



Association of University Technology Managers®  
Advancing Discoveries for a Better World®

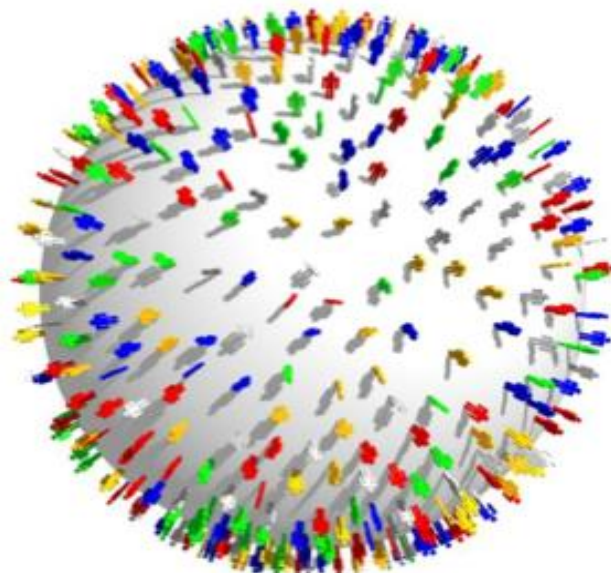
# The Global Innovation Imperative

**Richard A. Bendis**

Founder & CEO      Publisher  
Innovation America    Innovation Daily

(11/13/2012)

