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The Future of Innovation-Based Economic Development

“Making It Work In Iowa”



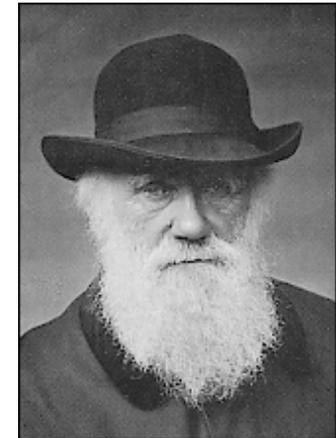
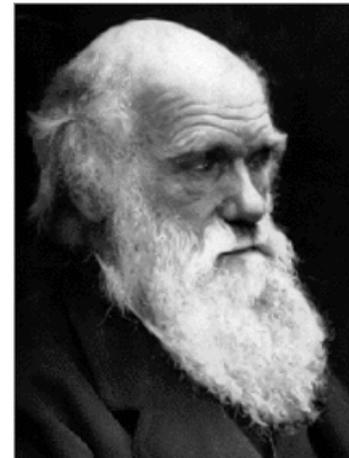
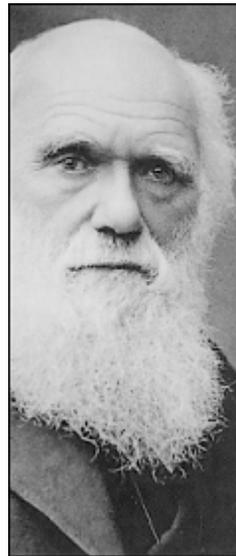
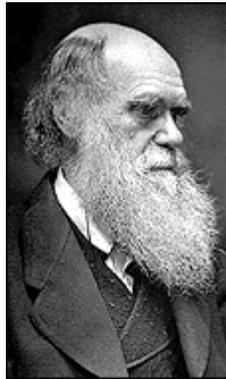
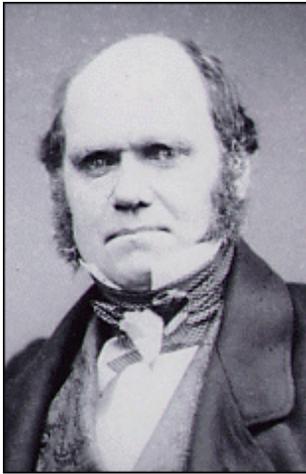
September 1, 2009
Kirkwood Center for Continuing Education
Cedar Rapids, Iowa
Richard A. Bendis
President and CEO - Innovation America



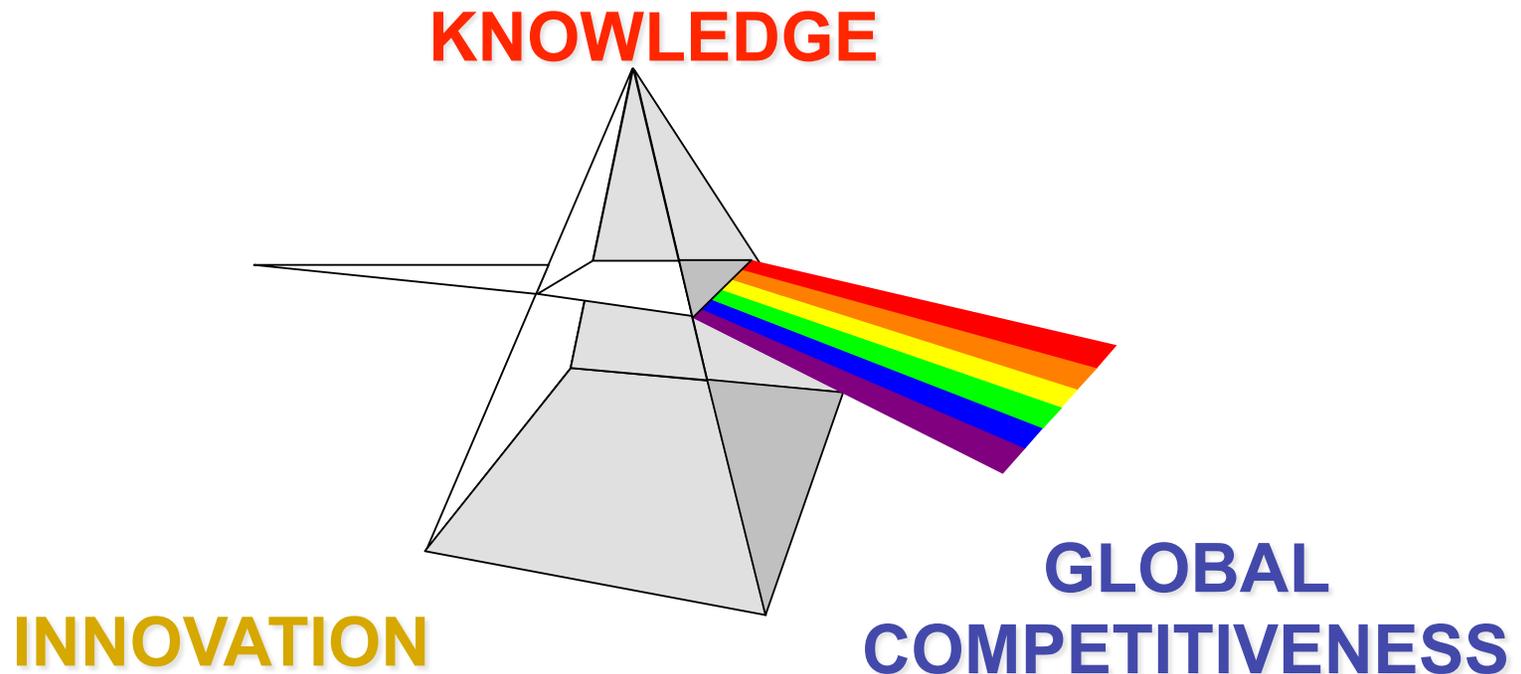
Change Is Inevitable

“ It is not the strongest of species that survive, nor the most intelligent, but the ones most responsive to change.”

-Charles Darwin



Innovation Economy



“If a man empties his purse into his head, no man can take it away from him. An investment in knowledge always pays the best interest.”

--Ben Franklin

Knowledge Economy: Definitions & Terminology

- Knowledge is the confident understanding of a subject, potentially with the ability to use it for a specific purpose
- Knowledge economy is based on creating, evaluating, and trading knowledge
- Innovation is the creation and transformation of knowledge into new products, processes, and services that meet market need

Goals of Innovation-Based Economic Development

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

- Address economic transition
- Capture the benefit of investments in research and development, higher education
- Build entrepreneurial cultures
- Help existing industries modernize
- Diversify economy
- 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

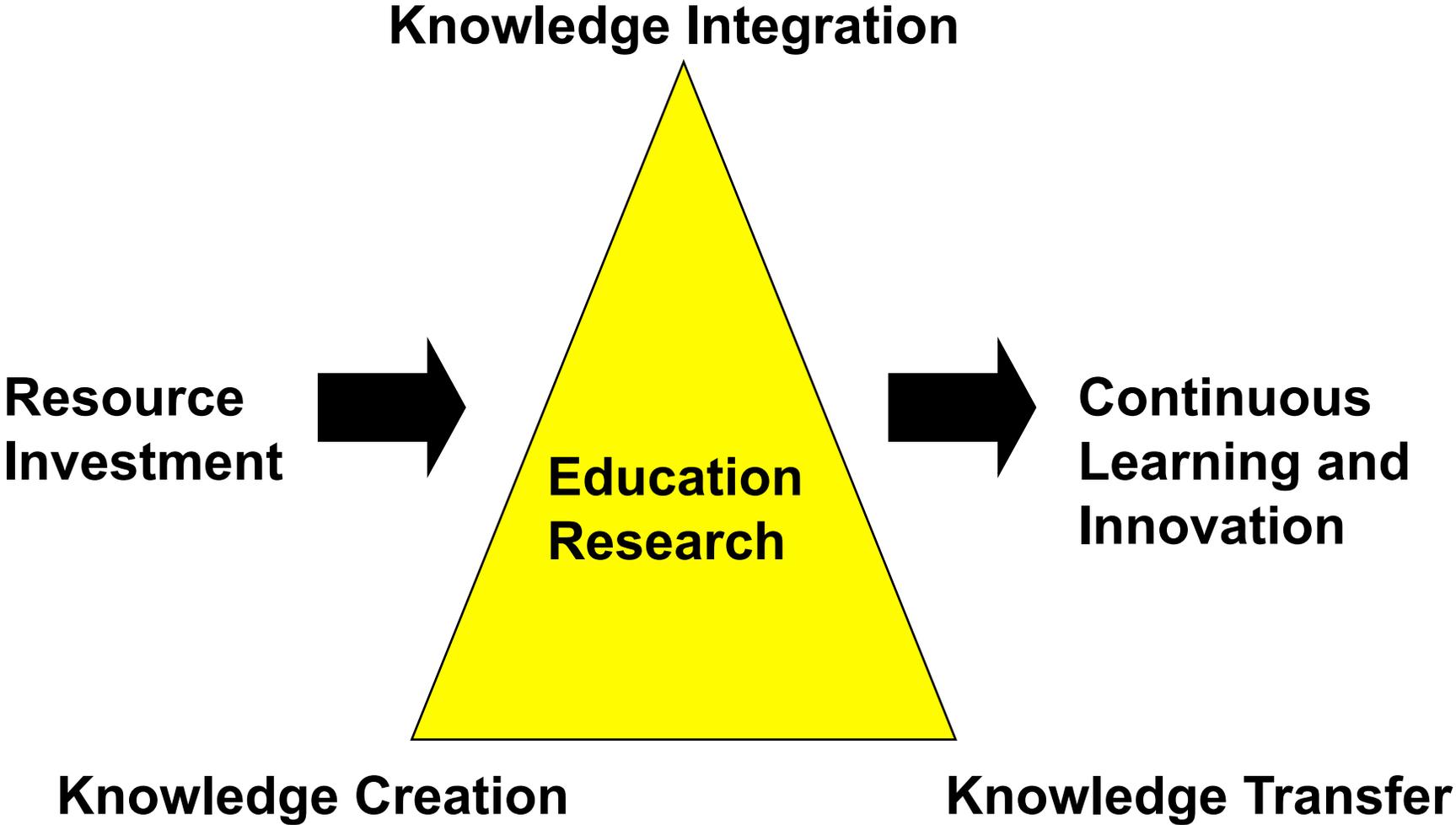
- Long term vision and planning
- Identify gaps and trends in science and technology environment
- Be a catalyst through strategic investments and partnering
- Develop a balanced and flexible research and development investment portfolio
- Encourage private sector innovation
- Establish performance-based research and development

