

Regional Intermediary Structures for Investing in Open Innovation



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Innovation America
Publisher, innovationDaily
September 24, 2011
Tampere, Finland**

Rich Bendis BIO



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- ✧ **Board member TechnoPolicy Network, The Hauge**
- ✧ **Consultant to the United Nations & NATO on IBED**
- ✧ **Founding Board Member of SSTI and NASVF**
- ✧ **Former member of the U.S. Innovation Partnership Advisory Board**
- ✧ **U.S. member National Academy of Sciences (SBIR Review Committee)**
- ✧ **Member Eisenhower Fellowship Selection Committee**
- ✧ **Board Member of University City Science Center – Philadelphia**
- ✧ **Chairman & CEO of Continental Healthcare Systems (NASDAQ IPO)**
- ✧ **Former Executive with Quaker Oaks, Texas Instruments, Polaroid & Marion Laboratories**

The Global Innovation Imperative

- Innovation is Key to Growing and Maintaining a Country's **Competitive** Position in the Global Economy and to address Global Challenges
- **Collaboration** among Small and Large Businesses, Universities, and Research Institutes is Essential for Innovation & Commercialization
- **New Institutions and New Incentives**, are increasingly important to support collaboration and foster innovation
- Competitive advantages are increasingly tied to human capital and innovation
- **Economic growth** is closely related to education/workforce, energy, climate change, environmental, natural resource, geopolitical issues & entrepreneurship



**OPEN
INNOVATION
MATTERS**

How Leading Nations Respond to the Innovation Imperative?

They are providing four things:

- High-level Focus
- Sustained Support for R&D: Leveraging Public and Private Funds
- Support for Innovative SMEs
- New Innovation Partnerships to bring new products and services to market



World Innovation Index

Country	2011	2010	2009
Sweden	2	2	3
Finland	5	5	8
US	7	11	1
Netherlands	9	8	10
Germany	12	16	2
Belgium	24	17	18
Spain	32	30	28
Portugal	33	34	40
Italy	35	38	31
South Africa	59	51	43
India	62	56	41

Open Innovation Defined

“Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology.”

Henry Chesbrough



Nokia Open Innovation

Nokia Research Center

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Open Innovation

Nokia Research Center is actively engaging in Open Innovation through selective and deep research collaborations with world-leading institutions. By sharing resources, leveraging ideas, and tapping each other's expertise we are able to create vibrant innovation ecosystems, multiply our efforts, enhance innovation speed and efficiency, and derive more value for our organizations and ultimately for our end-customers.

The geographical and thematic extent of our Open Innovation network reflects our ambition to foster innovation, tackle key technical challenges and unlock global business opportunities in collaboration with the world's best experts. This page lists in alphabetical order the strategic academic partners with whom Nokia has signed formal framework research agreements.



Trends & Predictions in Open Innovation

- Innovation involves more than just R&D (seriously!)
- Not enough invented here so look outside
- Ideas are precious so manage them
- Experiment with Collective Intelligence and crowdsourcing
- Innovate the Innovation Process (and do it properly for a change)
- Innovators learn to love measurement and ROI
- The future is cheap ... and coming from the bottom of the Economic Pyramid
- Don't be surprised that your CEO gets very interested in innovation
- Innovation with full-time staff & a full-time trained staff are best.



Source: Mark Turrell, CEO of Imaginatik

Open Innovation Paradigm



Open Innovation is not about...



...but about

open access to own technologies

outsourced R&D

technology only

technical invention

appropriating value

new ventures

partnerships only

cutting research costs

strategic IPR management

strategic R&D

both technology and business model

commercial innovation

win-win partnership

core product development process

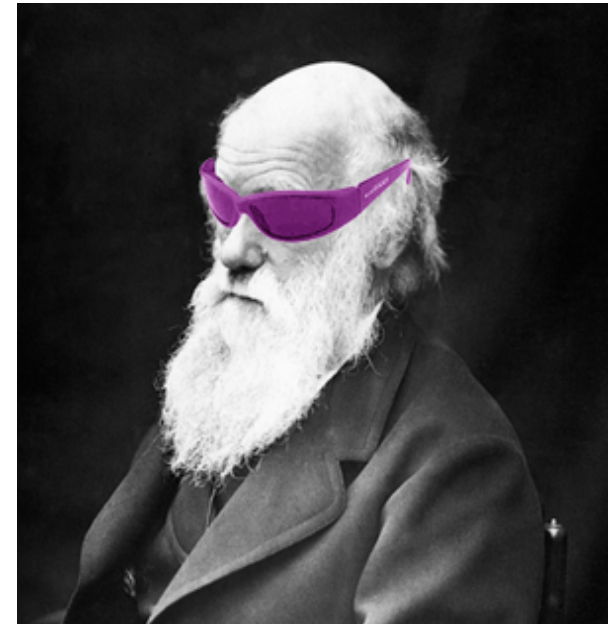
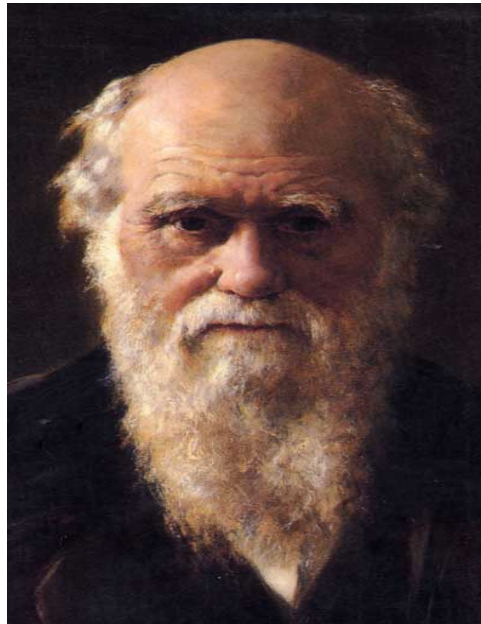
innovation ecosystem building

improving R&D Return on Investment

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



The Six Driving Forces of Change

- Commoditization
- The Digital Revolution
- Social Mediaization throughout society
- Global Open Innovation
- The Turbulent World
- Acceleration (or running faster to stay in the same place)



Why Is Innovation Essential?

***“INNOVATION
DISTINGUISHES
BETWEEN A LEADER
AND A FOLLOWER.”***

-STEVE JOBS



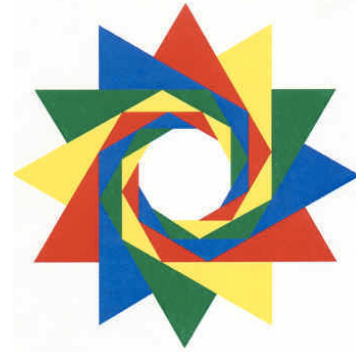
Defining Innovation

INNOVATION is the creation and transformation of knowledge into new products, processes, and services that meet market need.....and interactions, entertainment forms, and ways of communicating and collaborating



Implementing a New Innovation Paradigm

- Deviate from traditional perspectives
- Encourage public investment and risk taking
- Develop trust through collaboration
- Ensuring responsiveness to partners' missions
- Build consensus of all constituents through education, participation, and positive outcomes
- Move from Tech-Based Economic Development (TBED) to.....



Innovation-Based Economic Development (IBED)

Innovation Paradigm Shift

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



The Historic  Garage
invent

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



CASH IS KING!

