **Innovative Entrepreneurial Support Initiatives**







Helping great people with great ideas build great companies.

- 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)





#### **1991 Recession:**

#### **Small Business Drives Job Creation**

*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%* 

Total USA Cumulative Net New Job Creation 1991 to 1994 (In The Three Years After The 1990-1991 Recession)



#### 2001 Recession:

#### **Small Business Drives Job Creation**

 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)



#### **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**

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#### **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 (LEGI) The City of Longmont will launch the Longmont Economic Gardening Initiative (LEGI) 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©

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### **Innovation Intermediary Commercialization Structure**

Investigation	Technical	Market	Business				
Proof of Concept	Technology ConceptMarket NeedsAnalysisAssessment		Venture Assessment				
Development Phase							
Feasibility	Technology Feasibility	Market Study	Economic Feasibility				
Planning	Engineering Prototype	Strategic Marketing	Strategic Business Plan				
Introduction	Pre-Production Prototype	Market Validation	Business Start-Up				
Commercial Phase							
Full Scale Production	Production	Sales and Distribution	Business Growth				
Maturity	Production Support	Market Diversification	Business Maturity				

### **Innovation Paradigm Shift**

### PROOF OF CONCEPT (Technological Feasibility) "It Works!"

#### PROOF OF RELEVANCE (Market Pull) "I'll Buy It!"



# **The Business Plan Funnel**





## **IP Commercialization Model**



### **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

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## **Innovation Capital Valley of Death**

### **"VALLEY OF DEATH"**



### **REDUCED ANGEL ACTIVITY**

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### 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) <u>http://www.ktec.com/</u>
- ☆ Innovation Philadelphia (IP, 2001)
   <u>http://www.innovationphiladelphia.com/</u>
- Oklahoma Center For The Advancement Of Science And Technology (OCAST, 1987) <u>http://www.ocast.state.ok.us/</u>
- ☆ UCSD Connect (1985)
   http://www.connect.org
- ☆ First State Innovation (2007)
   www.firststateinnovation.org

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# **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





## **Change Is Inevitable**

"It is not the strongest of species that survive, nor the most intelligent, but the ones most responsive to change." –Charles Darwin



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**Technology Investment** 



### **Pennsylvania's Industry Clusters**





# **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



### Technology Investment

#### Formation Growth Maturity Reinvention Concept The idea for the The company begins The company grows The company has an The company takes action company is to establish itself and with increased pace established customer to seek new market hatched its product, hiring base and flattening opportunities employees and growth winning customers Revenue & Employees

> ready > set

> succeed

## Technology Investment

Technology-based Economic Development Tools Along the Continuum > ready >

> ready > set > succeed

	Concept	Formation	Growth	Maturity	Reinvention
	Ben Franklin Technology P	artners			. /
	BFTDA Technology Grants				:
			BFTDA/TSIB Venture Progra	ams	
	BFTDA University Program				
	Center for eBusiness and A	dvanced IT			
	CURE Program	:			
loyees	Idea Foundry				:
			Industrial Resource Centers		•
Em			Innovation Partnership		
Revenue & I	Keystone Innovation Zones	s / Innovation Grants			
	Life Sciences Greenhouse	Initiative			
	:	New PA Venture Guarantee	Program		:
	:	New PA Venture Investment	Program		:
	PA Initiative for Nanotechn	nology .			•
		PA Technical Assistance Pro	gram .		
		Pennsylvania Angel Network	(		
		R&D and KIZ Tax Credits			
	Technology Collaborative				:
	Pre-seed .	Seed	Series A	Series B/C	Mezzanine

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# **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 <u>www.benfranklin.org</u>





### **KTEC**

### **Kansas Technology Enterprise Corporation**



www.ktec.com

KTEC Mission:

