IOWA Innovation Council

Richard A. Bendis
President and CEO
Innovation America
April 8, 2010
Des Moines, Iowa
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** is essential to remain competitive
Why Is Innovation Essential?

“INNOVATION IS THE SPECIFIC INSTRUMENT OF ENTREPRENEURSHIP. THE ACT THAT ENDOWS RESOURCES WITH A NEW CAPACITY TO CREATE WEALTH.”

-PETER F. DRUCKER

“INNOVATION DISTINGUISHES BETWEEN A LEADER AND A FOLLOWER.”

-STEVE

“JUST AS ENERGY IS THE BASIS OF LIFE ITSELF, AND IDEAS THE SOURCE OF INNOVATION, SO IS INNOVATION THE VITAL SPARK OF ALL HUMAN CHANGE, IMPROVEMENT AND PROGRESS!”

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

--Ben Franklin
Knowledge Economy: Definitions & Terminology

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

• Knowledge economy is based on creating, evaluating, and trading knowledge

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

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

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

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

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

Knowledge Integration

Education Research

Resource Investment → Knowledge Creation

Continuous Learning and Innovation → Knowledge Transfer
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
Economic Development

- Economic Development is like a three-legged stool:
  - **Attraction**
  - **Retention**
  - **Grow Your Own**
- IBED requires patience and persistence, continuity and consistency.
- Working with early-stage companies takes time.
- Balanced portfolio economic development strategy is best!
• Progress is promoted by strong industry, government and university leadership

• Sustained by dynamic public/private partnerships

• These leaders create new, responsive models of governance
## Traditional ED vs. Innovation-Based ED

<table>
<thead>
<tr>
<th>Traditional ED</th>
<th>Innovation-based ED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competitive Basis</strong></td>
<td><strong>Innovation-based ED</strong></td>
</tr>
<tr>
<td>Natural resources</td>
<td>Specialized talent</td>
</tr>
<tr>
<td>Highways / Rail</td>
<td>Networks, information</td>
</tr>
<tr>
<td>Proximity</td>
<td>University research / professors</td>
</tr>
<tr>
<td>Costs</td>
<td>Market understanding</td>
</tr>
<tr>
<td>i.e. PHYSICAL</td>
<td>i.e. KNOWLEDGE</td>
</tr>
<tr>
<td><strong>Key values / offerings</strong></td>
<td><strong>Access to research</strong></td>
</tr>
<tr>
<td>Business parks</td>
<td>Workforce competencies</td>
</tr>
<tr>
<td>Incentives</td>
<td>Lifestyle</td>
</tr>
<tr>
<td>i.e. PHYSICAL</td>
<td><strong>Innovation intermediaries, Economic developers</strong></td>
</tr>
<tr>
<td><strong>Lead Organization</strong></td>
<td><strong>Innovation intermediaries, Economic developers</strong></td>
</tr>
<tr>
<td>Chambers / EDCs</td>
<td></td>
</tr>
</tbody>
</table>
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.
### Innovation Intermediary Commercialization Structure

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

#### Development Phase

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

#### Commercial Phase

<table>
<thead>
<tr>
<th>Full Scale Production</th>
<th>Production</th>
<th>Sales and Distribution</th>
<th>Business Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maturity</td>
<td>Production Support</td>
<td>Market Diversification</td>
<td>Business Maturity</td>
</tr>
</tbody>
</table>
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 (Small & Medium-size Enterprises) produce 13 times more patents per employee than large patenting firms
- Small Companies are a key source of innovation by themselves and for Large Companies

Source: Small Business Administration

Innovation Capital Facts

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

Source: PriceWaterhouseCoopers – MoneyTree©
Innovation Paradigm Shift

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

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

economic value creation

- return on invested capital
- cost of capital
+ organic
+ m&a

margin

growth
21st Century Innovation Intermediary

Connectivity of Key Human & Institutional Players

Leverage & Alignment of Funding & Resources

IOWA innovation council

Research & Marketing of the Strengths of the Innovation Economy

Programs
- Commercialization
- Direct Investment
- Angel Capital
- SBIR Programs
- Technology Mining / Intellectual Property Programs
Innovation Commercialization Model