University Commercialization Centers

THE GAP



Academic Research

- Federal Grants
- Corporate Sponsored Research

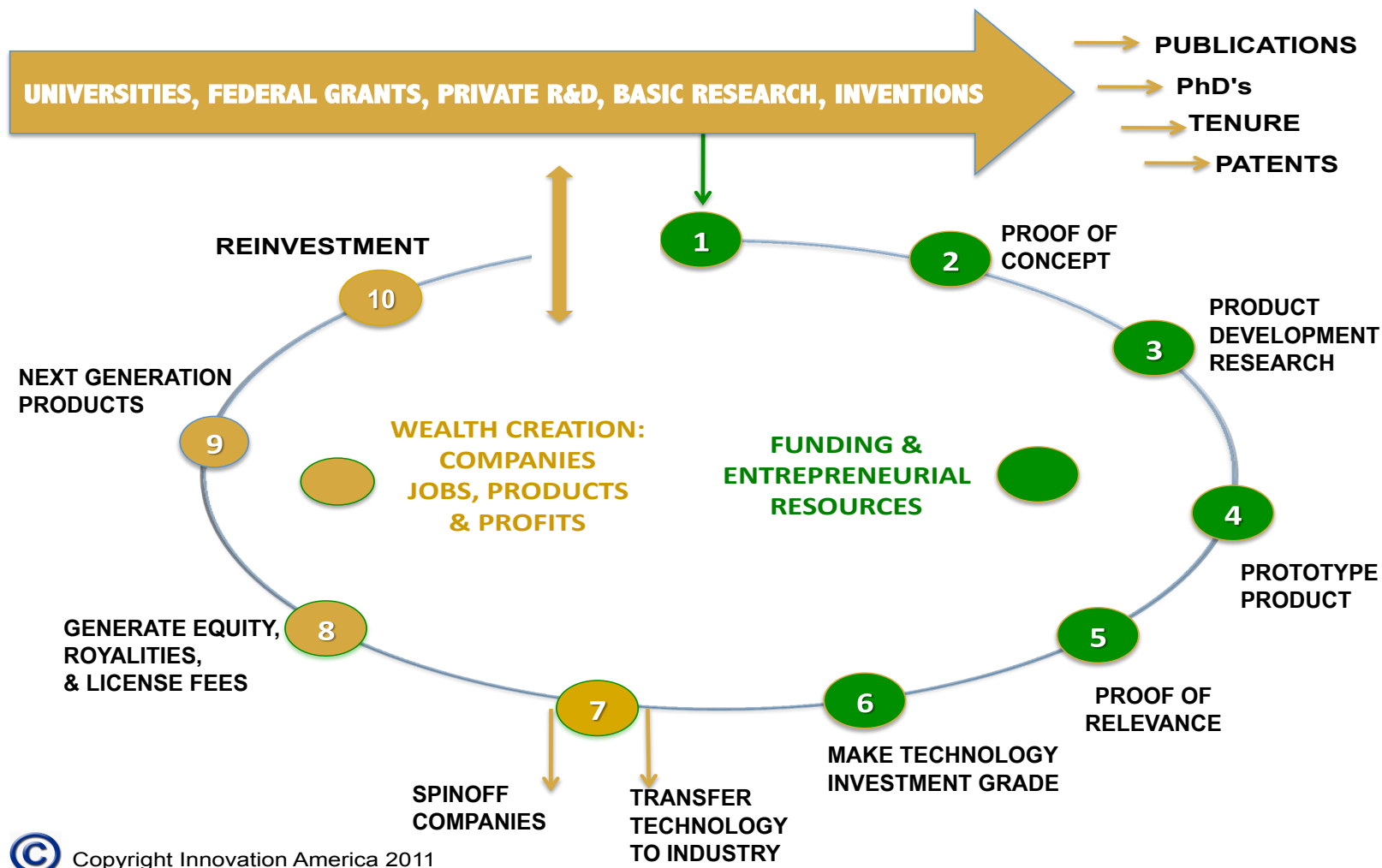
- » Technology risk
- » Market risk



Commercial Enterprise

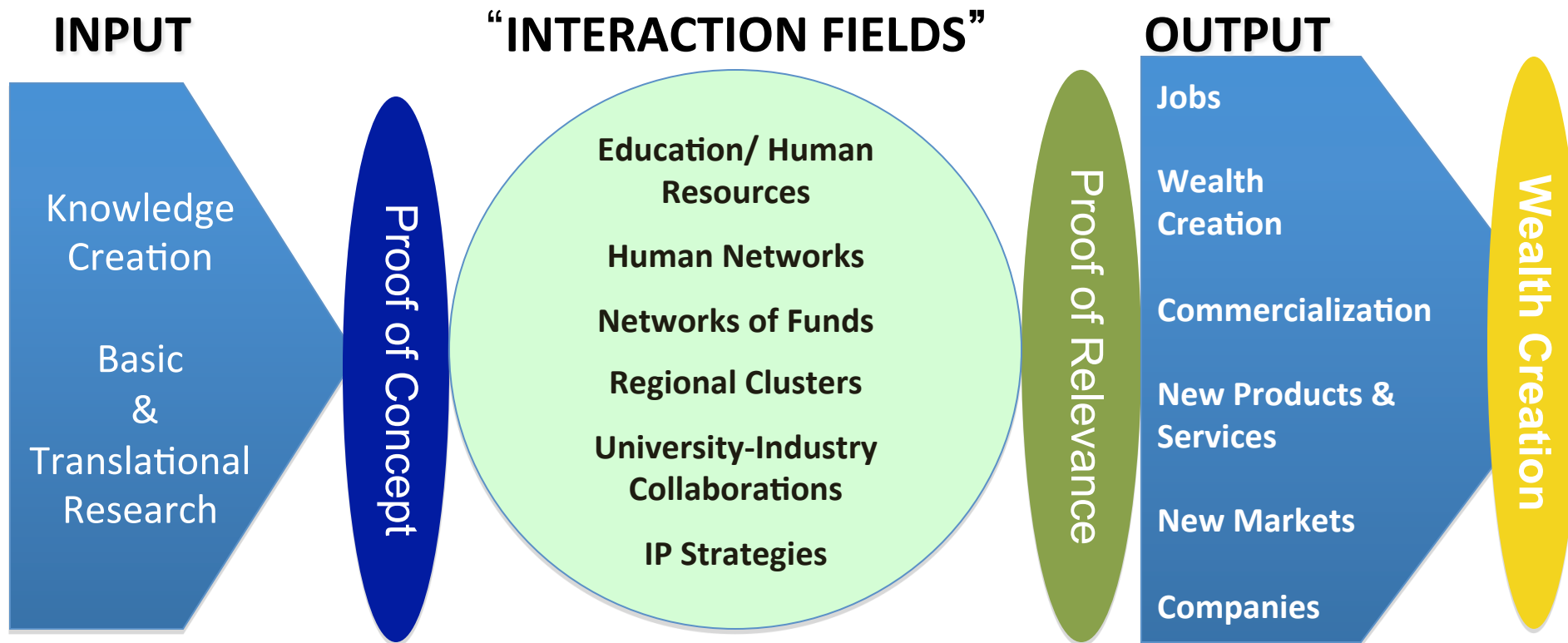
- Investors Commercialize
- Angels
 - VC's
 - Corporations

Innovation America Commercialization Model



Copyright Innovation America 2011

Innovation Ecosystem



The concept of the **Innovation Ecosystem** stresses that the flow of technology and information among people, enterprises and institutions is key to a vibrant innovation process.

