HIP-SEP National Best Practices Dialogue

Innovation Partnerships: National Best Practices

Richard A. Bendis
President & CEO
Innovation America

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
Best Practices in IBED

- $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
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 JOBS

“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
Innovation Economy

Knowledge

Innovation

Global Competitiveness

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

--Ben Franklin

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

Resource Investment → Education Research → Continuous Learning and Innovation

Knowledge Creation → Knowledge Transfer
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

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**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!
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

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></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></td>
</tr>
<tr>
<td>Business parks / Incentives</td>
<td>Access to research</td>
</tr>
<tr>
<td></td>
<td>Workforce competencies</td>
</tr>
<tr>
<td><strong>Lead Organization</strong></td>
<td></td>
</tr>
<tr>
<td>Chambers / EDCs</td>
<td>Innovation intermediaries, Economic developers</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.

![Image](image-url)

**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!”

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

economic value creation

margin
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

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

Proof of Concept

ROI: Companies, Jobs, Products & Profits

Product Development Research

Funding/Entrepreneur Resources

R&D: Companies, Jobs, Products & Profits
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

“The Perfect Storm”

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 closer look
Extensive due diligence
1 gets funded

Innovation Capital Valley of Death

“VALLEY OF DEATH”

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

Funding Gap → Secondary Funding Gap
The Need for Innovation as the engine for Growth

- Underpinned by economic reforms and the “open door” policy, the Chinese economy has performed extraordinarily over nearly three decades.

- China’s re-emergence as a major power in the world economy is one of the most significant developments in modern history.

- The Chinese economy is now the fourth largest in the world and its macro-economic performance remains strong.
China - A Major Destination for FDI

- China has become a major destination for foreign direct investment (FDI) and a trading nation of global rank, with an increasing share of high-technology products in its export structure.
- A significant and continuing increase in income per capita and an impressive reduction in poverty levels imply huge domestic demand for goods and services.

Sustainable Economic Growth In China

- High rates of economic growth, industrialization and urbanization are putting increasing pressure on the sustainability of economic growth and social development owing to:
  - High consumption of energy and raw materials.
  - Environmental degradation which also leads to damage to human health.
  - Uneven distribution of the benefits of economic development across regions, & between urban and rural populations.
  - Large migration flows that contribute to rapid urbanization and strain the social fabric and the environment.
Institutional barriers that inhibit China despite tremendous growth in science and technology.

• Ineffective public funding.
  • Ministry of Science and Technology (MoST) and other public sources of R&D funds have traditionally done a poor job of distributing these resources to those who might best realize innovation returns. Peer review panels can incline to favoritism, collusion or even incompetence. MoST’s brief move towards blind review panels to address issues of collusion and favoritism has been reversed.

• Public procurement.
  • The procurement process favors firms with strong government connections and thereby hinders efficient allocation of public resources to support domestic innovation.

US Angel Capital Programs

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 2006

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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%

![Graph showing cumulative net job creation by company size](image)

Size of Company (Employees) at Beginning of Each Year (March)

Source: Small Business Administration

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Innovative Entrepreneurial Support Initiatives

- **Y Combinator**
- **DREAMIT Ventures**
- **Pipeline**

- 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.
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

U.S. State IBED Programs

Ben Franklin Technology Partners
Ohio Third Frontier
KTEC KANSAS TECHNOLOGY ENTERPRISE CORPORATION
OCAST ARKANSAS SCIENCE & TECHNOLOGY AUTHORITY
Georgia Research Alliance
TEDCO Technology Development Corporation
TTDC Tennessee Technology Development Corporation
USTAR First State Innovation
TEDC
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

[Diagram showing the relationship between opportunity and capacity with high, medium, and low levels]
Attracting Investors

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

KANSAS ANGEL TAX CREDITS 2005 – 2008

<table>
<thead>
<tr>
<th></th>
<th>Total (from inception)</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Companies Receiving Investments</td>
<td>73</td>
</tr>
<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

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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.
## The Kansas Cluster Experience - 2009

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

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U.S. State Innovation Councils

IDAHO TECHNOLOGY COUNCIL

Hawaii's INNOVATION INITIATIVE

big Business Innovation Growth

IOWA innovation council

INNOVATION AMERICA
Louisiana's Innovation Summit
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
IOWA Innovation Paradigm

Cultivation  Collaboration

Capital  Careers

Commercialization

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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!
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