ACCELERATING THE GROWTH
OF THE
ENTREPRENEURIAL INNOVATION ECONOMY IN AMERICA

Richard A. Bendis
President and CEO
“It is not the strongest of species that survive, nor the most intelligent, but the ones most responsive to change.”

–Charles Darwin
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 and create Knowledge-based jobs
Implementing a New Innovation Paradigm

- Willingness to deviate from traditional and parochial perspectives
- Encourage public investment and risk taking
- Developing trust through collaboration and partnerships
- 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
## 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>Natural resources</td>
</tr>
<tr>
<td></td>
<td>Highways / Rail</td>
</tr>
<tr>
<td></td>
<td>Proximity</td>
</tr>
<tr>
<td></td>
<td>Costs</td>
</tr>
<tr>
<td></td>
<td>i.e. PHYSICAL</td>
</tr>
<tr>
<td><strong>Key values / offerings</strong></td>
<td>Business parks</td>
</tr>
<tr>
<td></td>
<td>Incentives</td>
</tr>
<tr>
<td><strong>Lead Organization</strong></td>
<td>Chambers / EDCs</td>
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</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.
Leverage & Alignment of Funding & Knowledge Resources

Connectivity of Key Human & Institutional Players

The Innovation Intermediary

Research, Branding & Marketing of the Strengths of the Innovation Economy

Programs
- Commercialization
- Direct Investment
- Angel Capital
- Federal Programs
  - (SBIR, TIP, CRADA)
- Technology Mining / Intellectual Property Programs
## 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>Phase</th>
<th>Technical</th>
<th>Market</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility</td>
<td>Technology Feasibility</td>
<td>Market Study</td>
<td>Economic Feasibility</td>
</tr>
<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>Phase</th>
<th>Technical</th>
<th>Market</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Scale Production</td>
<td>Production</td>
<td>Sales and Distribution</td>
<td>Business Growth</td>
</tr>
<tr>
<td>Maturity</td>
<td>Production Support</td>
<td>Market Diversification</td>
<td>Business Maturity</td>
</tr>
</tbody>
</table>
Innovation Paradigm Shift

PROOF OF CONCEPT
(Technological Feasibility)

PROOF OF RELEVANCE
(Market Pull)

economic value creation

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

growth
Innovation Capital Lifecycle

Discovery
- Proof of Concept / Pre-Seed
- Seed/Start-Up

Early Stage

Expansion

Later Stage

Venture Capital Investment
By Stage
(Percentage of Total VC Investment)

1995
- Start-up/Seed: 15%, Early Stage: 30%

2000
- Start-up/Seed: 20%, Early Stage: 40%

2005
- Start-up/Seed: 10%, Early Stage: 25%

2008
- Start-up/Seed: 5%, Early Stage: 20%
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©
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

SBIR NOT REAUTHORIZED YET & TIP UNDERFUNDED
### Innovation Capital

#### “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</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>

**Supply**

- Funding Gap
- Secondary Funding Gap

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**innovation AMERICA**
Financing For Innovation In Crisis

• Seed- and early-stage investors and entrepreneurs are struggling more than usual according to a recent survey by the National Association of Seed and Venture Funds.

  Venture Funding
  ▪ 90% of the already-funded companies can’t obtain follow-on funding to get to the next level. Without this follow-on funding, they will die and a generation of great ideas will die along with them.
  ▪ 75 percent of the money received by seed- and early-stage venture funds comes from private investors.
  ▪ 70 percent of the money needed to fill this early stage investment gap is less than a million dollars per company.
  ▪ 60 percent of early-stage funds aren’t making any new investments.