Model Ecosystem

ACADEMIA

- RESEARCH/T2
- LIFELONG LEARNING
- ECONOMIC DEVELOPMENT

INDUSTRY

- PROFIT
- PROCESS
- PRODUCT

INSEPARABLE MISSIONS

GOVERNMENT

- SUSTAINABILITY
- QUALITY OF LIFE
- ECONOMIC POLICY

FOUNDATIONS

- ECONOMIC GROWTH
- COMMUNITY INVESTMENT
- REGIONAL COLLABORATION

Government's Role in Innovation

- Long term vision and planning
- Identify gaps and trends in science, technology, innovation and SME development
- **Be a catalyst through long-term strategic investments and partnering**
- Develop a balanced and flexible research and development investment portfolio
- Encourage private sector innovation
- Establish performance-based research and development
- Accelerate the commercial exploitation of creativity and knowledge



Government Innovation Programs



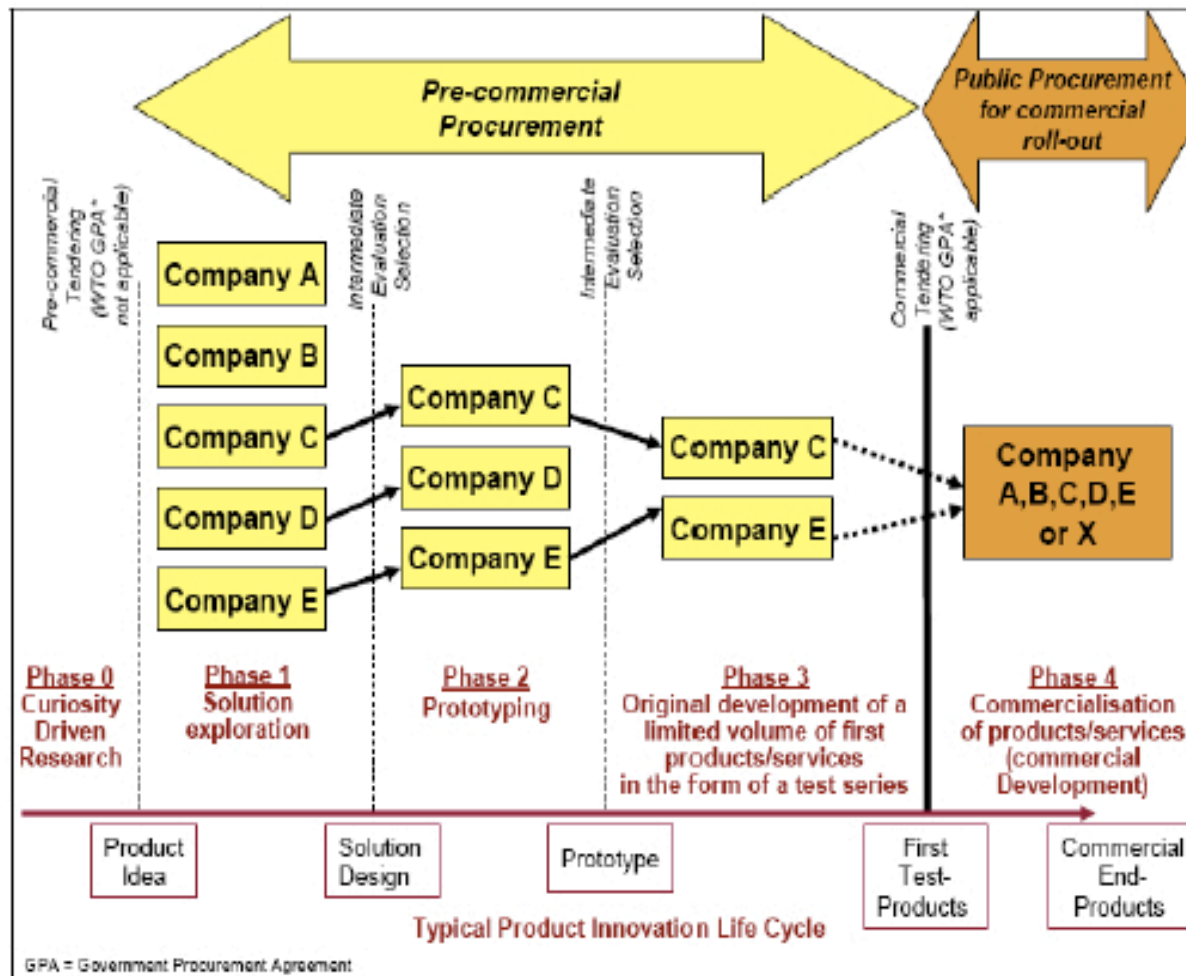
Pre-Commercial Procurement

Pre-commercial
procurement:

DRIVING INNOVATION TO ENSURE HIGH QUALITY PUBLIC
SERVICES IN EUROPE

- The scope is R&D services only
- The application of risk-benefit sharing
- A competitive procurement designed to exclude State aid

2. SBIR and PCP



Some differences:

- SBIR P1 is feasibility study
- SBIR integrates P2 and P3 of PCP
- SBIR can lead to B2G and / or B2B, can PCP?

My conclusions:

- SBIR is more simple and more flexible, cheaper and gives results faster.
- PCP has advantages too, like less risk in complex public procurements!

Status Overview of implementation of PCP Across Europe

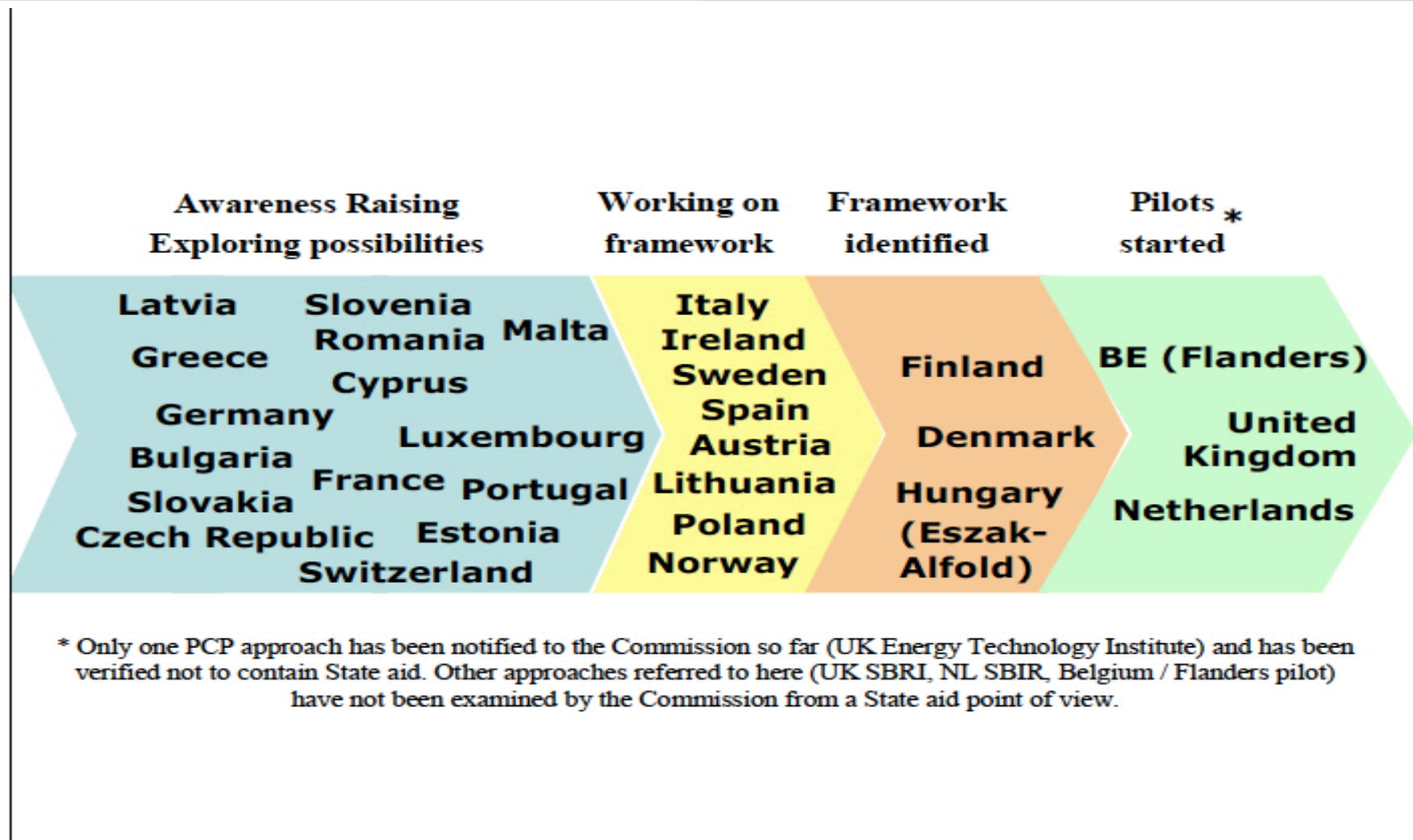
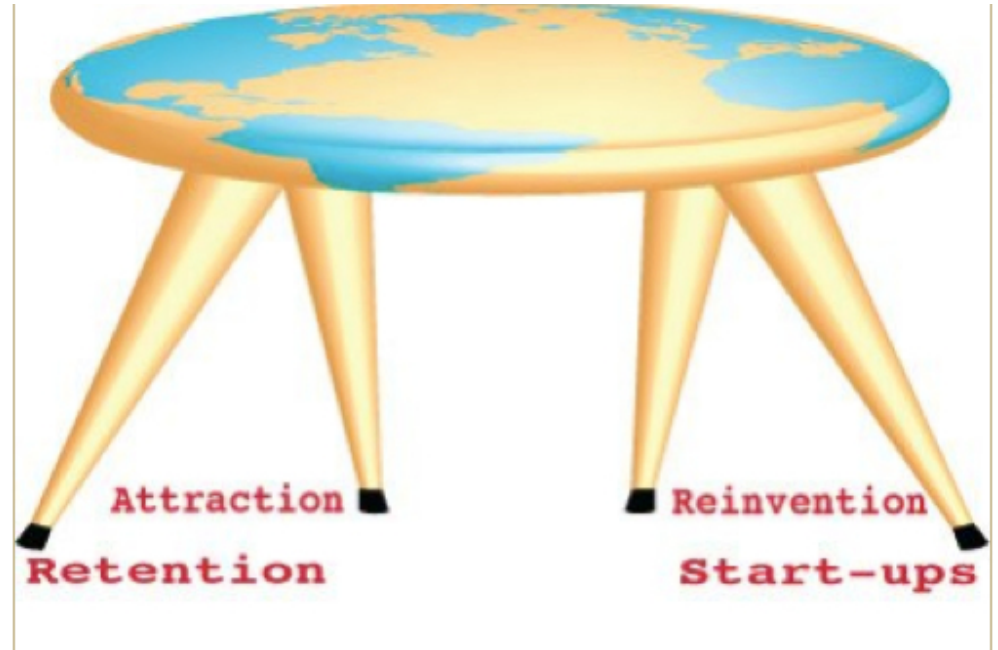