# The World According to Friedman: Hot, Flat, and Crowded



# 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**



# Why Is Innovation Essential?

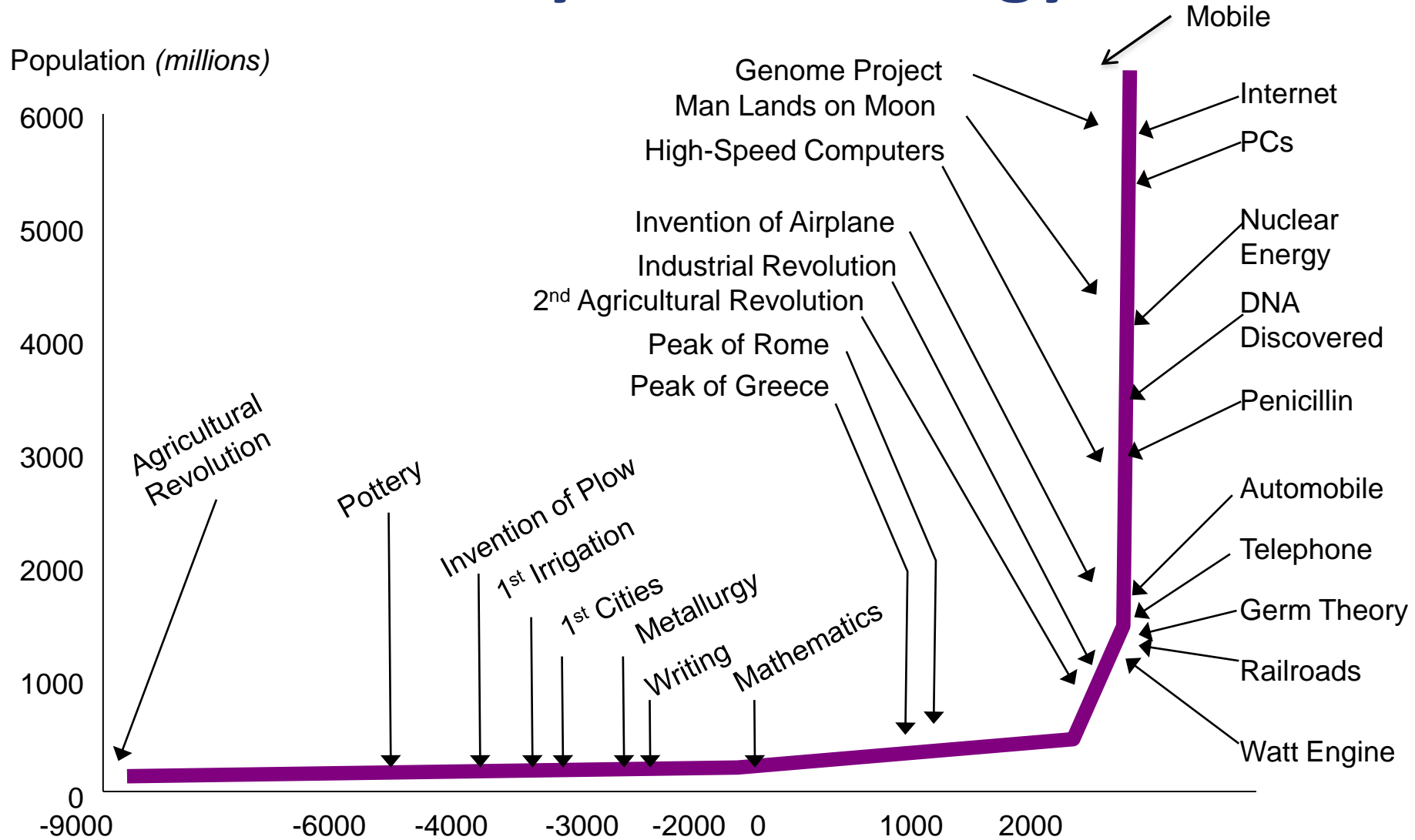


**“INNOVATION  
DISTINGUISHES BETWEEN  
A LEADER AND A  
FOLLOWER.”**

**- STEVE JOBS**

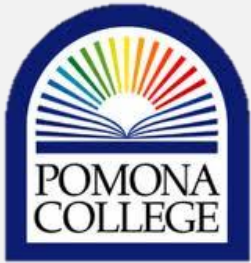
**INNOVATION** is the creation and transformation of knowledge into new products, processes, and services that meet market need.....and interactions, entertainment forms, and ways of communicating and collaborating

# Growth of World Population and the History of Technology



# Top 10 College Campuses for Tech

1



2



3



4



5



6



7



8



9



10



# The New Locational Competition

***Definition: The competition for economic activity***

Intense and growing competition among nations and regions for well paid jobs and improving living standards.....



# States by Innovation Index

- Percentage growth and per capita growth of business establishments
- Business formation rate
- Number of patents per thousand residents
- Income per non-farm proprietor

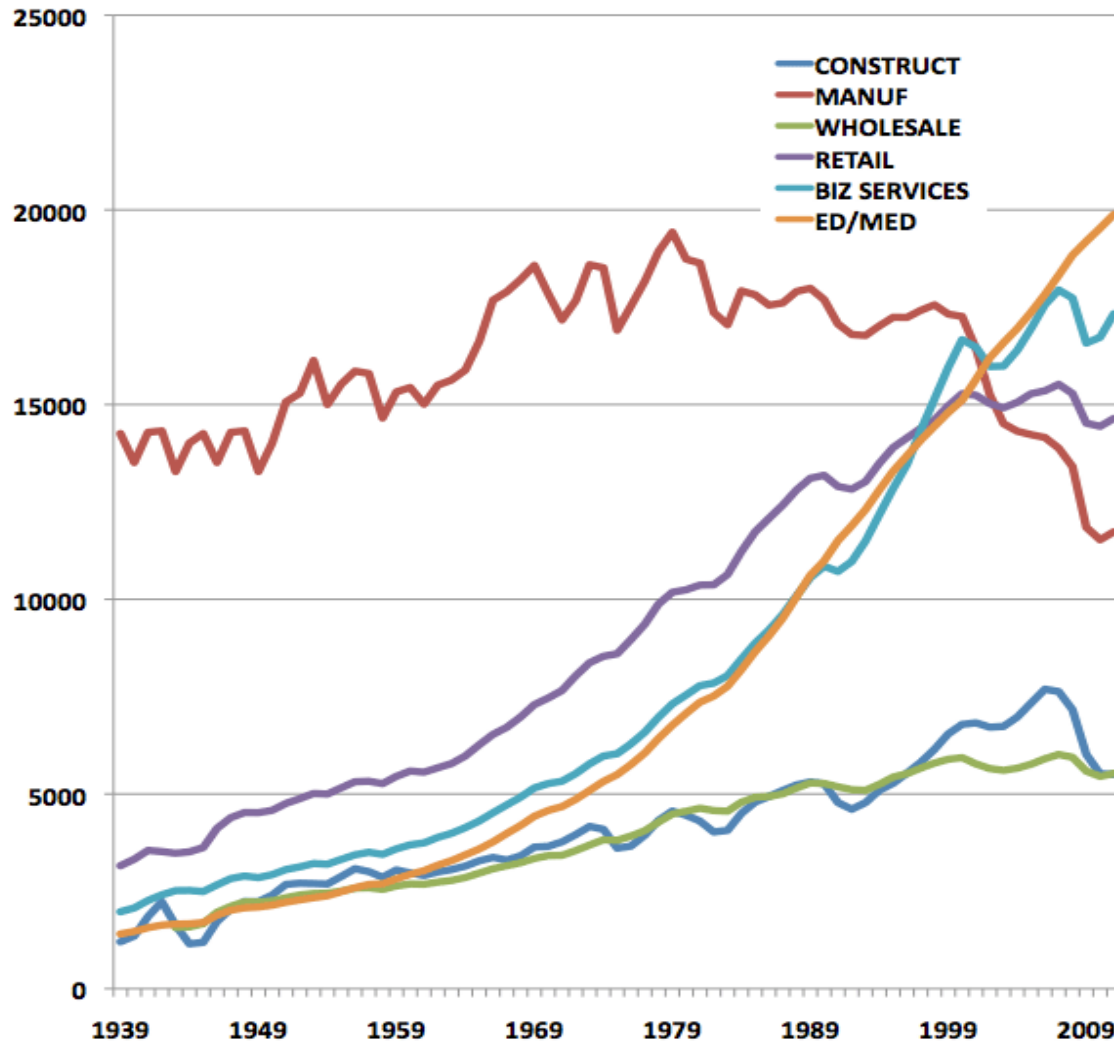
Massachusetts	<b>3.01</b>	Hawaii	<b>0.34</b>
North Dakota	<b>2.52</b>	Kentucky	<b>0.30</b>
California	<b>2.39</b>	Mississippi	<b>0.29</b>
New York	<b>2.23</b>	South Carolina	<b>0.19</b>
Minnesota	<b>1.79</b>	Michigan*	<b>0.10</b>
Utah	<b>1.07</b>	Louisiana	<b>0.03</b>
Nebraska	<b>0.99</b>		