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





- 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



### 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	<b>Opportunity Indicators</b>	Capacity Indicators				
Economic Context	<ul> <li>Growth in US Exports</li> <li>US Sectoral Growth Projections</li> </ul>	<ul> <li>Level of Kansas exports, sectors related to critical technology areas</li> <li>Kansas employment in sectors</li> <li>Kansas' shares of the nation's firms in sectors related to critical technologies</li> </ul>				
Federal Programs	<ul> <li>Advanced Technology Program Awards</li> <li>SBIR program awards</li> </ul>	• SBIR program awards to Kansas firms by technology area				
State Programs		<ul> <li>Presence of Centers of Excellence in critical technology areas</li> <li>State ARMF program awards by technology area</li> </ul>				
Research Universities	<ul> <li>University/Industry Research Centers         <ul> <li>Patent awards to US Universities</li> <li>Growth in R&amp;D Specific Technologies at US Universities</li> </ul> </li> </ul>	<ul> <li>Research Awards by technology area</li> <li>Growth rates for research by critical technology area</li> <li>Departmental research</li> </ul>				
Industry	<ul> <li>Research &amp; Development, specific technologies, at US firms</li> <li>Level of spending on R&amp;D, specific technologies</li> <li>Venture Capital investments in sectors related top critical technologies</li> <li>Number of patents to US inventors, by technology area</li> </ul>	<ul> <li>Venture capital investments in Kansas</li> <li>Number of patents to Kansas inventors, by technology area</li> </ul>				

# **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.

 $/ \Delta$ 

#### **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

<u>∧</u> innovation





# **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.





### **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**

Investments

For Inventors, Entrepreneurs and

#### 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)

• Epsepevation

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 •Ouest 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)

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# **ICC's Expand the Life Cycle**

Investment Grade Technologies Development

Risk

Applied Research Project

#### Innovation

- •Development Risk
- •Market Risk
- •Management Risk
- •Growth Risk

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



General Incubator Services

> Quality Investments

Start-up Company •*Market Risk* 

Seed Capital

- •Market Risk
- •Management Risk
- •Growth Risk

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# **2008 State New Economy Index**

 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 <u>www.comehometokansas.com</u> to address issue
- Site shows thousands current technology job openings, plus strong cluster of recognizable companies in Kansas

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 Software crawls internet to match people with career opportunities



Greg had the vision to see the vast possibilities to be harvested in the biopharmaceutical industry. So he cultivated his idea, rediscovered his roots and transplanted his dream to Kansas. He's just one of a lot of smart natives who are following their heads back to the heartland.




### **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.





#### **The Kansas Cluster Experience - 2009**

CLUSTER	ORGANIZATION	OUTCOMES
Human BioSciences	Kansas BioScience Authority (KBA) www.kansasbioauthority.org	<ul> <li>\$581m Fund</li> <li>Build world-class research capacity, growth of bioscience startups, expansion of the state's bioscience clusters and facilitate industrial expansion and attraction.</li> </ul>
Value-added Agriculture and Ag Bio	National Agricultural Biosecurity Center (NABC) http://nabc.ksu.edu/content	<ul> <li>\$500m Research Center</li> <li>Focused on protecting America's agricultural infrastructure and economy from endemic and emerging biological threats.</li> </ul>
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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## 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







## **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)



## 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**



MERIC

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 threelegged stool:
  - Attraction
  - Retention

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- 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!"



*life* | changing<sup>\*</sup>

#### **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

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PHILADELPHIA

LOCAL INNOVATION...GLOBAL REALIZATION

is our glass half empty or half full?

TP



#### **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





## 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

innovation



#### 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



Philadelphia Region: 11-County Aggregate; Cluster Analysis by Output



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

GREATER PHILADELPHIA

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



#### **Road Map Implementation**



#### **Next Steps / Hot Teams**



#### **Targets of Opportunity**



How

WHY

REGIONAL

OUTCOME

ASSETS

#### THE TARGETS OF OPPORTUNITY

#### **Business Process IT - Software**

Greater Philadelphia is a leader in the field of large customized integrated corporate "knowledge systems."

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 wrieless, voice recognition and other unique technologie

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 engineerin problems or challenges.

**Opportunity** — Garner DataGuest predicts that this sector will continue to grow by leaps and bounds — worldwide spending on IT products and services is projected to be a  $3 \le p$ . Billion market by  $2 \cos q$ . In addition, the federal government's homeland security initiative has a 5 gB billion budget for  $2 \cos q$  that will include substantial spending on system integration software and applications.