Figure 1: Overview status of implementation of PCP across Europe

Economic Development

- Economic Development is like a 4 - legged stool:
 - **Attraction**
 - **Retention**
 - **REINVENTION**
 - **Grow Your Own**
- IBED requires patience and persistence, continuity and consistency
- Working with early-stage companies takes time
- A balanced portfolio economic development strategy is best!



Convergence of Traditional Eco Devo & IBED

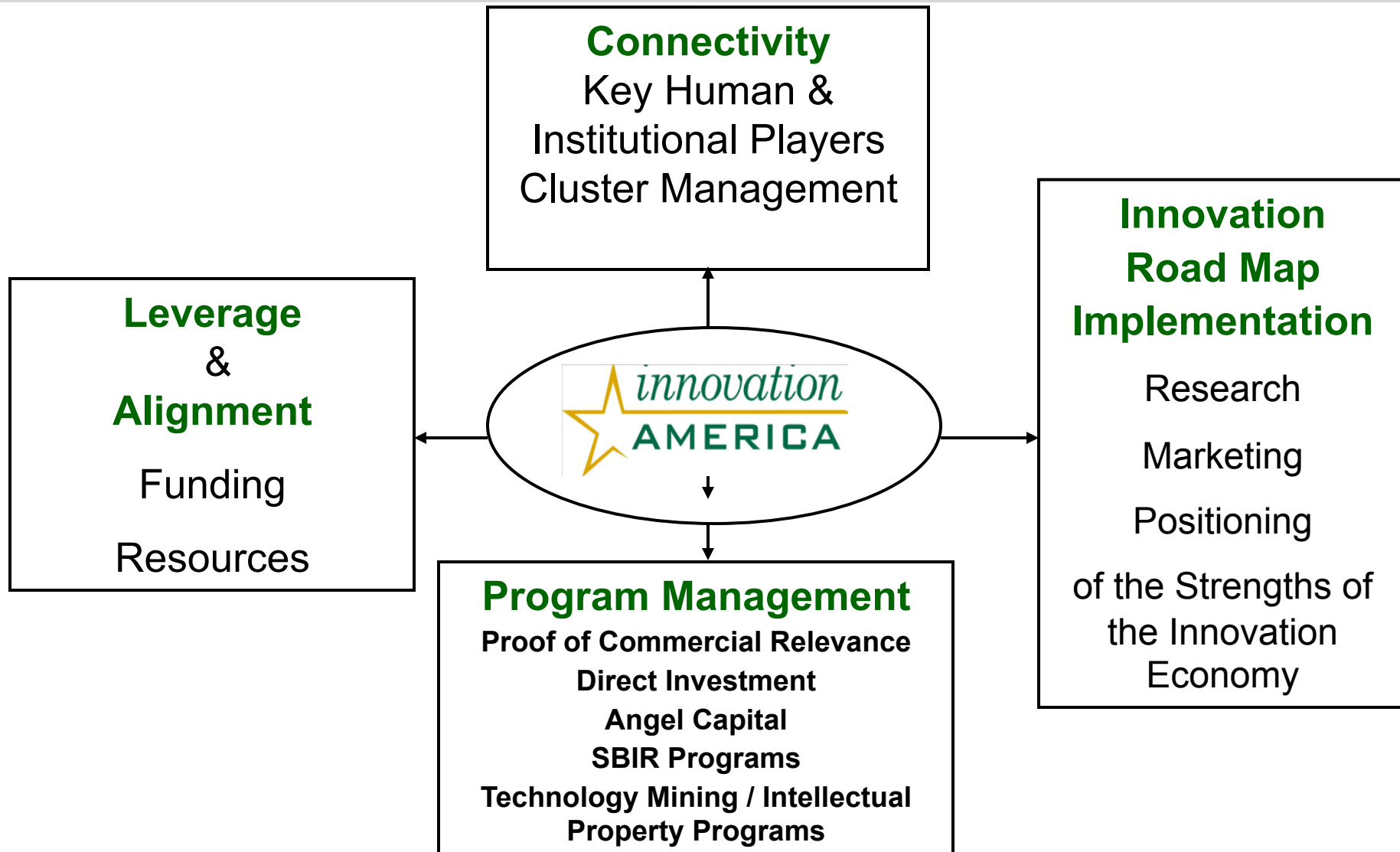
	<u>Traditional</u>		<u>Innovation</u>
Assets:	PHYSICAL		KNOWLEDGE
Competitive Basis:	Natural resources Highways / Rail Proximity Costs	➔	Specialized talent Networks, Clusters, University research, Commercialization, Market Positioning Globalization
Key values/offerings:	Business parks Incentives	➔	Access to research Workforce competencies Lifestyle
Lead Organization:	Chambers / EDCs	➔	Economic developers INNOVATION INTERMEDIARIES

What is a 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



Intermediary Best Practices

- Longevity
- Bipartisan Support & Champions
- Independent Organizations
- Continuous Reinvention
- PRIVATE SECTOR LEADERSHIP
- Understand Return On Investment
- Sustainability In Funding
- Accountable
- Innovative
- Effective Leadership



Innovation Intermediary Commercialization Services

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 – Proof of Commercial Relevance			
Full Scale Production	Production	Sales and Distribution	Business Growth
Maturity	Production Support	Market Diversification	Business Maturity
		30	

U.S. State Innovation Programs



Regional IBED Intermediaries



Innovation Works



Northeast Ohio IBED Intermediaries



NorTech, (the Northeast Ohio Technology Coalition) is a nonprofit Technology-Based Economic Development (TBED) organization that champions growth in Northeast Ohio's 21 county region. Foundation funded.