  Entrepreneurial Companies
  ▪ 75 percent of the companies investors are putting money into can’t leverage that money into bank financing.
  ▪ 42 percent of the companies investors are putting money into have been stripped of their lines of credit.
Does Seed Investing REALLY Create Jobs?
## Public Investment Job Creation

<table>
<thead>
<tr>
<th></th>
<th>State of PA</th>
<th>CDVCA</th>
<th>Stimulus Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds Invested</td>
<td>$90M</td>
<td>$26M</td>
<td>$800B</td>
</tr>
<tr>
<td>Jobs Created</td>
<td>8,150</td>
<td>3.700</td>
<td>4,000,000</td>
</tr>
<tr>
<td>$ Per Job Invested</td>
<td>$11,000</td>
<td>$7,100</td>
<td>$200,000</td>
</tr>
</tbody>
</table>
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%
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
Creating a National Innovation Framework

More Signs of Capital Starvation

A Federal VC Fund of Funds?

Recession Knocks VC Funds to 5 ½ Year Low

Into the Valley of Death

Federal Aid Sought for Equity-Backed Companies

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!
U.S. Experiencing a Slowdown In Its Global Innovation Leadership

GLOBAL INNOVATION INDEX

<table>
<thead>
<tr>
<th>RANKING</th>
<th>COUNTRY</th>
<th>SCORE*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Singapore</td>
<td>2.45</td>
</tr>
<tr>
<td>2</td>
<td>South Korea</td>
<td>2.26</td>
</tr>
<tr>
<td>3</td>
<td>Switzerland</td>
<td>2.23</td>
</tr>
<tr>
<td>4</td>
<td>Iceland</td>
<td>2.17</td>
</tr>
<tr>
<td>5</td>
<td>Ireland</td>
<td>1.88</td>
</tr>
<tr>
<td>6</td>
<td>Hong Kong</td>
<td>1.88</td>
</tr>
<tr>
<td>7</td>
<td>Finland</td>
<td>1.87</td>
</tr>
<tr>
<td>8</td>
<td>United States</td>
<td>1.80</td>
</tr>
<tr>
<td>9</td>
<td>Japan</td>
<td>1.79</td>
</tr>
<tr>
<td>10</td>
<td>Sweden</td>
<td>1.64</td>
</tr>
</tbody>
</table>

Source: Boston Consulting Group & National Association of Manufacturers

*Global Innovation Index evaluated both innovation inputs, such as fiscal and education policies, and outputs such as patents, technology transfer from basic university research, research and development, and business performance
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.

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.
<table>
<thead>
<tr>
<th>Year</th>
<th>Innovation Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>The State–Federal Technology Partnership Taskforce Formed</td>
</tr>
<tr>
<td>1997</td>
<td>President Clinton creates the U.S. Innovation Partnership</td>
</tr>
<tr>
<td>2000</td>
<td>The State Science and Technology Institute (SSTI) is free-standing</td>
</tr>
<tr>
<td>2004</td>
<td>Innovation Philadelphia and Rich Bendis create Innovation America</td>
</tr>
<tr>
<td>2005</td>
<td>The National Innovation Act created President’s Council on Innovation</td>
</tr>
<tr>
<td>2006</td>
<td>The National Competitiveness Investment Act</td>
</tr>
<tr>
<td>2007</td>
<td>The America Competes Act</td>
</tr>
<tr>
<td>2007</td>
<td>The National Governor’s Association under Gov. Napolitano create the Innovation America Partnership</td>
</tr>
<tr>
<td>2008</td>
<td>Governor Napolitano creates the Innovation America Foundation</td>
</tr>
<tr>
<td>2008</td>
<td>The National Innovation and Job Creation Act introduced to create a National Innovation Council</td>
</tr>
<tr>
<td>2008</td>
<td>The National Innovation Foundation proposed by Rob Atkinson</td>
</tr>
<tr>
<td>2009</td>
<td>A National Innovation Framework proposed by Rich Bendis</td>
</tr>
<tr>
<td>2009</td>
<td>Commerce Dept. creates Office of Innovation &amp; Entrepreneurship?</td>
</tr>
</tbody>
</table>
MISSION: TO ACCELERATE THE GROWTH OF THE ENTREPRENEURIAL INNOVATION ECONOMY IN AMERICA

- 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.

- 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.

- Opportunity to leverage the federal innovation portfolio of programs with state and regional early-stage funds and IBED organizations.