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



The Role of Academia



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

Innovation Capital

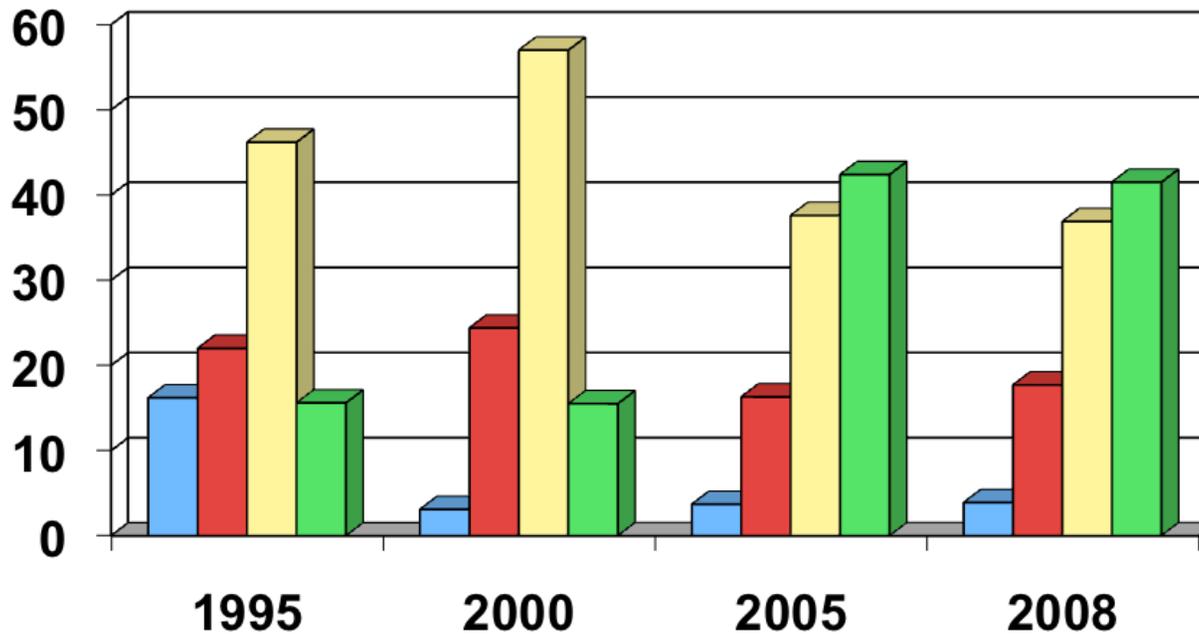
- Invested before commercial success
- \$500,000 - \$2,000,000
- Vital to new innovative companies
- Scarce for new entrepreneurs
- Shrinking in the U.S.
- Focused on key “commercial” sectors
- Very high risk
- Generates 60 to 80% of net new jobs annually
- Employs 30% of high-tech workers
 - scientists, engineers, and computer workers
- Produces 13 to 14 times more patents per employee than large firms



Innovation Capital Lifecycle



Venture Capital Investment
By Stage
(PERCENTAGE OF TOTAL VC INVESTMENT)



■ Start-up/Seed ■ Early Stage ■ Expansion ■ Later Stage

“The Perfect Storm”

Reduced Angel Activity

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

Venture Funding Moving Downstream

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

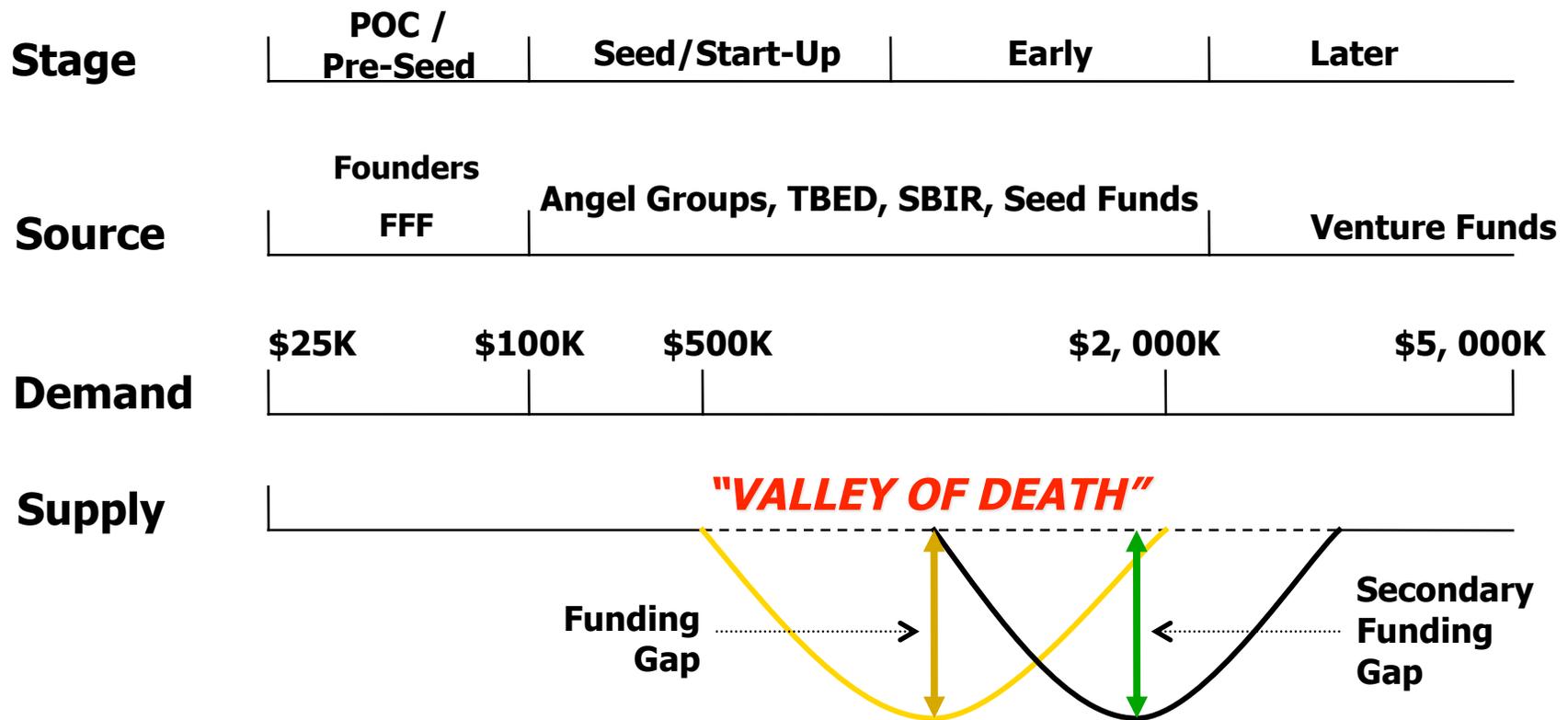
State TBED Budgets Decreasing

- 44 states have budget deficits



Innovation Capital Valley of Death

“VALLEY OF DEATH”

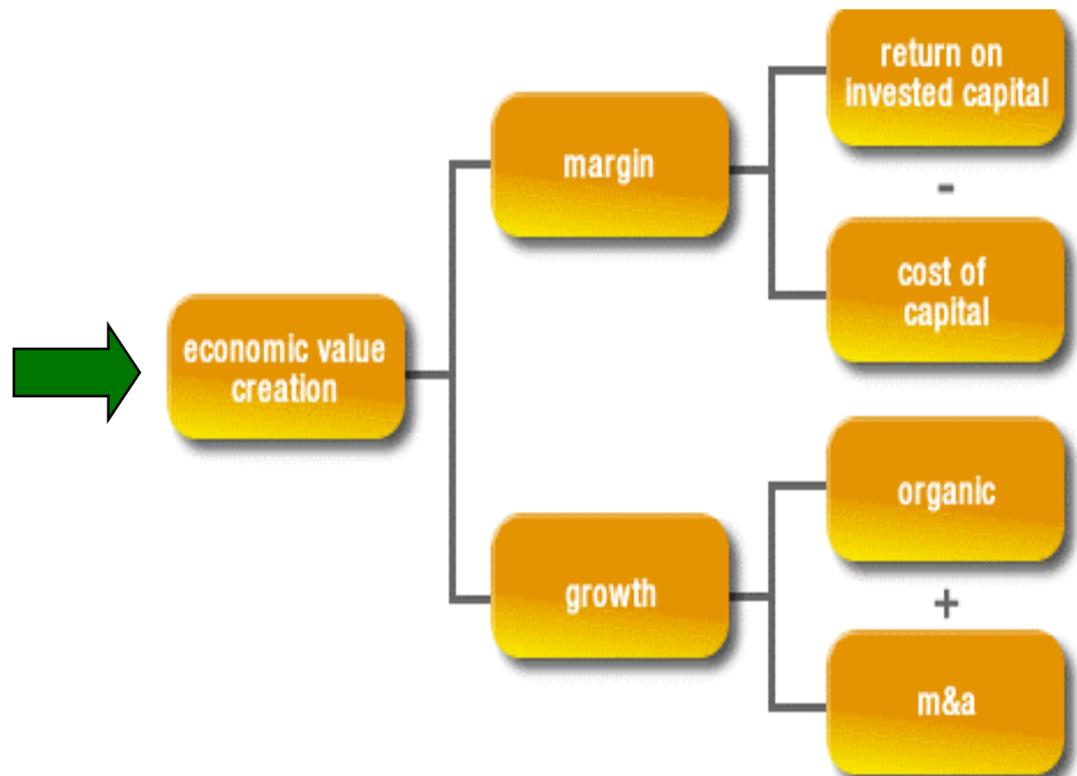


Innovation Paradigm Shift

PROOF OF CONCEPT (Technological Feasibility)



PROOF OF RELEVANCE (Market Pull)



The Funding “Secret”

- Its not just about
 - ***TECHNOLOGY!***
- Its about
 - ***RELEVANCE***
 - ***REVENUE***
 - ***SCALABILITY***
 - ***CASH FLOW***
 - ***COMPETITIVE ADVANTAGE***



**TOP
SECRET**

Role of Seed Capital Today

- Raising Funds is Getting Harder
- Fewer \$ Available
- Job Creation is Important
- Innovation Intermediaries are critical
- Seed funding really does.....