JumpStart is creating economic transformation in Northeast Ohio by providing resources to entrepreneurs to grow their high potential, early stage companies.



BioEnterprise is a business formation, recruitment, and acceleration initiative designed to grow health care companies and commercialize bioscience technologies



Team NEO advances Northeast Ohio's economy by attracting businesses worldwide to the 16-county Cleveland Plus region.



Cleveland Clinic Innovations advances commercial oriented innovation and transforms promising therapies, devices and diagnostics into products by creating spin-off companies, licensing to established companies and enabling equity partnerships.

The New Economy Initiative for Southeast Michigan

Founded:2008

Organizational Mission: Unique philanthropic initiative aimed at helping to restore southeast Michigan to a position of leadership in the new global economy.

Original Funding: \$100M – 8 year initiative - 10 national and local foundations

Goal: Accelerate the transition of metro Detroit to an innovation-based economy. Entrepreneurial Eco-System

- Capitalizing on Existing Assets and Resources
- Build and employ a more skilled and educated workforce
- Urban Entrepreneurial Partnership provides assistance to 150 minority automotive suppliers to diversify their customer bases to aerospace, alternative energy, medical devices, military and homeland security.



European/Canadian Innovation Intermediaries



<http://www.vinnova.se>



<http://www.cotec.pt>



<http://www.senternovem.nl>



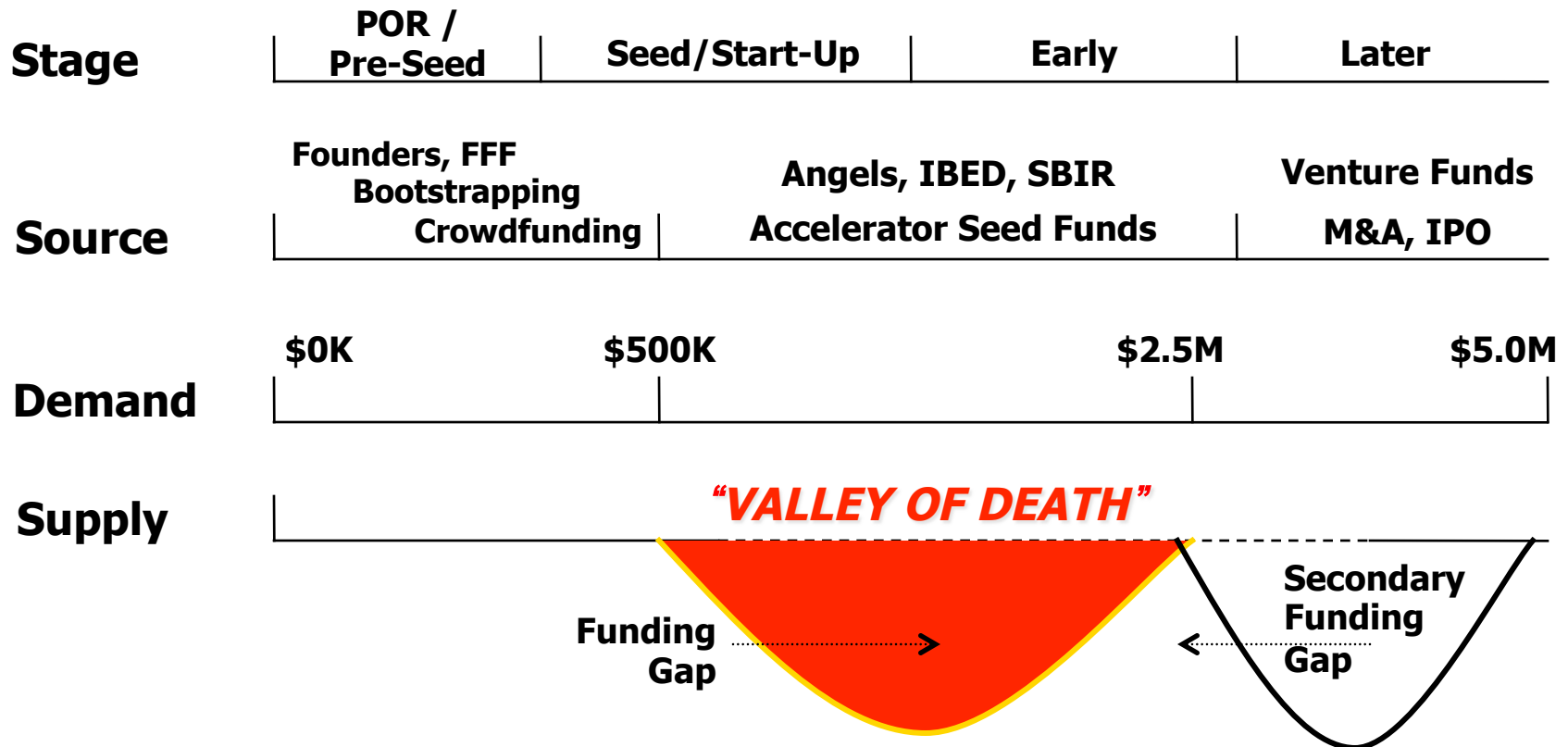
<http://techsoutheast.ca/index.php>



<http://www.innovasjon Norge.no>

Innovation Capital Valley of Death

“VALLEY OF DEATH”



Jobs! Jobs! Jobs!

Does Seed Investing **REALLY** Create Jobs?



Public Investment In Job Creation

Category	CDVCA*	State of PA	State of MI	State of UTAH	Stimulus Bill
Funds Invested	\$26M	\$90M	\$291M	\$60M	\$800B
Jobs Created	3,700	8,150	28,854	2,047	1,000,000 To 4,000,000
\$ Per Job Invested	\$7,100	\$11,000	\$11,728	\$29,300	\$800,000 To \$200,000












*Community Development Venture Capital Association

Top 10 States for Venture Capital

State	2010 VC Raised	1970-2010 VC Invested/Companies	Public Co's VC Backed # of Jobs/ U.S. Revenues	Cost of 1 Job Created per VC \$ invested
CA	\$11.6B	\$215.7B / 9,827	2,822,345/\$846B	\$74,846
MA	\$2.5B	\$53.6B / 2,860	775,151/\$190B	\$69,324
TX	\$981M	\$27.7B / 1,743	1,129,551/\$243B	\$24,525
NY	\$1.4B	\$25.2B / 1,799	656,632/\$188B	\$38,384
WA	\$634M	\$15.B / 837	778,579/\$256B	\$20,293
CO	\$483M	\$15.1B / 793	162,720/\$45B	\$92,812
NJ	\$469M ³⁹	\$14.6B / 788	328,429/\$66B	\$44,464
PA	\$559M	\$13.3B / 1,130	783,527/\$238B	\$16,930
IL	\$732M	\$9.8B / 726	256,750/\$63B	\$38,693
NC	\$529M	\$8B / 475	195,973/\$42B	\$40,835