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

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

Outputs: Publications, Ph.D.s, Tenure, Patents

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

Innovation America
Iowa Innovation Council
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
Reduced Angel Activity
• Angel Investors reduced their investments in 2009 Q1/Q2 by over 27%
• Availability of investment capital among angels decreased dramatically by 50% in 2009

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
The Business Plan Funnel

100 business plans come in

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

Extensive due diligence

1 gets funded
### Innovation Capital Valley of Death

#### "VALLEY OF DEATH"

<table>
<thead>
<tr>
<th>Stage</th>
<th>Source</th>
<th>Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>POC / Pre-Seed</td>
<td>Founders: FFF, Angel Groups, TBED, SBIR, Seed Funds, Venture Funds</td>
<td>$25K</td>
</tr>
<tr>
<td>Seed/Start-Up</td>
<td></td>
<td>$100K</td>
</tr>
<tr>
<td>Early</td>
<td></td>
<td>$500K</td>
</tr>
<tr>
<td>Later</td>
<td></td>
<td>$2,000K</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$5,000K</td>
</tr>
</tbody>
</table>

"VALLEY OF DEATH"

- **Supply**
- **Demand**
- **Source**
- **Stage**

Funding Gap

Secondary Funding Gap
The Case for Focus: U.S. Venture Capital

Source: Gompers, Kovner, Lerner and Scharfstein [2009].
IOWA VC Investment in $

Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report, Data: Thomson Financial
Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report, Data: Thomson Financial
Note: 29 states with Angel Capital Tax Credit Investment Programs
Angel Investor Market in 2009

• Total investments in 2009 were $17.6 billion, a decrease of 8.3% over 2008

• 57,225 entrepreneurial ventures received angel funding in 2009, 3.1% increase from 2008

• Active investors in 2009 was 259,480 individuals, virtually unchanged from 2008.

• The small decline in total dollars, coupled with the increase in investments resulted in a smaller deal size for 2009 (a decline in deal size of 11.1% from 2008).

# Venture Capital Returns By Investment Stage

## Historic Venture Capital Returns

Early stage VC funds historically out-perform the overall venture asset class:

<table>
<thead>
<tr>
<th></th>
<th>1 Yr</th>
<th>5 Yr</th>
<th>10 Yr</th>
<th>20 Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Stage VC</td>
<td>-20.6</td>
<td>3.7</td>
<td>36.0</td>
<td>21.8</td>
</tr>
<tr>
<td>Balanced VC</td>
<td>-26.9</td>
<td>8.4</td>
<td>13.5</td>
<td>14.5</td>
</tr>
<tr>
<td>Late Stage VC</td>
<td>-6.8</td>
<td>8.7</td>
<td>7.5</td>
<td>14.5</td>
</tr>
<tr>
<td>All Venture</td>
<td>-20.9</td>
<td>6.4</td>
<td>15.5</td>
<td>17.0</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>-36.1</td>
<td>-4.0</td>
<td>-3.0</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Data Source: Thomson Reuters' US Private Equity Performance Index, National Venture Capital Association, April 2009
Does Seed Investing REALLY Create Jobs?
In the three years after the 1991 recession, Companies of less than 20 employees created 89% of net new jobs while companies over 500 employees created a net of 4%.

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

Source: Small Business Administration
Innovative Entrepreneurial Support Initiatives

- 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)
Best Practices in Innovation Entrepreneurial Support

The PIPELINE is the nation’s premier state-sponsored technology entrepreneur fellowship program. PIPELINE is designed to systematically identify high potential technology entrepreneurs and match them with best-in-class training, resources and mentors to facilitate their dynamic growth in Kansas.
## Public Investment Job Creation

<table>
<thead>
<tr>
<th>Category</th>
<th>State of PA</th>
<th>CDVCA*</th>
<th>State of UTAH</th>
<th>Stimulus Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds Invested</td>
<td>$90M</td>
<td>$26M</td>
<td>$60M</td>
<td>$800B</td>
</tr>
<tr>
<td>Jobs Created</td>
<td>8,150</td>
<td>3.700</td>
<td>2,047</td>
<td>4,000,000</td>
</tr>
<tr>
<td>$ Per Job Invested</td>
<td>$11,000</td>
<td>$7,100</td>
<td>$29,300</td>
<td>$200,000</td>
</tr>
</tbody>
</table>

* Community Development Venture Capital Assoc.
“It is not the strongest of species that survive, nor the most intelligent, but the ones most responsive to change.”