“MAKE A DIFFERENCE!”

Jobs! Jobs! Jobs!

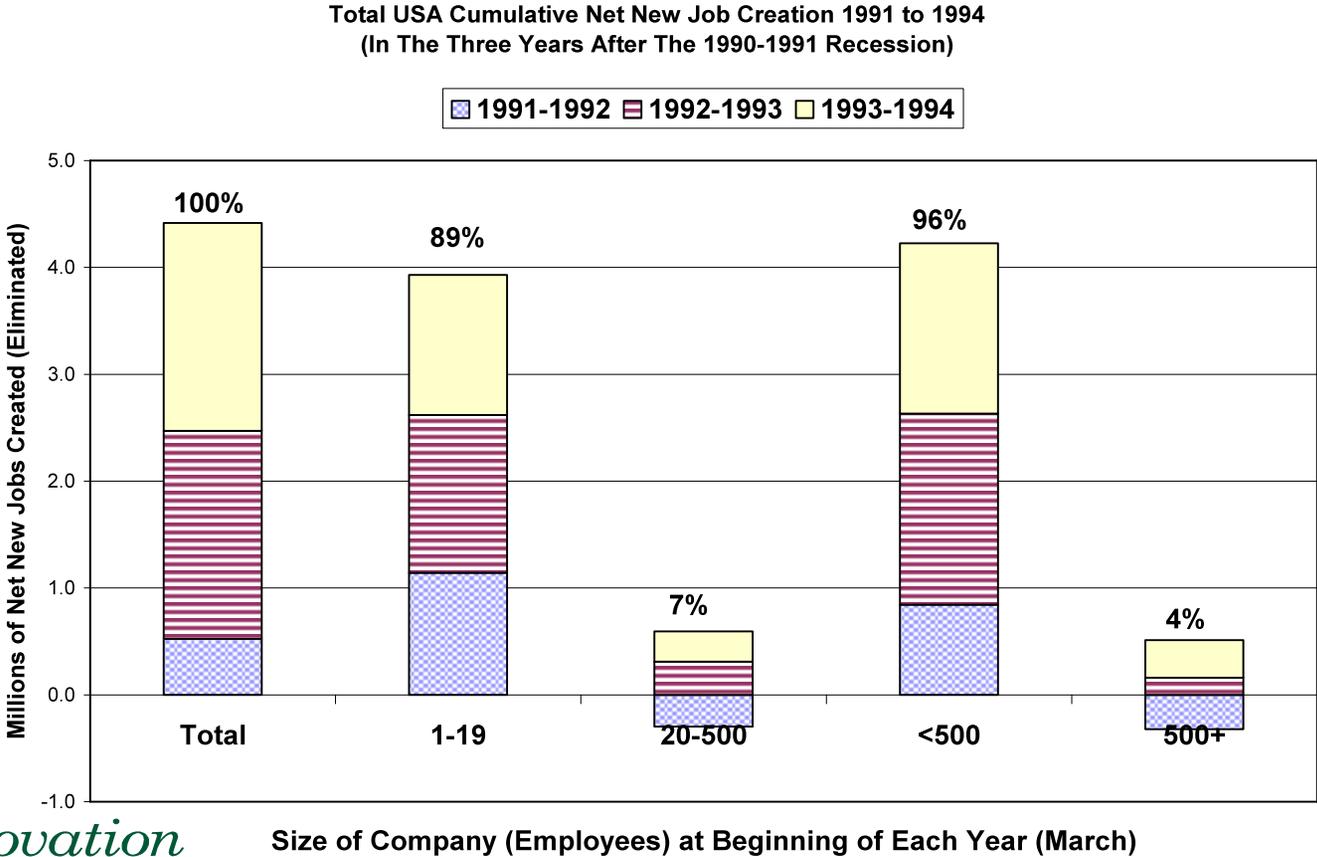
**Does Seed Investing
REALLY
Create Jobs?**