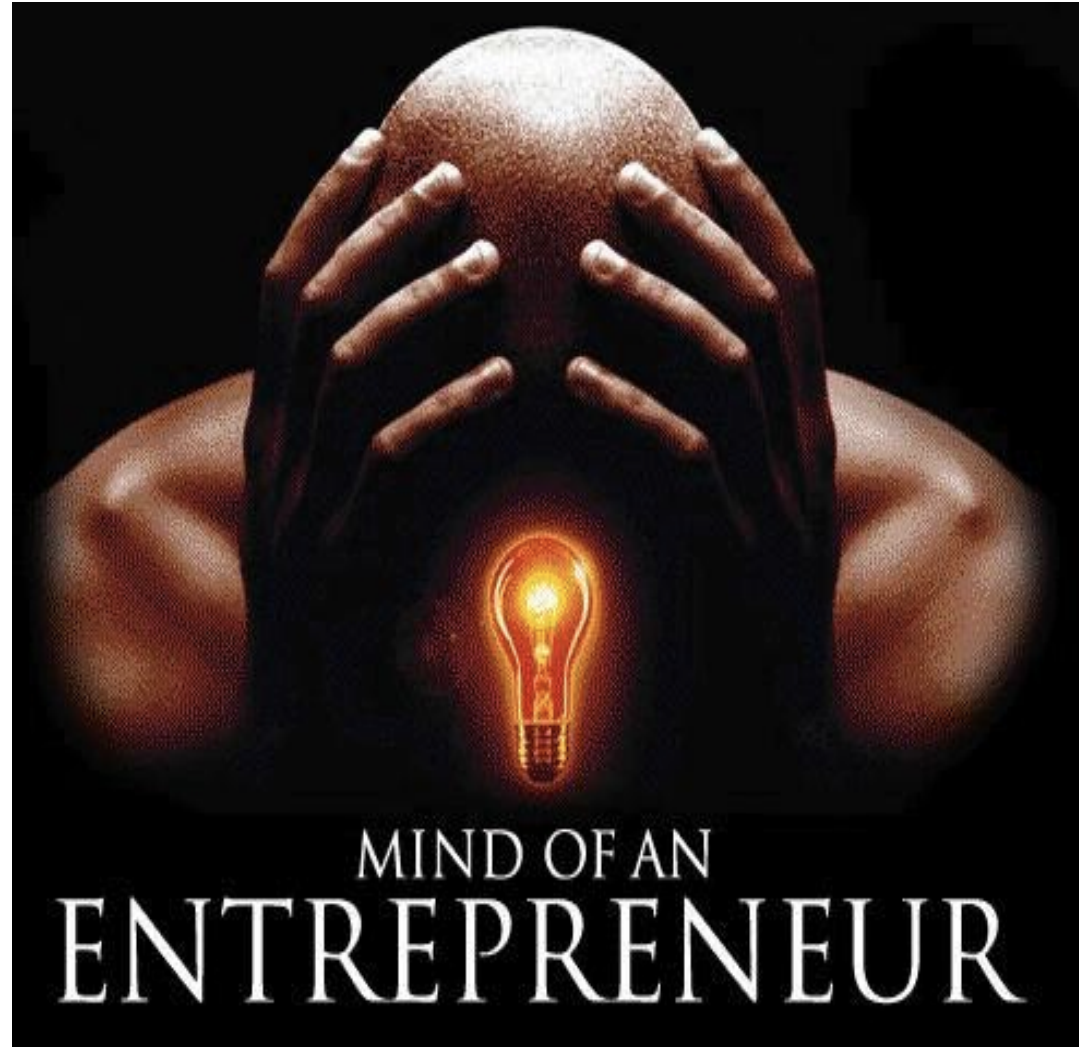
Source: PWC/NVCA 2011

Innovation Funding Continuum

DREAM	CONCEPT	APPLIED	COMMERCIAL RELEVANCE	STARTUP	ROLL OUT	GROWTH
FoundersFFF Bootstrapping Crowdfunding	Seed	Accelerator	IBED	Federal	ANGEL	VC
    						

Six Distinct Organizational Paths for Entrepreneurs

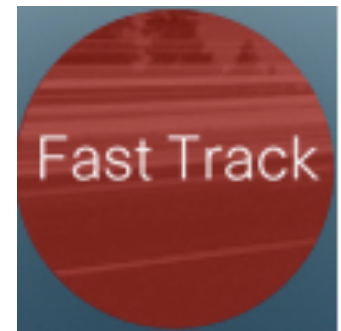
- Lifestyle business
- Small business
- Scalable startup
- Buyable startup,
- Large company,
- Social entrepreneur



Incubators & Accelerators

Incubators - incubators allow for slower growth, although they typically have some requirements as to how long companies can remain in the incubators before they graduate.

Accelerators - as their name implies, focus on an intense, boot-camp-like experience to get new businesses up and running in a matter of months.



Successful Funding Models



Third Frontier
Innovation Creating Opportunity

\$700M 5-year Bond Issue
62% Taxpayer vote approving



**KANSAS BIOSCIENCE
AUTHORITY**

\$581M 15 year Wage-tax TIF



\$160M VC Premium insurance
Tax Incentives



\$60 Million
Angel Tax Credits



\$129M E-RIC Grant

What Is A Road Map.....Why Is It Needed?

- A roadmap answers the *question* “**Where do we want to be and how to we get there?**”
- A cluster roadmap *provides strategies and action* plans to best *achieve a vision of the future shared by a critical mass* of industry-related organizations.
- The strategies and action plans are developed according to the unique strengths of the cluster and region as compared to a global market opportunity.



Innovation America: Innovation Road Map Process

1. Literature Review of Comparables
2. Key Stakeholder Interviews/Recommendations
3. Asset & GIS Mapping/Cluster Analysis
4. Innovation Benchmarking/Index (Peer 2 Peer)
5. Innovation & Entrepreneurship Resource Guide
6. Innovation Economic Development Organizational Analysis
7. Innovation & Commercialization Program Gap Analysis
8. Innovation Ecosystem Public Policy Recommendations
9. Innovation Strategic and Organization Plan
10. Operations & Implementation Plan
11. Branding & Marketing Strategy
12. Economic Impact Analysis - Celebrate Your Success



IOWA Innovation Road Map Leadership

IOWA

economic DEVELOPMENT

Iowa Department of
Economic Development



IOWA STATE
UNIVERSITY



IOWA ASSOCIATION OF
BUSINESS AND INDUSTRY

The Voice of Iowa Business Since 1903.

Road Map Projects – Resource Guide



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PAGE

RESOURCE DIRECTORY

Appanoose Economic Development Corporation

101 W. Van Buren Street, Suite 1
Centerville, IA 52544

Telephone: 641-856-3388
Website: www.appanoosecounty.org

Programs: Economic Development, Revolving Loan Fund, AIC Financial Assistance, IowaMicroloan Program Affiliate
Key Staff: Tod Forts, Executive Director; aeddirector@iowatelecom.net

Overview: AEDC's mission is to facilitate the retention, expansion, attraction, and creation of businesses and jobs, and collaboratively work to enhance the overall business climate of the county.

Program Services: Work Opportunity Tax Credit, Enterprise Zone, HUBZone, Property Tax Abatement, Appanoose Industrial Corporation, Tax Increment Financing

The Revolving Loan Fund is designed to assist small to medium sized businesses, and requires a minimum of 5 jobs be created or retained to access this program. The interest rate is 5% and the maximum repayment term is 5 years. The maximum loan amount is \$50,000.

The AIC Financial Assistance Program is designed for medium to large businesses who are expanding or considering moving their business to Appanoose County. AIC may be able to provide at least \$1,000 per job created in the form of a forgivable loan.

The IowaMicroloan was created for those microbusinesses that are considered on the fringe of riskbearing capacity for most traditional financial institutions. Loans are available from \$5,000 to \$35,000.

ARCH Venture Partners

8725 W. Higgins Road, Suite 290
Chicago, IL 60631

Telephone: 73-380-6600
Website: www.archventure.com/entrepreneurs.html

Key Staff: Keith L. Ciandell, Co-founder and Managing Director

Overview: ARCH invests primarily in companies co-founded with leading scientists and entrepreneurs, concentrating on bringing to market innovations in life sciences, physical sciences, and information technology. We enjoy special recognition as a leader in the successful commercialization of technologies developed at academic research institutions and national laboratories. If you are an entrepreneur who has identified an opportunity to commercialize an advanced technology and you are working on a business plan or have formed a startup venture to introduce new technology in information technology, life sciences, or physical sciences, please contact us.