–Charles Darwin
U.S. State IBED Programs

Ben Franklin Technology Partners

Ohio
Third Frontier
Innovation Creating Opportunity

KTEC
Kansas Technology Enterprise Corporation

OCAST

Arkansas Science & Technology Authority

Georgia Research Alliance

Maryland TEDCO
Technology Development Corporation
Maryland...Technology Starts Here.

TTDC
Tennessee Technology Development Corporation

First State Innovation

IOWA
Innovation Council
IBED 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
Kansas Technology Enterprise Corporation

www.ktec.com

KTEC Mission:

“To create, grow and expand Kansas enterprises through technological innovation.”
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
Linking Opportunity With Capacity

- Standardized rating system
- Determine level of capacity and opportunity for critical technologies
IOWA Innovation Council

Board of Directors

KTEC Staff

Federal Initiatives and Partnerships

KTEC Program Structure

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)
ICC’s Expand the Life Cycle

- **Investment Grade Technologies**
- **Development Risk**
- **Applied Research Project**
- **Innovation**
  - Development Risk
  - Market Risk
  - Management Risk
  - Growth Risk

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

- **Laboratory & Office Space**
- Business Plan Consulting
- Financial Expertise
- Management & Operations Consulting
- Marketing & Sales Strategies
- Guidance in Accessing Financing
- Training
- Market Research
- Due Diligence
- Technical Review

**Quality Investments**

**Start-up Company**
- **Market Risk**
- **Seed Capital**
  - Market Risk
  - Management Risk
  - Growth Risk

**General Incubator Services**

IOWA innovation council
Attracting Investors

- Kansas Angel Tax Credit Program
- Kansas Angel Networks
  - Three statewide organizations

KANSAS ANGEL TAX CREDITS  2005 – 2008

Total (from inception)

<table>
<thead>
<tr>
<th># of Companies Receiving Investments</th>
<th>73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Capital Raised</td>
<td>$118M</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>$119M</td>
</tr>
</tbody>
</table>

Note: Wisconsin has a model Angel Investment Tax Credit Program
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.
## The Kansas Cluster Experience - 2009

<table>
<thead>
<tr>
<th>CLUSTER</th>
<th>ORGANIZATION</th>
<th>OUTCOMES</th>
</tr>
</thead>
</table>
| Human BioSciences                    | Kansas BioScience Authority (KBA)                     | • $581m Fund  
  • Build world-class research capacity, growth of bioscience startups, expansion of the state’s bioscience clusters and facilitate industrial expansion and attraction. |
| Value-added Agriculture and Ag Bio   | National Agricultural Biosecurity Center (NABC)       | • $500m Research Center  
  • Focused on protecting America’s agricultural infrastructure and economy from endemic and emerging biological threats. |
| Aviation                             | National Institute for Aviation Research (NIAR)        | 24 year-old research and tech-transfer center established to advance the nation’s aviation industries that may benefit from aviation-related technologies. |
| Information and Telecommunications & Computing | Software and Technology Association of Kansas (SITAKS) | Advocate for Kansas’ software and information technology sector to help Kansas' software and IT companies grow and succeed. |
Iowa Innovation Council

- $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
How the Fund Works

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

Measure Actual Incremental Growth in State Bioscience Taxes

Baseline to State General Fund

Increment of Growth to Bioscience Fund

Kansas Bioscience Authority
Fund Programs & Repay Bonds

Repeat annually for 15 years
U.S. State Innovation Councils

big Business Innovation Growth
IOWA Innovation Leadership/Collaboration?
IOWA Innovation Road Map Elements

1. Asset Mapping
2. Cluster analysis
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 (Private Public Partnership)
9. Organizational leadership and staffing
10. Program portfolio/implementation
11. Economic Impact Analysis
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

IOWA Innovation Paradigm

Cultivation

Collaboration

Capital

Careers

Commercialization
“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!