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%

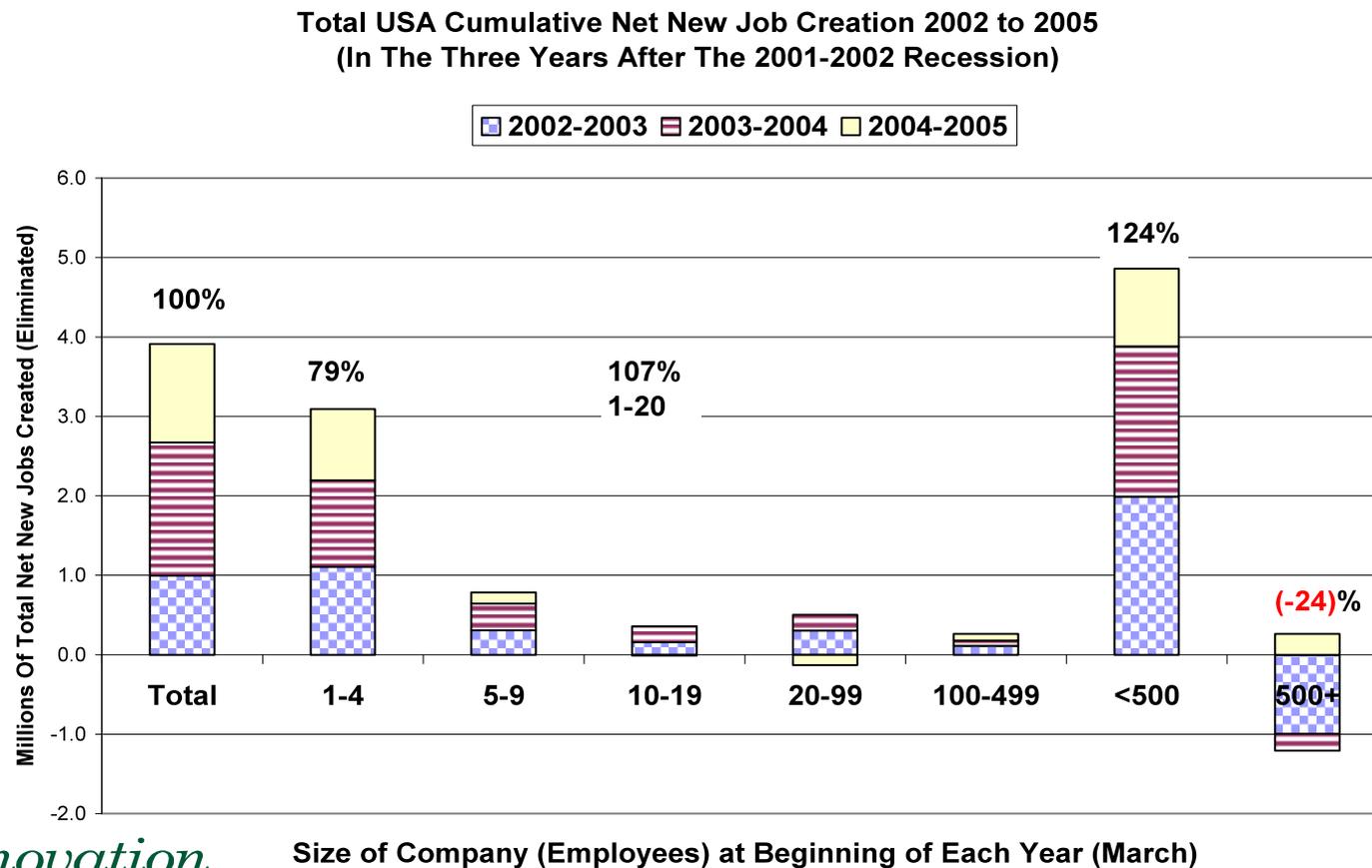


Source: Small Business Administration

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%



Traditional ED vs. Innovation-Based ED

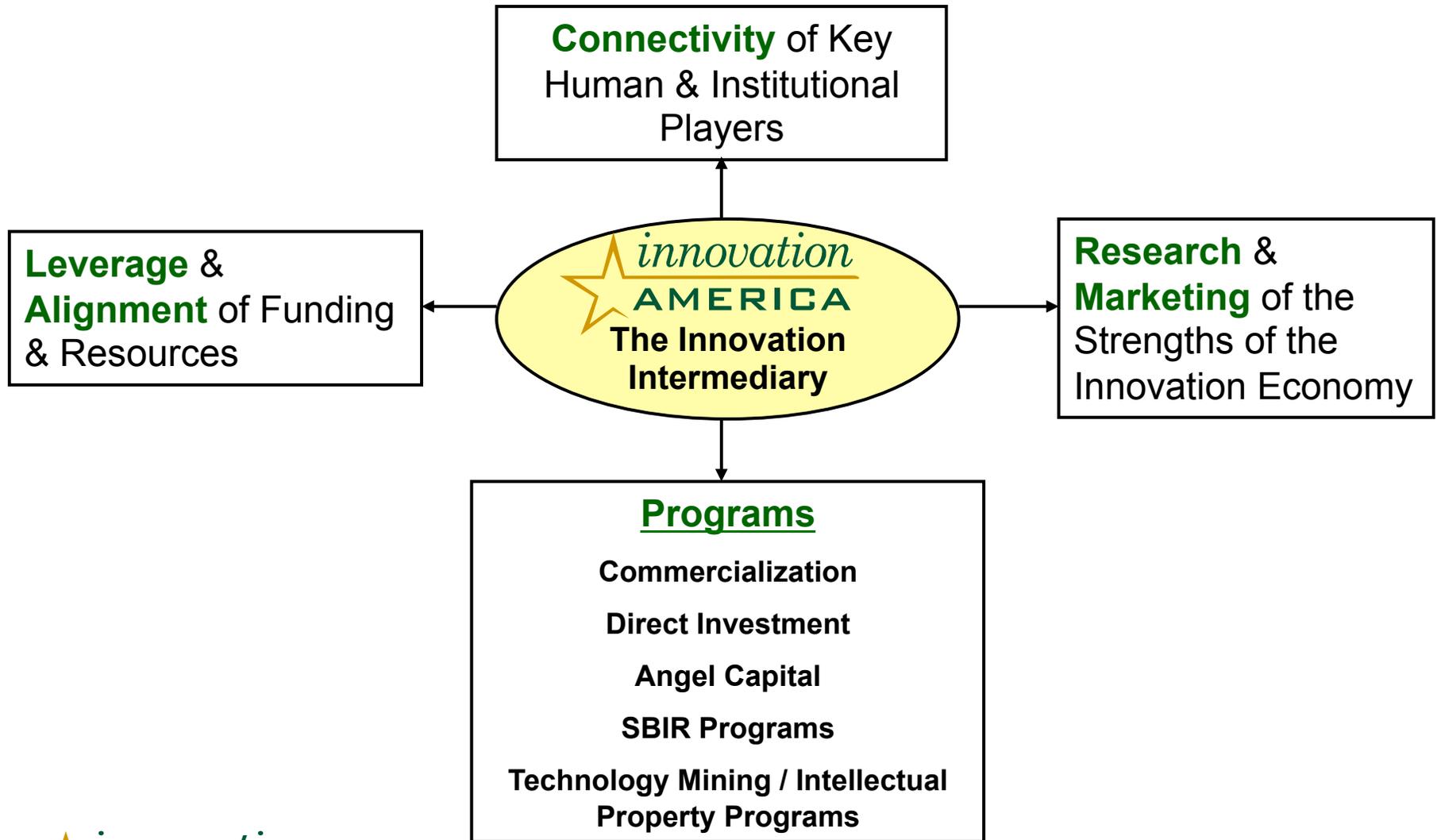
	<u>Traditional ED</u>		<u>Innovation-based ED</u>
• Competitive Basis	Natural resources Highways / Rail Proximity Costs	➔	Specialized talent Networks, information University research / professors Market understanding
	i.e. PHYSICAL		i.e. KNOWLEDGE
• Key values / offerings	Business parks Incentives	➔	Access to research Workforce competencies Lifestyle
• Lead Organization	Chambers / EDCs	➔	Innovation intermediaries, Economic developers

What is an Innovation Intermediary?

- An Organization at the Center of the region's, state's or country's efforts to align local technologies, assets and resources to work together on advancing Innovation



21st Century Innovation Intermediary



Innovation Intermediary Commercialization Structure

Investigation	Technical	Market	Business
Proof of Concept	Technology Concept Analysis	Market Needs Assessment	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

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

Battelle 2006 Iowa Entrepreneurship Recommendations

*“Scale up level of support for
Iowa'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
 - Iowa Demonstration Fund
 - Community Based Seed Funds (RAINSource Capital Template)
 - www.iowaentrepreneur.com
- Iowa Commercialization Services Network
- Management Talent Recruitment Program
- Supply Chain Development
- Networking Fund
- Information Technology Training Program
- Innovation Technology Joint Venture Fund
- Iowa Student Internship Program

Clusters of Innovation

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

**IOWA TARGETED
INDUSTRY CLUSTERS**

ADVANCED

MANUFACTURING

BIO SCIENCE

IT

IOWA
life | changing®



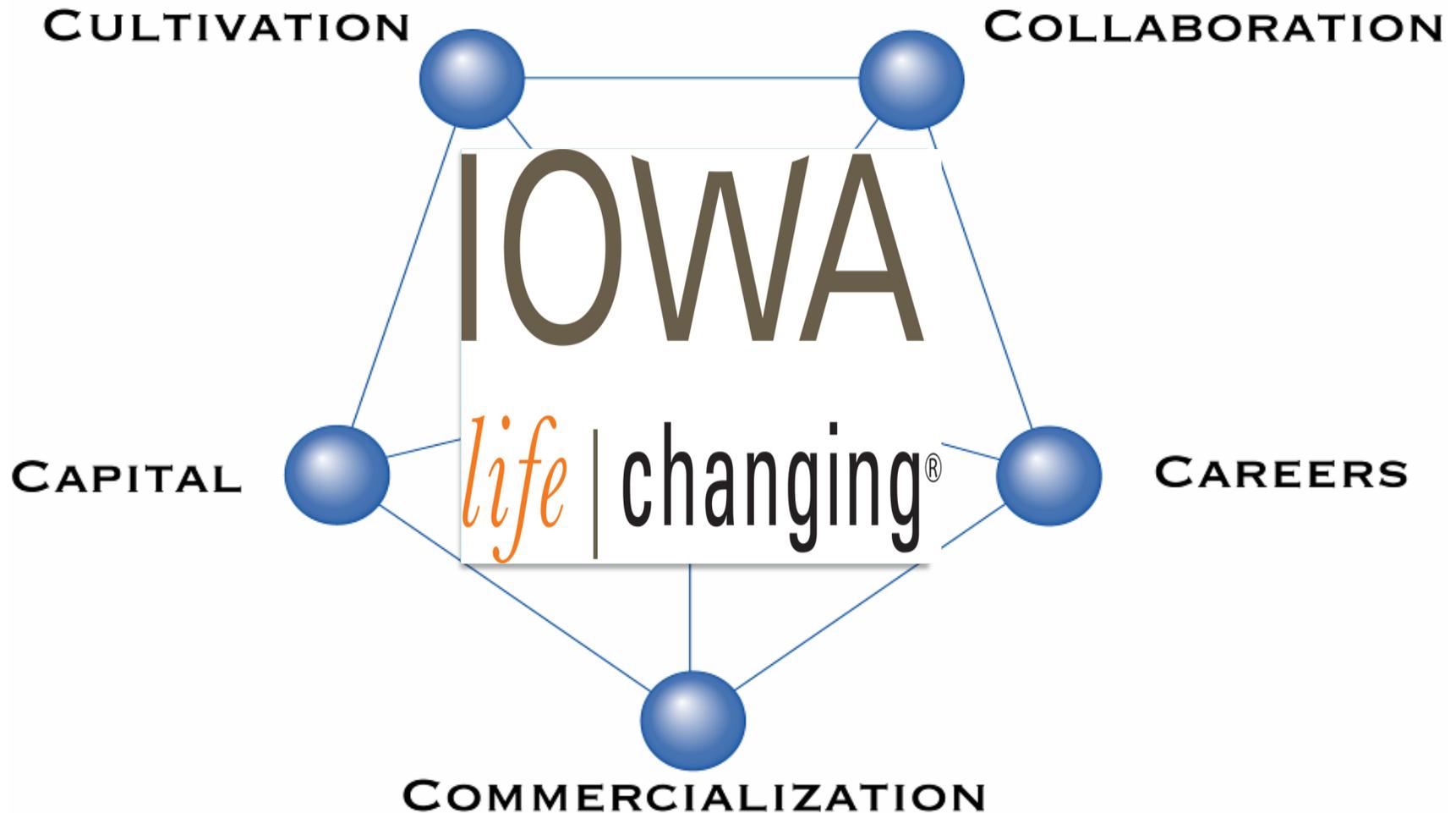
Entrepreneurial Development Center, Inc – CR/IC

EDC has supported over 300 businesses generating:

- **42** new interstate-commerce businesses
- **\$158M** in increased sales
- **\$65M** capital investment
- **\$106M** in wages (840 jobs; 560 direct; 280 indirect)
- **\$48,000** average annual wage – 33% higher than 2007 per capita in the Corridor
- **\$327M** total economic impact



Implementing a New Iowa Innovation Paradigm



National IBED Best Practices

- Longevity
- Bipartisan Support & Champions
- Independent Organizations
- Continuous Reinvention
- Private Sector Involvement
- Understand Return On Investment
- Sustainability In Funding
- Accountable
- Innovative
- Effective Leadership

U.S. Innovation Intermediaries' Best Practices

- ☆ Ben Franklin Technology Partners (BFTP, 1982)

<http://www.benfranklin.org/>



- ☆ Kansas Technology Enterprise Corp. (KTEC, 1987)

<http://www.ktec.com/>



- ☆ Innovation Philadelphia (IP, 2001)

<http://www.innovationphiladelphia.com/>



- ☆ Oklahoma Center For The Advancement Of Science And Technology (OCAST, 1987)

<http://www.ocast.state.ok.us/>



- ☆ UCSD Connect (1985)