Stage of Development for Investments: Seed/Early Stage

Preferred Investment Industry: Micro/Nanotechnologies, specialty materials and semiconductors, biotechnology, interdisciplinary technologies.

Iowa Innovation Index - Indicators



Iowa Innovation Index

IOWA INNOVATION INDEX
KEY INNOVATION INDICATOR SCORECARD

National Ranking	Regional Ranking	Indicator Number	Indicator Subject Rankings
Key: ++: National/Regional Indicator Ranking - Strength 0: National/Regional Indicator Ranking - Neutral ---: National/Regional Indicator Ranking - Weakness			
Economic Impact			
---	---	1	Industry Cluster Employment & Wage
N/A	N/A	2	Occupations & Wages
---	---	3	Household Income
0	---	4	Productivity
---	---	5	Corporate Sales and Manufacturing Value-added
---	+	6	Manufacturing Exports
---	---	7	Wages & Wage Growth (In Key Industry Clusters & Overall)
Innovation Research & Commercialization			
0	0	8	Royalty and Licensing Income to Universities
---	---	9	Start-up Companies Formed from University Research
---	---	10	Federal Investment in University & Engineering Research
---	+	11	State and Local Investment in University Science & Engineering Research
0	---	12	Industry & Other Support in University Science & Engineering Research
---	0	13	Size of College and University Endowments
---	0	14	Patenting
++	++	15	Academic Article Output
---	---	16	Research & Development Performed
Innovation Capital			
---	+	17	Sum of all Investments - all stages
---	---	18	Targeted Industries Innovation Capital Investments
---	---	19	SBIR/STTR Awards
---	---	20	Number of Public Traded Companies
TBD	TBD	21	R&D Tax Credits
TBD	TBD	22	Angel Tax Credits
Innovation Workforce			
+	0	23	Education Level of the Workforce
---	---	24	Public Investment in K-16 Education
---	---	25	Science and Engineering Degrees
N/A	0	26	Talent Flow and Migration (Int'l and domestic)
Innovation Location and Environment			
N/A	++	27	State-based Innovation Intermediary (Public/Private Partnership)
---	0	28	Broadband Internet Availability
N/A	---	29	E-Government Programs
---	---	30	Arts and Cultural Endowment

Special thanks to our sponsors:



Iowa & Federal Innovation Capital Programs

State

- Iowa Demonstration Fund
- Iowa Seed Fund
- \$10M Annual Angel Capital Tax Credit
- EB-5 Immigrant Investment Program
- SBIR Assistance Program

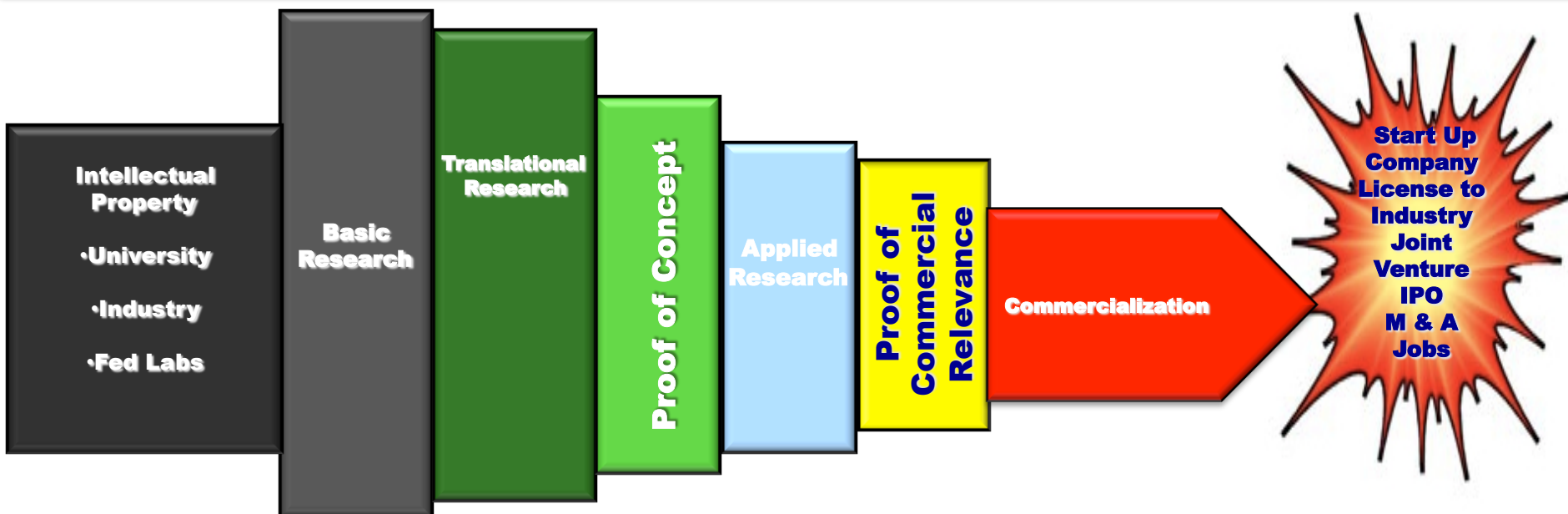
Federal Agency Programs

- EDA i6 Green - \$1M
- USDA/ARS Rural Development Funding Programs
- US Treasury SSBCI



Knowledge

Infrastructure: Interns → MBA's → PhD's → Post Docs → Univ. Research → IIICN → Mentors/Advisors → Industry Management



State & University

Funding: POCC → Demonstration Fund → POCR → State Funds → Iowa Seed Fund

Federal & Public

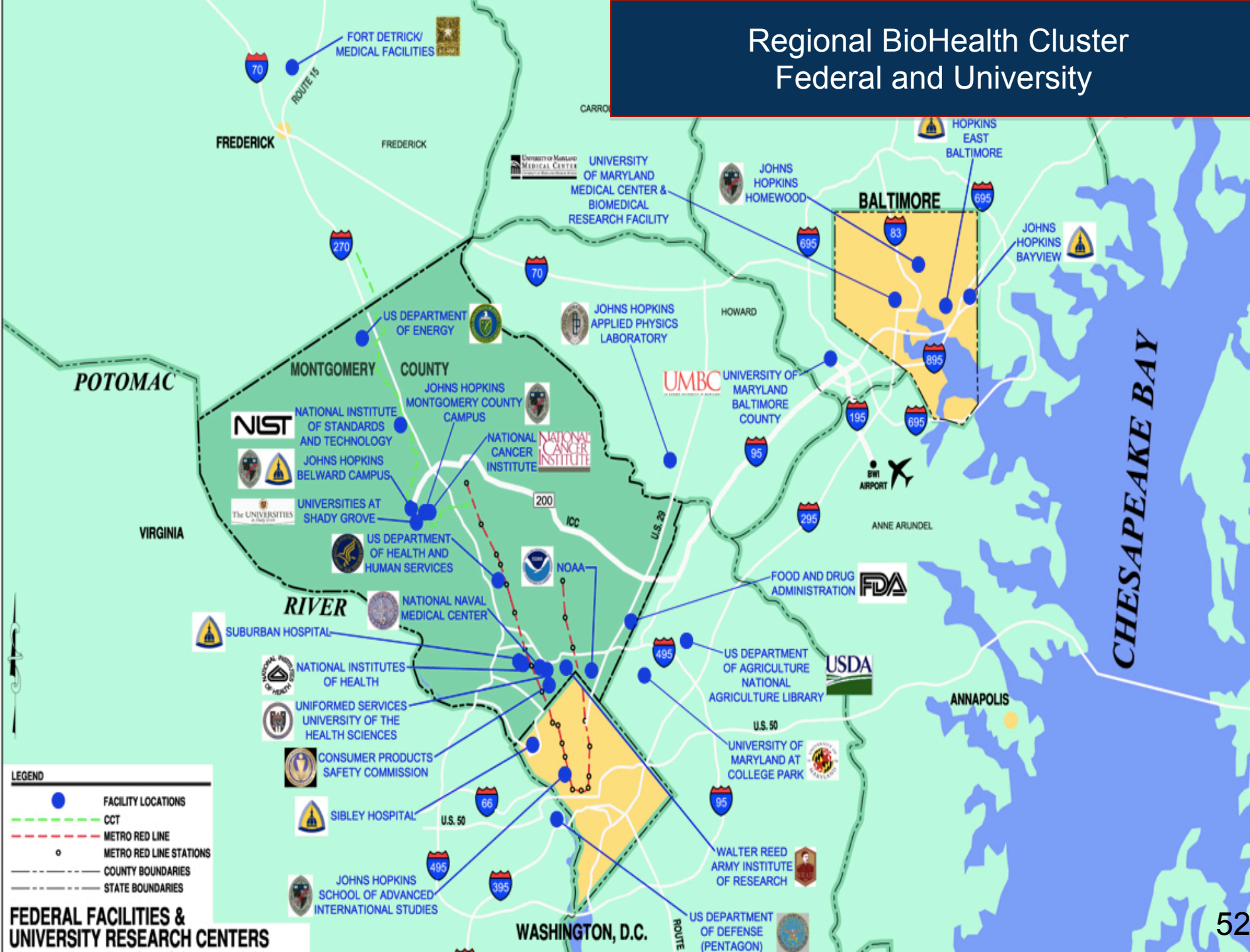
Funding: SBIR/SSTR Phase I&II → TIP → SBIR 2B → I6 Green → E-RIC → Other Public Funds