Business Process IT - Software	
Relates to the design, development, implementation, and operation of critical information systems and knowledge-delivery	
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.	How

R

А

C

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
ow	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.
нч	From music to museums and from graphics art to digital media, our Region has abundant assets.
EGIONAL SSETS	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.
UTCOME	Global Node Denser 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 Opportunity – The growing creative community coupled with technological developments in entertainment and

communications could translate into significant economic benefits. PricewaterhouseCoopers has predicted 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 T	POETS	OPTUNITY	, ·

**Global Node** 

#### **Evidence-Based Medicine**

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

Contraction of the local division of the loc	
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 liness.
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.
Оитсоме	<b>Global Hub</b> Greater Philadelphia is the world-wide "home" for the development of the 2n" Century health care Greater Philadelphic policy to physician practice, the Region establishes a fully-integrated life science solution that for the very first time reduces health care costs. <b>Opportunity</b> – 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 ptillion.*



#### THE TARGETS OF OPPORTUNITY

#### **Breakthrough Research on Cancer** in the 21<sup>st</sup> 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.
Wнү	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.
Ουτςομε	Global Node Greater Philadelphin receives world-wide recognition as a "Cancer Cure Region." Greater Philadelphin receives world-wide recognition on the second seco



#### THE TARGETS OF OPPORTUNITY

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

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

low	The 'old' chemical industry has found new applications: coatings for microelectronics and naneelectronics, smart coatings, catalytics, fuel cell membranes and fibers for apparer. Bather 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.
Инү	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?
EGIONAL SSETS	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.
θυτςομε	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 second secon



REG

#### THE TARGETS OF OPPORTUNITY

Ce/	Advanced Materials/Nanotechnology
Air 6	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
	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.
	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 Albary, New York, research into immediate market opportunities.
ONAL TS	Ben Franklin Technology Partners, Pennsylvania State University, Princeton University, University of Pennsylvania, Drexel University and Boeing represent the core of university/industry collaboration.
OME	National Node Recognition by <i>Small Times Magazine</i> as a national nanotechnology niche leader. <b>Opportunity</b> – 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

## **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

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	<ul> <li>Greater Philadelphia's #1 industry</li> <li>Science Center QED Proof of Concept Fund</li> <li>\$5m WIRED (DOL) grant - 14 county tri-state regional initiative to transform the way in which the region develops its life science talent.</li> </ul>
Nanotechnology	Ben Franklin Technology Partners of Southeast PA <u>www.sep.benfranklin.org</u> Mid-Atlantic Nanotechnology Alliance (MANA) <u>www.midatlanticnano.org</u>	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 <i>innovation</i>	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, VA businesses and talent <i>life</i>   changing*

## **IP Core Products / Services**



## World's Best Technology Network



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AMERICA





Fund TN



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
ци	T C Delaware	tion

- Regional Branding & Marketing
- Common Investment Review Process



VENTURE FUND



#### 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



#### KNOWLEDGE INDUSTRY PARTNERSHIP & CAREER PHILLY

KAP Knowledge Industry Partnership

ATTRACT GPTMC, Campus Visit/ Philadelphia



onebigcampus

www.careerphilly.com

ENGAGE Campus Philly, City of Philadelphia

RETAIN IP innovation PHILADELPHIA<sup>SE</sup>

#### CareerPhilly

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- 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

∧ innovation





## 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"





## First State

Delaware's Pro's and Con's

#### **Regional Assessment**

INNOVATION

#### <u>Pros</u>

- Patents per worker 3 <sup>1</sup>/<sub>2</sub> 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

innovation

#### <u>Cons</u>

- Middle of pack for venture capital funding but far behind leaders (26<sup>th</sup> in the nation)
- Relatively few jobs in high growth firms (46<sup>th</sup> in Gazelle jobs)
- 50<sup>th</sup> 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 : <u>www.firststateinnovation.org</u>







2009/2010 GOALS?

- 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...



Building the Broadband Economy

- 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**



*life* | changing®

## **Smart 21 Communities of 2010**



#### The Road from Basic Research to Commercialization



#### The Road from Basic Research to Commercialization



All of the puzzle pieces must come together early in order for the project to have any hope innovation AMERICA of commercial success



# 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!





### innovationDAILY



I have got to be honest. I didn't have any idea of what an "innovation economy" had to do with me until yesterday. True, I don't cover business issues normally, sticking to what I know best, which is politics, with the primary focus of foreign policy. But when I was offered the opportunity to attend the Innovation Economy Conference held in Washington, D.C. yesterday, I jumped at the chance. (I tweeted the conference as well.) Because if ever there was a time we need some out of the box thinking on our economy this is it. The event, hosted by The Aspen Institute, Intel, Democracy (a journal of ideas), and The News Hour with Jim Lehrer, I went to check out, expecting to stay for a couple of hours, but ended up staying all day. I by no means caught every speech or break-out session, but what I did witness proved one thing to me. If the U.S. doesn't get moving we're going to be in even more serious trouble.

#### *innovation* AMERICA

economy in America. innovationDAILY is a service of Innovation America and Richard

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