<http://www.connect.org>



- ☆ First State Innovation (2007)

www.firststateinnovation.org





pennsylvania
DEPARTMENT OF COMMUNITY
& ECONOMIC DEVELOPMENT

Technology Investment

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

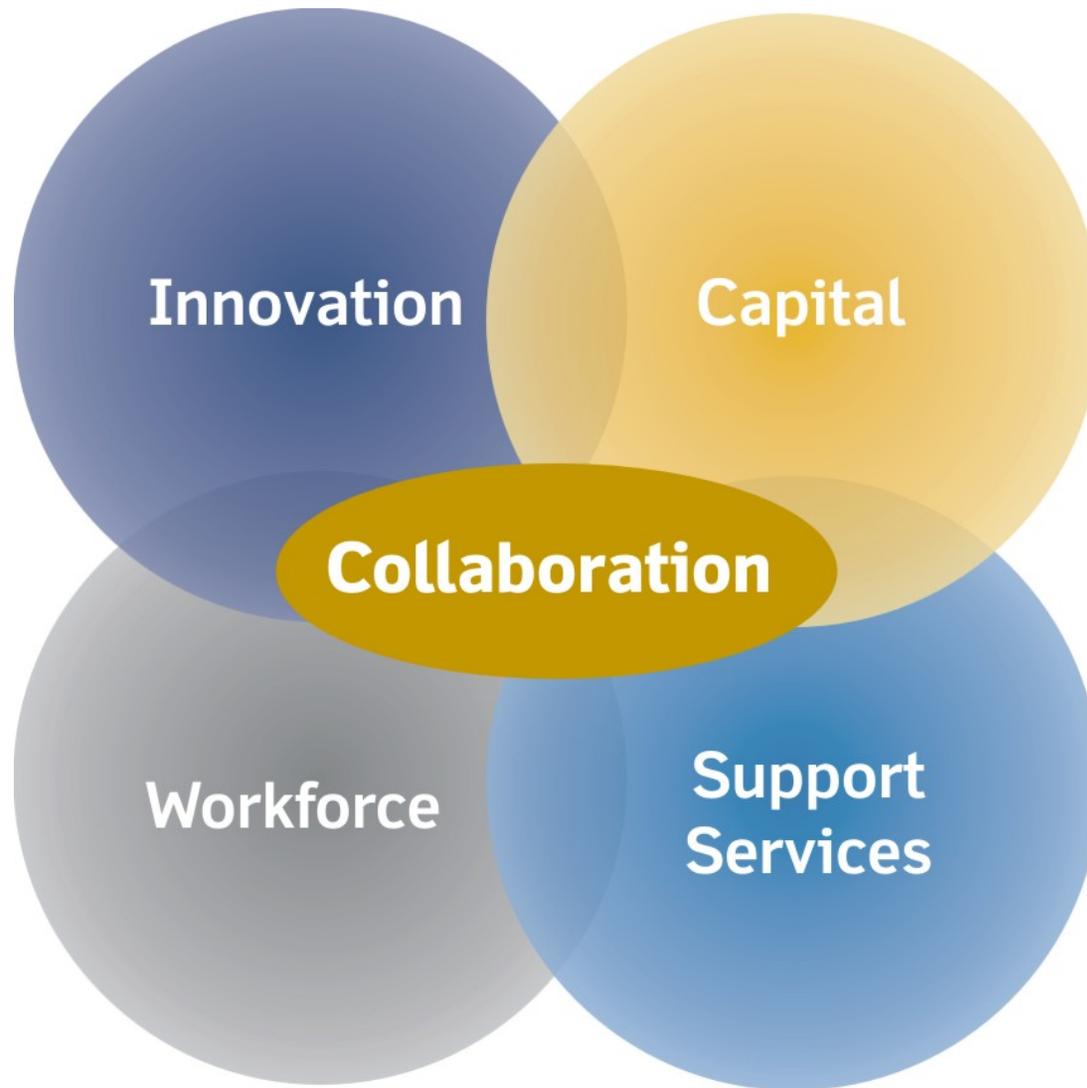
- The goal of the Technology Investment Office is to ensure that the variety of TBED organizations and initiatives located throughout the Commonwealth are working collaboratively to fully leverage the wealth of research, capital sources, and support services available to build a comprehensive infrastructure 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



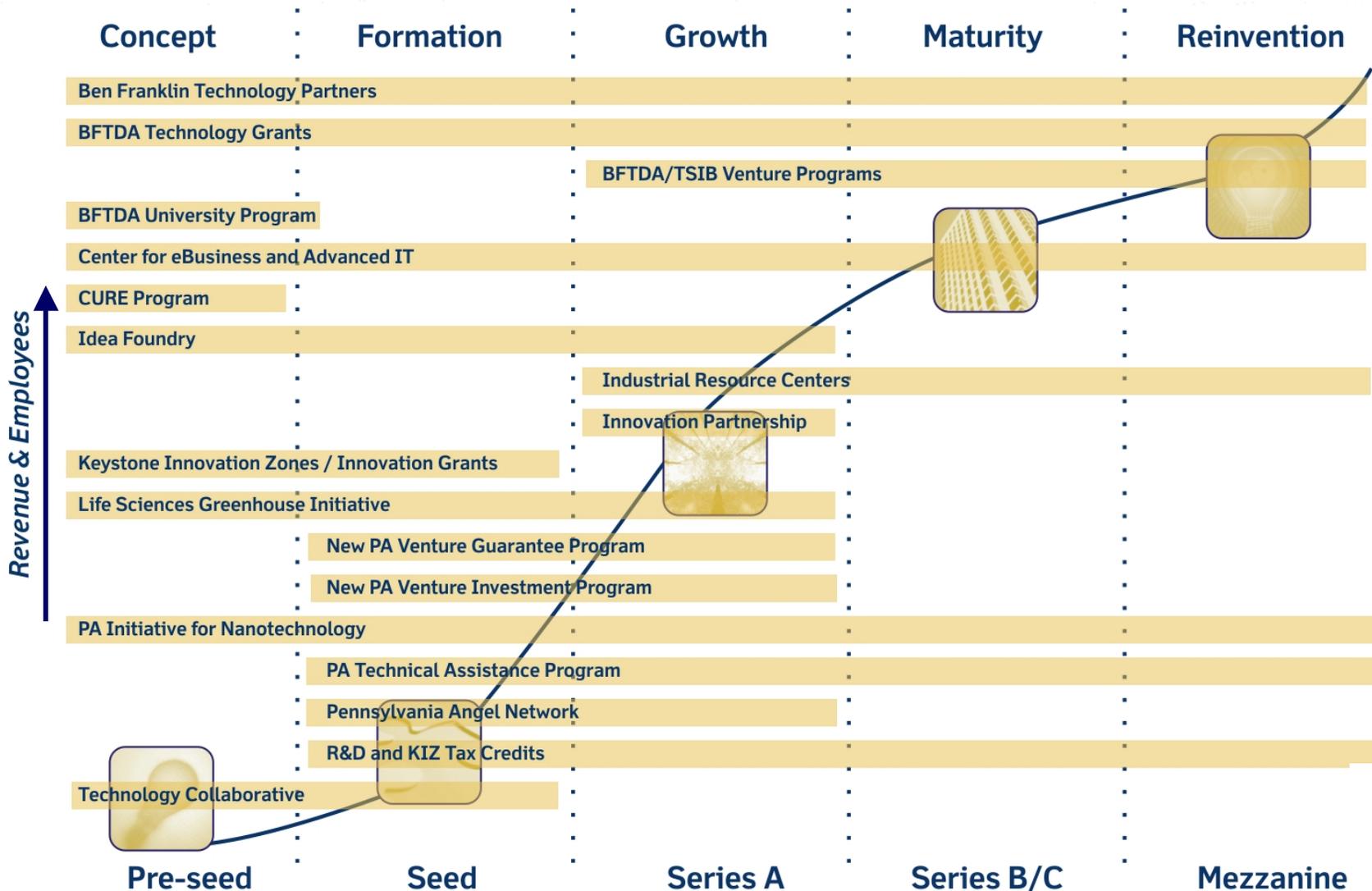
The Four Pillars of Innovation-based Economic Development



Technology Investment

Technology-based Economic Development Tools Along the Continuum

> ready > set > succeed



Ben Franklin Technology Partners

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



Kansas Technology Enterprise Corporation



www.ktec.com

KTEC Mission:

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

Board of Directors

KTEC Program Structure

KTEC Staff

Federal Initiatives and Partnerships

Research

For Inventors, Entrepreneurs and University & Industry Scientists

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

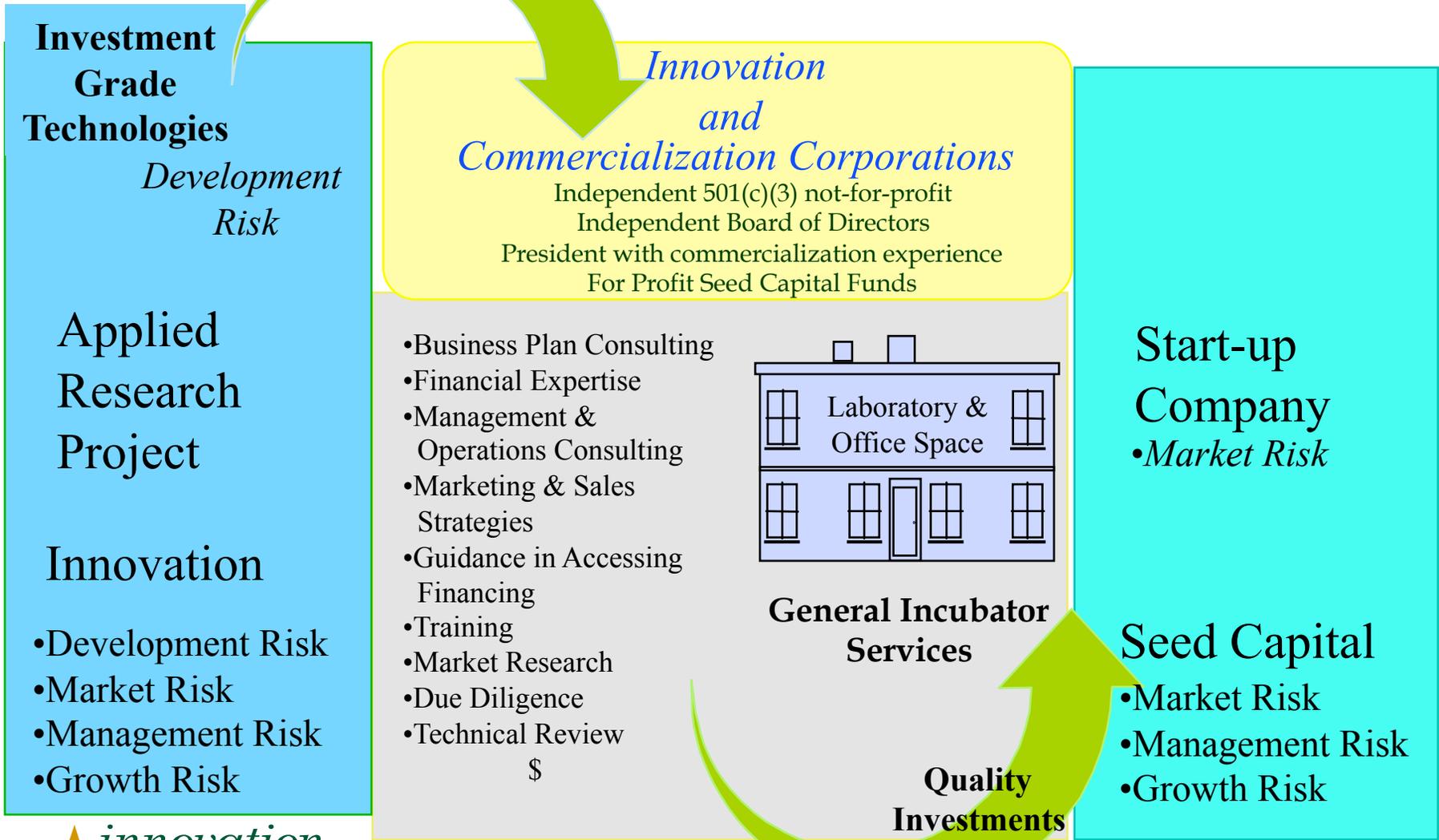
Business Assistance

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)



Kansas ICC's Accelerate the Life Cycle



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.