Private Funding: Foundation → Angel → Seed → Venture Capital → Mezzanine → Debt → Bank

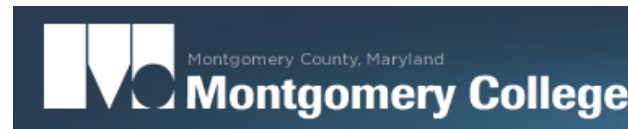
AMERICA'S BioHealth INTERMEDIARY (ABHI) CENTRAL MARYLAND REGIONAL CLUSTER



Regional BioHealth Cluster Federal and University



Maryland Partners in BioHealth



Alignment of National, State & Regional Policies



**Obama
Administration**



**Governor
O'Malley**



**County Executive
Ike Leggett
Montgomery County**



**Stephanie Rawlings -
Blake
Mayor of Baltimore**

- Link Both State, County & City Strategies to Obama Administration Objectives
- Develop an integrated Regional BioHealth Economic Development and Transit Strategy
- Present the “Regional Job Generating BioHealth and Transit Plan” to the White House & partner with federal agencies and other stakeholder organizations as a “Showcase Model.”
- Develop structure & governance for the regional BioHealth innovation intermediary
- Obtain Priority Federal Funding for Region’s BioHealth Industry-Federal Labs-University Innovation Intermediary Pilot Plan
- Obtain Priority Federal Funding for the region’s Innovative “State of the Art” Comprehensive Rapid Transit Vehicle Plan (CCT et al)
- Develop a pilot BioHealth-Regional Innovation Cluster (H-RIC) program

Benchmarking Summary of Key Cluster Attributes & Interventions

Subject Area	Maryland/ Greater DC Area	Philadelphia	Cleveland	San Diego	San Francisco	Greater Boston	Research Triangle, NC	Medicon Valley – Denmark - Sweden	Oxfordshire England	Switzerland	Victoria, Australia
1. Scientific Workforce Availability	+	+	—	+	+	+	+	+	+	+	+
2. Federal Laboratory Presence	+	—	—	—	—	—	—	N/A	0	N/A	N/A
3. Bioscience Seed Fund	—	+	0	0	0	0	0	0	+	+	—
4. Direct Incentives / Business Costs	0	+	0	—	—	—	0	+	—	+	+
5. Enhanced R&D Tax Credits	0	+	—	—	—	—	+	0	—	+	+
6. Efficient Tech Transfer Policies	—	—	+	+	+	0	0	—	+	+	0
7. SBIR Support Program	—	+	—	0	0	0	+	N/A	N/A	N/A	N/A
8. Early-stage & VC capital availability	—	—	+	+	+	+	—	+	—	+	—
9. Commercialization Institutes	—	—	+	0	0	+	—	0	0	0	—
10. Established Public-Private Partnership (Innovation Intermediary)	—	+	+	+	—	+	0	+	+	+	+

Key: + : Strength — = Weakness 0 = Neither Strength/Weakness

VC Regional History:

Last decade the region: ***\$79.8 million per year****
in biotechnology venture financing (2003-2010).

Goal:

150 prospective deals annually

Fund:

25% or 35 deals per year

Avg. Investment:

\$4.3 million per start-up

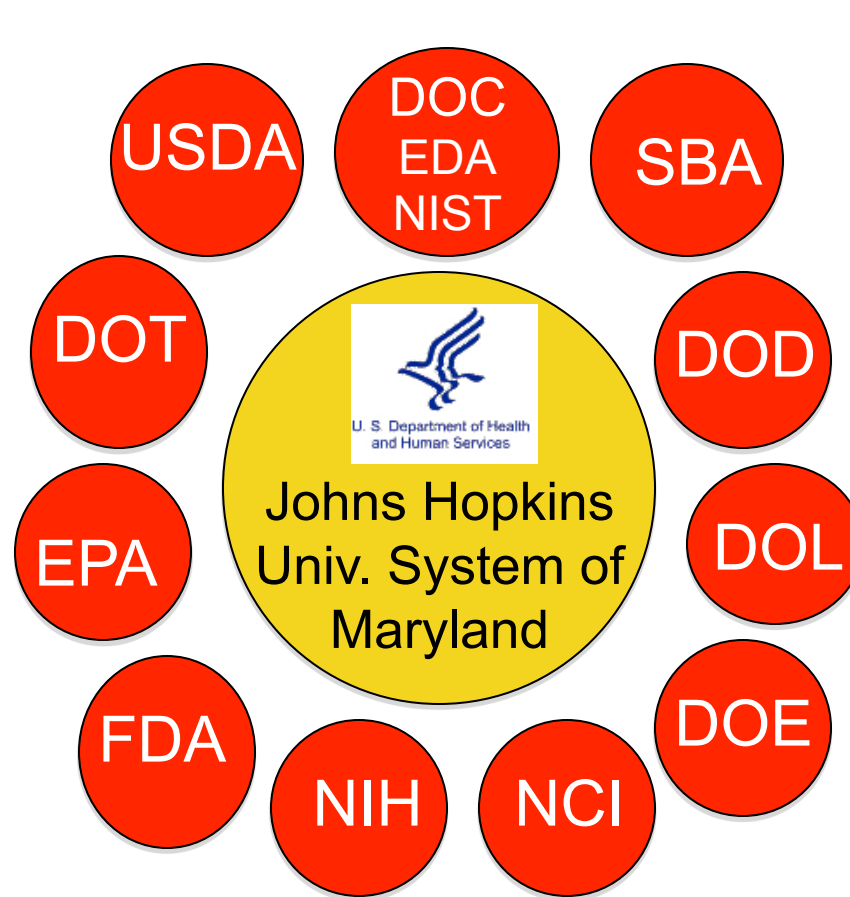
Targeted VC Annual Investment

\$150,000,000



*This includes an estimated \$57.7 million per year in Montgomery County, and \$22.1 million per year in the rest of the state.

ABHI Health Regional Innovation Cluster



The Baltimore/Montgomery County Region would lead a consortium of key industry, academic, foundation, public and NGOs to support the ABHI H-RIC.

Bill Gates - Microsoft

“Never before in history has innovation offered promise of so much to so many in so short a time.”





www.innovationamerica.us/daily



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