- The **moons are aligning** to create and implement, an integrated innovation U.S. strategy and leverage the newly created Commerce Department Office of Innovation and Entrepreneurship.
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
National Innovation Framework

- Angel Capital Association (ACA)*
- Community Development Venture Capital Alliance (CDVCA)*
- National Association of Seed & Venture Funds (NASVF)*
- American Society of Mechanical Engineers (ASME)*
- State Science & Technology Institute (SSTI)*
- National Business Incubation Association (NBIA)*
- Association of University Research Parks (AURP)*
- Association of University Technology Managers (AUTM)*

*Potential national innovation partners

- Federal Agency (TBD)
- National Innovation Jobs Seed Fund
  - $2 billion fund
- National Seed Fund of Funds 50 Seed Funds
  - $1.8 billion
- Innovation Capital Technical Assistance Grant Fund
  - $200 million

NPPPI
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Not For Profit
(Innovation America)

establishes criteria, metrics & best practices

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

Federal Technology Innovation Programs
SBIR, STTR, TIP, MEP, WIRED, FLC, EPSCoR, NSF-PFI, NSF-IUCRC, NSF-Eng’g Resource Center, DOE-Ind’l Tech. Program

Innovation Federal Capital Programs
CRA, CDFI, NMTC, NISF, TIP, SBIR

National Innovation Advisor
Federal Innovation Partnership
Partners in National Innovation Development

ASME

NASVF

ACA

ASSOCIATION OF UNIVERSITY RESEARCH PARKS

Community Development Venture Capital Alliance

SSTi

NBIA

AUTM
National Innovation Jobs Seed Fund

U.S. Federal Agency (TBD)

National Innovation Jobs Seed Fund
$2 billion fund

National Innovation Jobs Seed Fund of Funds
50 Seed Funds = $1.8 Billion

- 50 State/Regional Innovation Seed Funds
- Receive approximately $10-15 M direct investment from NISF
- Has to match with $1 from other third parties
- Awarded on early-stage innovation focus and experienced managers
- Leverages successful federal SBIR recipients and like or similar state and regional investment programs
- Federal Government is a Financial Partner

Innovation Capital Technical Assistance Grant Fund
$200 Million

- Available to both NISF funds
- Grants are used to provide support and technical assistance to fund managers, portfolio, companies & entrepreneurs
- The National Public-Private Partnership would administer the Innovation Capital Technical Assistance Grant Fund
- Approximately $200 M
A National Innovation high-level Advisor performs an intermediary function with the existing and potential new federal innovation programs and also interacts with other national innovation initiatives

- Identify gaps in the US national innovation portfolio and make recommendations for new programs
- Current Federal budget for listed Technology Innovation Programs is approximately $2.7 - $3 billion
- Interacts with the National Public-Private Partnership and existing innovation associations and networks
- Leverages its technology innovation investment programs with state and regional like or similar programs
- Performance-based budgeting and measurement
- National clearinghouse of information and resources
National Innovation Intermediary

- A Public Private Partnership with a mission to accelerate the growth of the entrepreneurial innovation economy in America
- Intermediates partnerships with existing innovation associations and networks and federal technology innovation programs
- Manages & supports the listed programs

Innovation America
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Potential partnering innovation associations and networks

- 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)*

Innovation America

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

✓ Create a $2 billion dollar National Innovation Jobs Seed Fund (NISF) that consists of a Fund of Funds and a Technical Assistance Grant Fund. The Technical Assistance Grant Fund provides entrepreneurial support resources and services to portfolio companies and Fund Managers.

✓ Encourage the leveraging and coordination of Federal Technology Innovation Programs through a Federal Innovation Partnership with a new administration high-level National Innovation Advisor that has access to the President.

✓ Create a Public-Private Innovation Intermediary with a mission to accelerate the growth of the entrepreneurial innovation economy in America and oversee the National Innovation Seed Fund. This intermediary would be a program partially supported by a U.S. federal agency.
The Road from Innovation to Commercialization

...has many complex pieces!
All of the puzzle pieces must come together early in order for the project to have any hope of commercial success
“Somebody has to do something, and it's just incredibly pathetic that it has to be us.”

--Jerry Garcia of the Grateful Dead
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