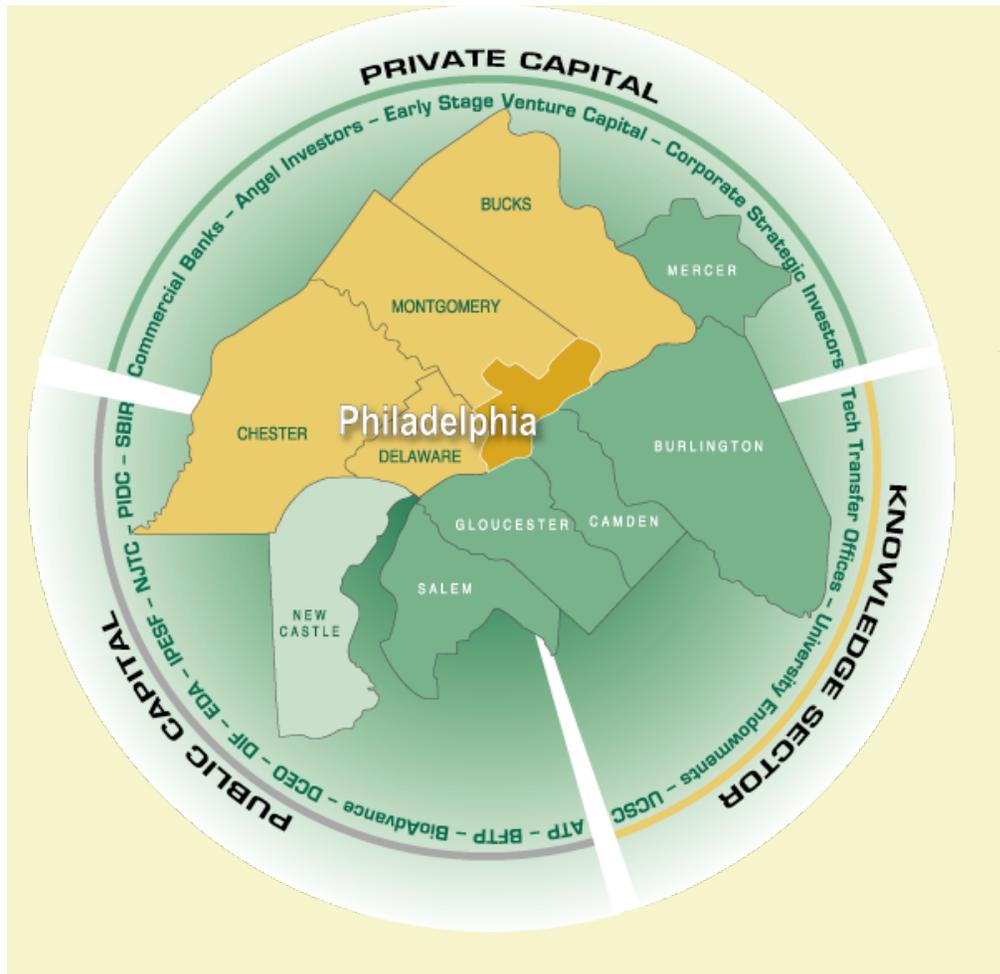
Innovation Philadelphia's Mission



A Public/Private Partnership
created to:

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

Innovation Philadelphia: Leveraging the Resources of the Greater Philadelphia Region

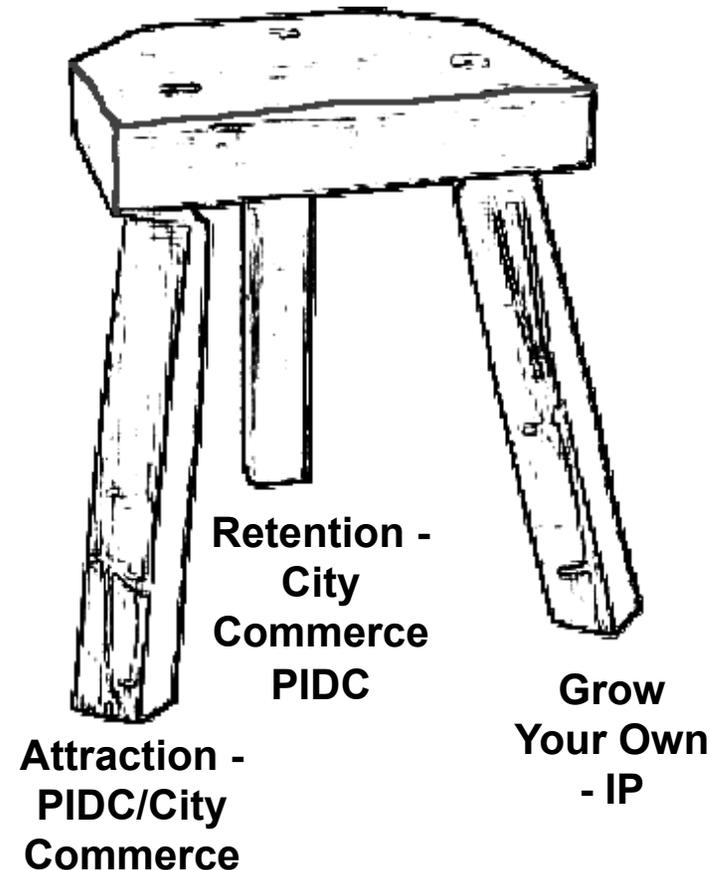


3 states
11 counties

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

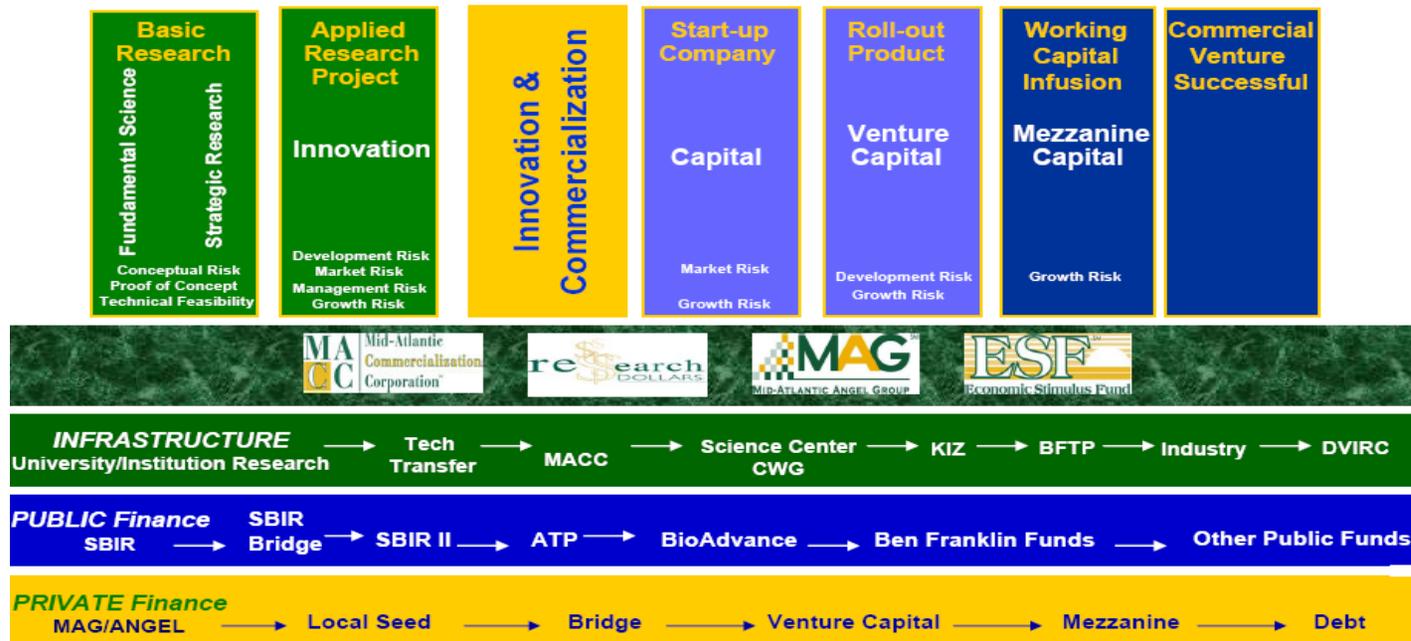
Economic Development

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



How Innovation Philadelphia Started

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





IP

innovation

PHILADELPHIASM

LOCAL INNOVATION...GLOBAL REALIZATION

Innovation & Entrepreneurial Index

Is **our** glass half empty or ***half full?***

IP Core Products / Services

Investment



Commercialization



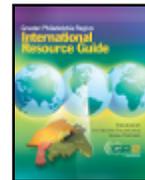
World's Best
Technology Network



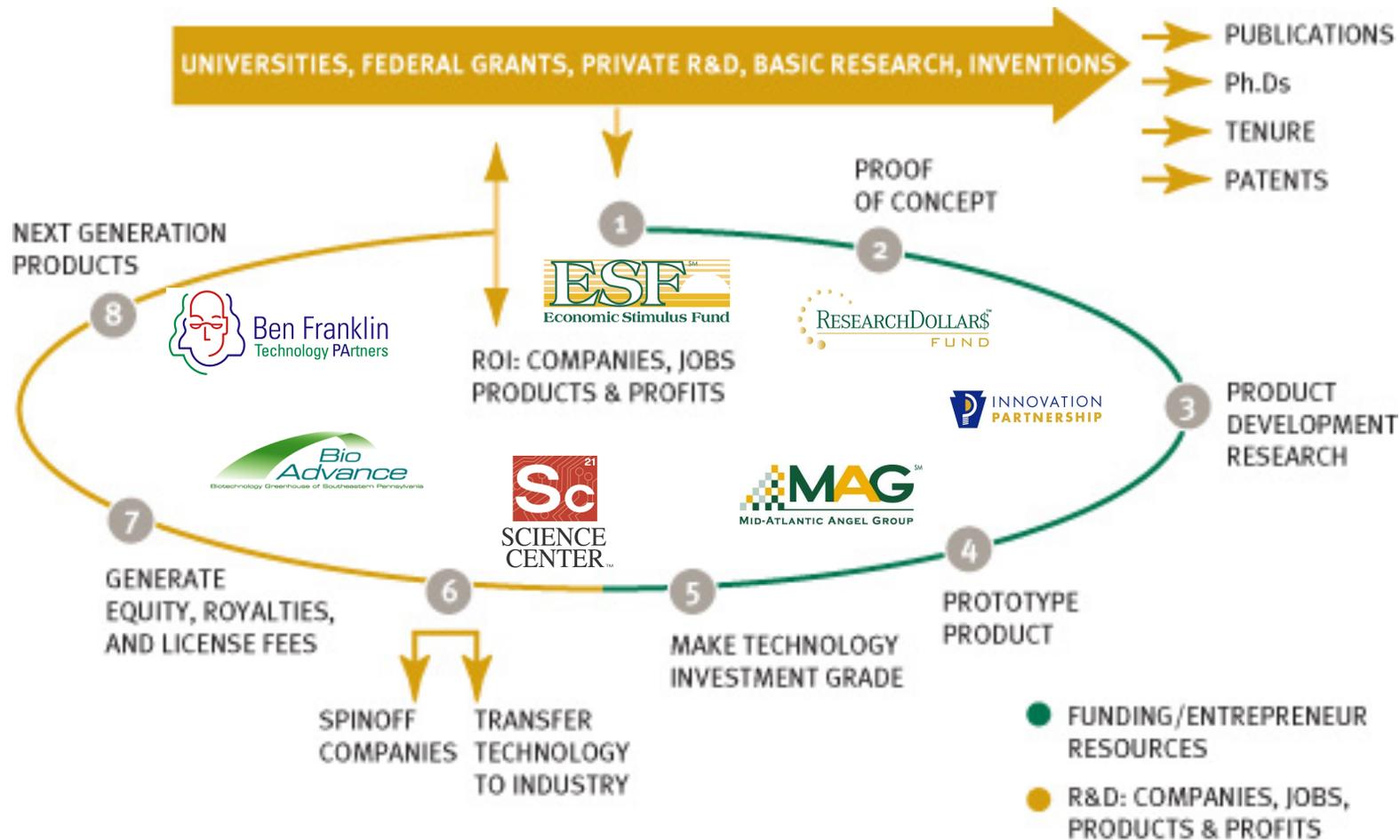
Global & Regional Workforce / Economic Development



Branding, Research & Marketing



IP Commercialization Model



What Worked for KTEC and Innovation Philadelphia

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



*Accelerating Delaware's
Entrepreneurial Economy*

www.firststateinnovation.org



Mission:

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



Delaware's Pro's and Con's Regional Assessment

Pros

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

Cons

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



STRATEGY

It is actually quite simple....

- FSI connects **People, Ideas and Capital**



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
- CREATE A \$3M-\$5M Angel Fund in \$2009
- 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



Hot Off the Presses



Creating a National Innovation Framework



Federal Aid Sought for Equity-Backed Companies



More Signs of Capital Starvation



A Federal VC Fund of Funds?



Into the Valley of Death



Recession Knocks VC Funds to 5 1/2 Year Low



Health Care Bleeds Small-Biz Finances



Buzz Article





US Government has not yet addressed
the “Valley of Death” Funding Crisis

Nor Has It Developed

An Integrated Innovation Plan for America

Innovation America has a Plan!



Other Countries Response – Valley of Death



UK Government Unveils Plans for £1BN Venture Capital Fund of Funds

30 Jun 2009. Source: AltAssets

The UK's venture capital industry will receive a much needed boost as the government announced plans to commit £150m (€177m) to a new fund of funds, the UK Innovation Investment Fund.

The Department for Business, Innovation and Skills, with the Department of Energy and Climate Change and the Department of Health, will invest the money alongside the private sector in order to stimulate growth.



Industry
Canada

Industrie
Canada

Government of Canada Announces \$450 Million in New Funding for BDC to Assist Canadian Businesses

TORONTO, Ontario, June 15, 2009 — The Honourable Tony Clement, Minister of Industry, today announced that the Government of Canada is providing \$450 million to the Business Development Bank of Canada (BDC) in support of small and medium-sized enterprises and innovative firms.

The funding will include \$100 million to establish the Operating Line of Credit Guarantee and \$350 million over three years to help drive venture capital investment in promising Canadian technology businesses.



**MISSION: TO ACCELERATE THE GROWTH OF THE
ENTREPRENEURIAL INNOVATION ECONOMY
IN AMERICA**

- The following represents a preliminary framework on how to finance and bring together organizations, networks, and resources involved in growing the nation's entrepreneurial innovation economy and creating new jobs.
- A private-public partnership such as Innovation America could be an innovation intermediary for facilitating this process between, State, Federal, University, Foundation and Private Sector stakeholders.
- There is an opportunity to leverage successful federal SBIR recipients as well as state and regionally funded early-stage, high-growth growth technology companies.
- We believe that this is an important MISSING ingredient in the long-term health of America's Competitiveness and Technology Innovation leadership.

Creating a National Innovation Framework

- **The National Innovation Jobs Seed Fund and Technical Assistance Grant Fund**
- **The Federal Innovation Partnership and a National Innovation Advisor**
- **The National Private-Public Partnership Innovation Program**

science progress

Creating a National Innovation Framework

Building a Public-Private Support System to Encourage Innovation

By Richard Bendis & Ethan Byler
April 2009

INTRODUCTION AND SUMMARY

Science, technology, and innovation experts in the United States today almost unanimously agree that our country needs to launch a collective national effort to accelerate U.S. technological and innovation-based growth, fend a global economic downturn during which other nations are boosting their already significant public and private sector efforts to build more competitive, innovation-led economies. The United States stands alone above in the world without a national innovation framework.

The truth? Our country is beginning to lose its innovation leadership and national competitive advantage because we do not coordinate innovation policy across federal, state, municipal, and university boundaries and do not adequately support high-growth entrepreneurial companies. The federal government spends approximately \$1.50 billion annually into basic scientific research but then largely fails to ensure this money results in the kind of broad-based economic growth that makes our products and services the most competitive on the planet. This is a tragedy because it is innovative small businesses that have generated between 80 to 90 percent of net new jobs annually over the last decade as they grow and prosper, according to the U.S. Small Business Administration. These same companies also employ 90 percent of high-tech workers such as scientists, engineers, and information-technology workers.

Today's economic crisis, however, is also an opportunity to reinvigorate our knowledge economy, if recent history is any guide.

After both the 1990-91 and the 2000-01 recessions, small businesses of less than 50 employees were by far the dominant job creators in our country. The Office of Small Business Advocacy to the Small Business Administration shows that during the three years after the 2000-01 recession, the smallest of our companies (one to four employees) provided 79 percent of the net new jobs in the subsequent three years. Similarly, after the recession of 1990-91, small businesses created 89 percent of net new jobs (see sidebar for case studies in Pennsylvania and Kansas).

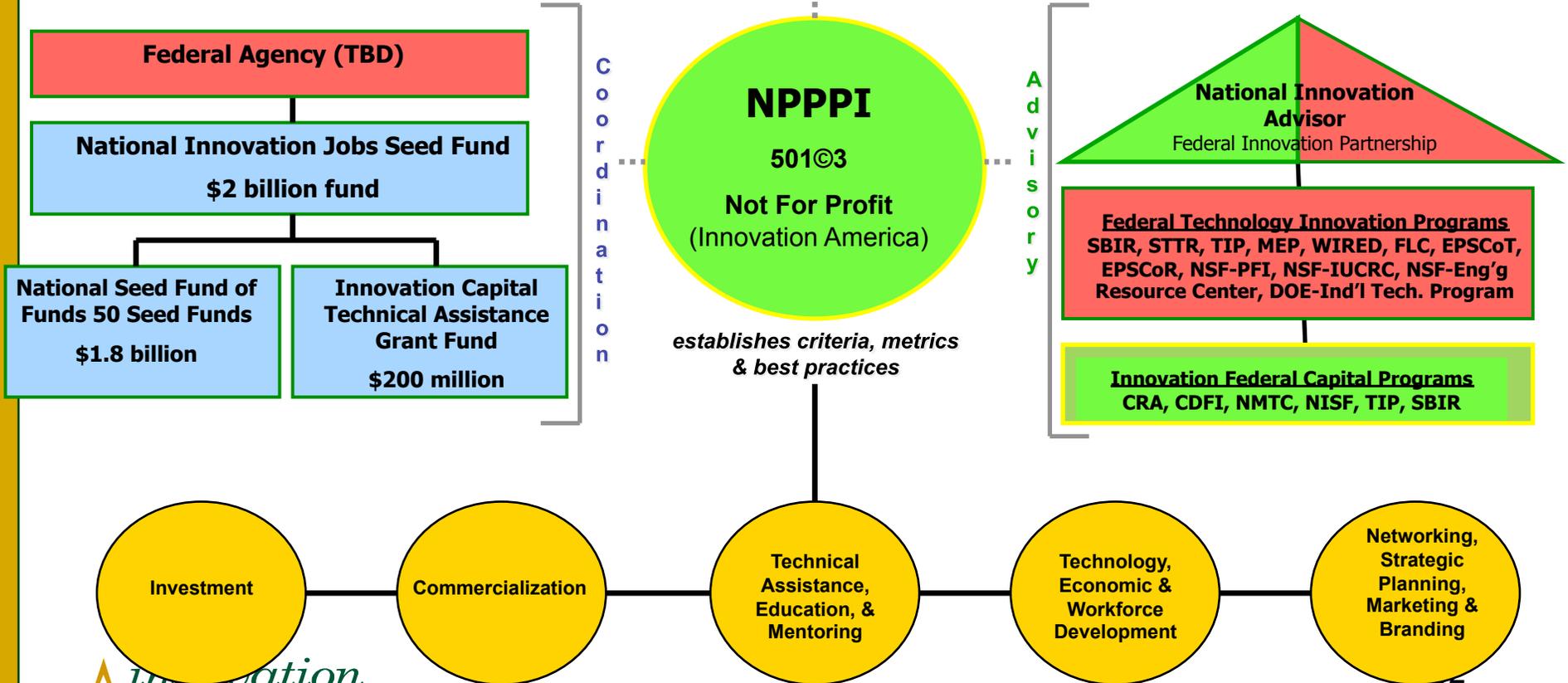
Year	2000-01	2001-02	2002-03	2003-04	2004-05
Small (1-49 employees)	15	10	10	10	10
Medium (50-99 employees)	5	5	5	5	5
Large (100+ employees)	5	5	5	5	5

science progress / Creating a National Innovation Framework 3

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)*
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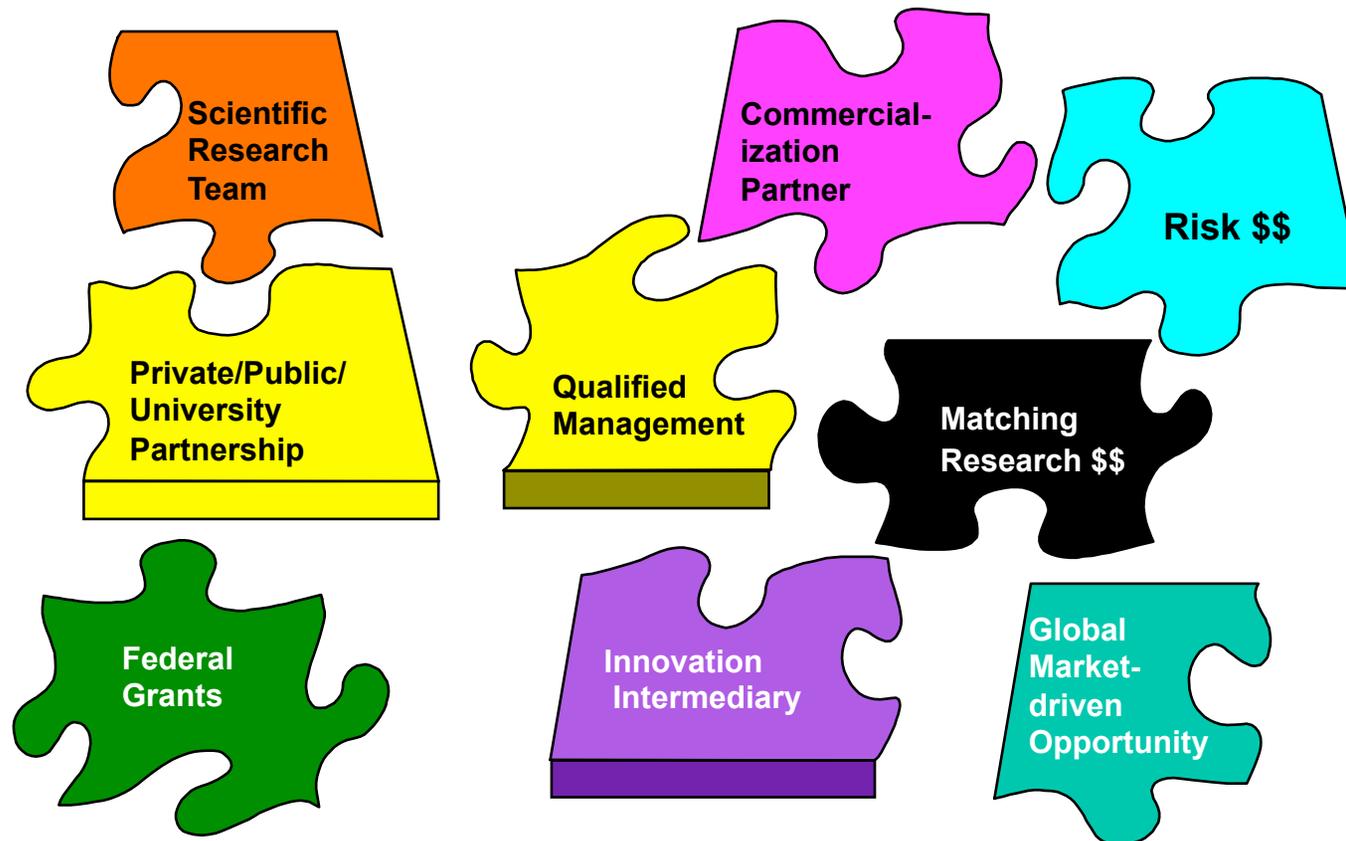
*Potential national innovation partners



Public Policy NISF Recommendations

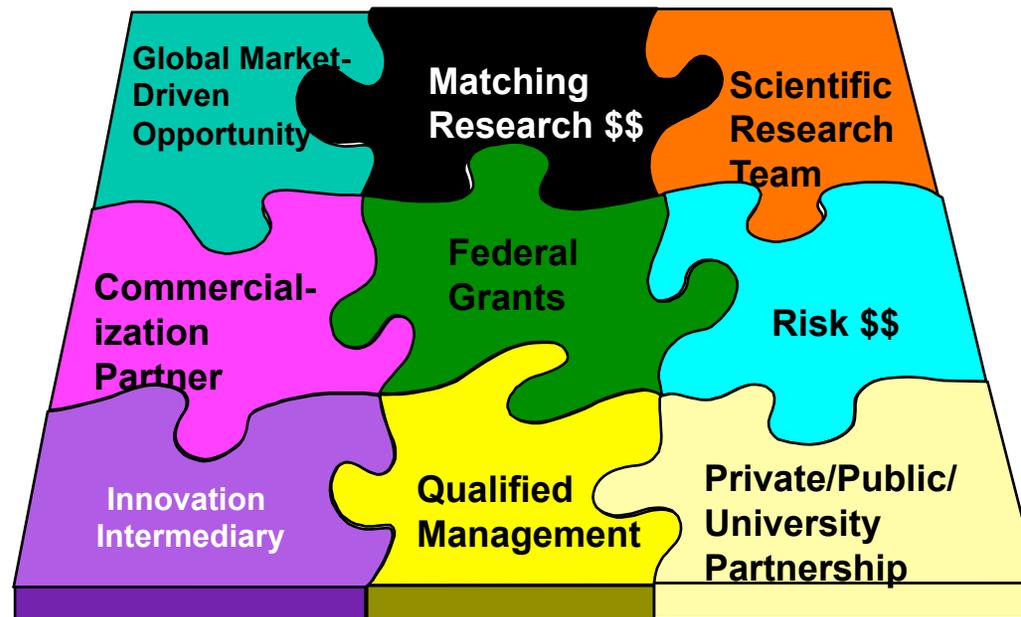
- \$2 billion Fund of Funds
- Technical Assistance Grant Fund
- Focus on seed stage – investments of \$500k to \$2mm
- Encourage leveraging of Federal Technology Innovation Programs
- Utilize experienced early stage fund managers
- Deliver through existing infrastructure
- Matching third-party funds
- Job Creation is KEY

The Road from Innovation to Commercialization



...has many complex pieces!

The Road from Innovation to Commercialization



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

What's Next for Iowa?

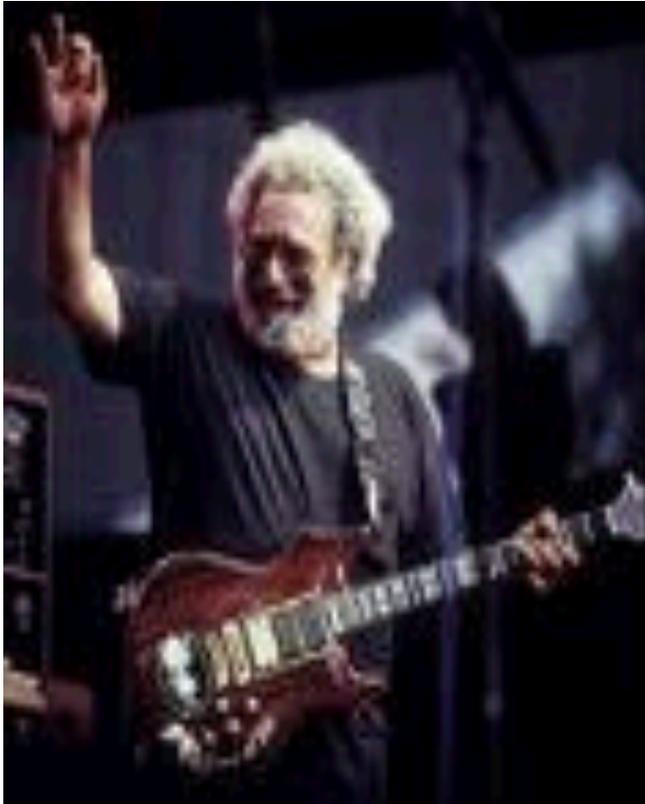
Today

IOWA
life | changing®

Tomorrow

innovation IOWA
life | changing®

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



Richard A. Bendis
President and CEO
Innovation America
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1500 Market Street
Philadelphia, PA 19102
(215) 496-8102
rbendis@bendisig.com
www.innovationamerica.us



Enjoy the EXPO!

Exhibit Hall Hours:

5:30 pm – 8:30 pm