\* Weighed down by sharp declines in number of establishments, [...] Michigan (0.10) was No. 49.

University of Nebraska News Releases 10/2/2012

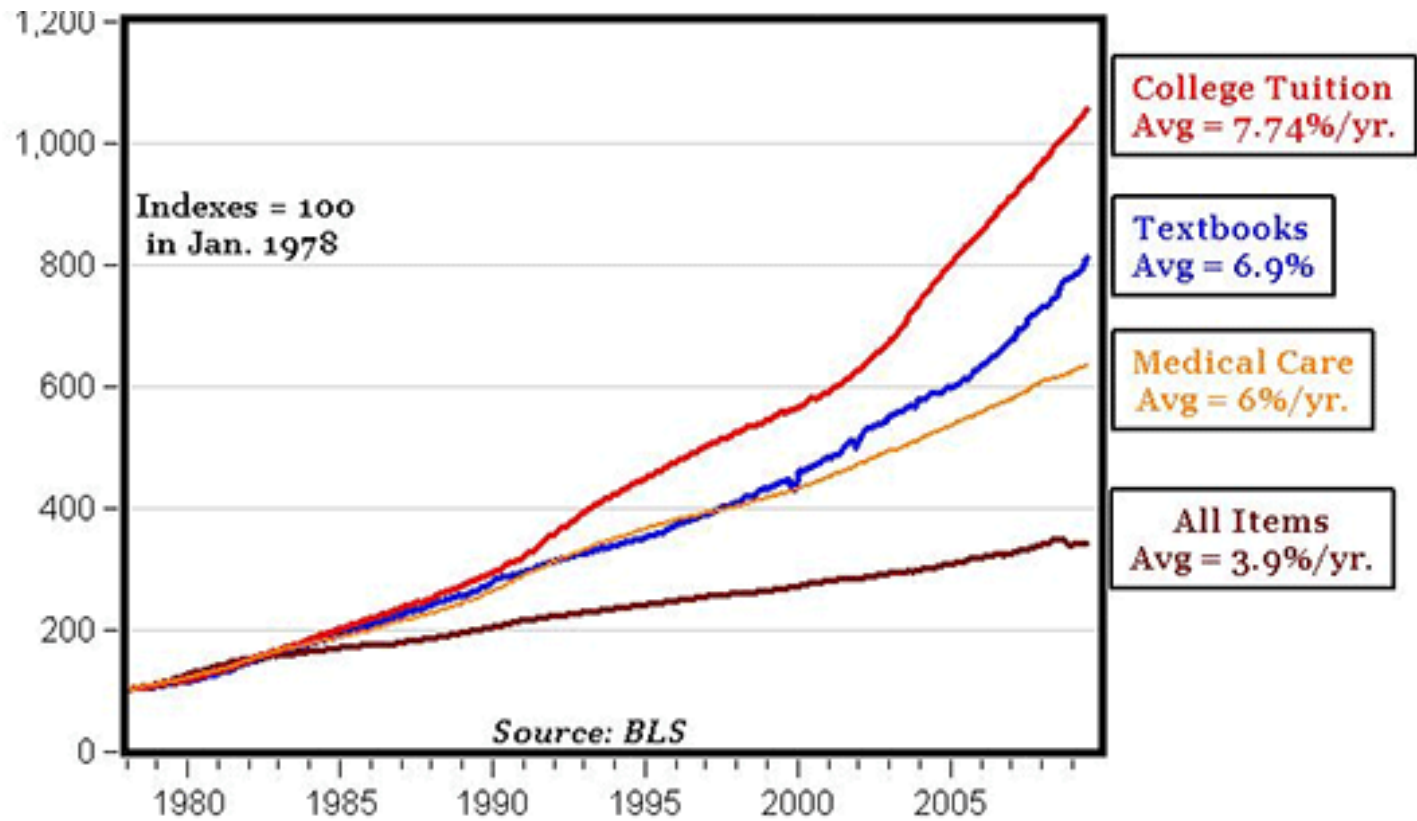


# Job Creation by Sector since 1939



# Consumer Price Indexes

## January 1978 to July 2009



# Top 10 Universities for Entrepreneurs

1



2



3



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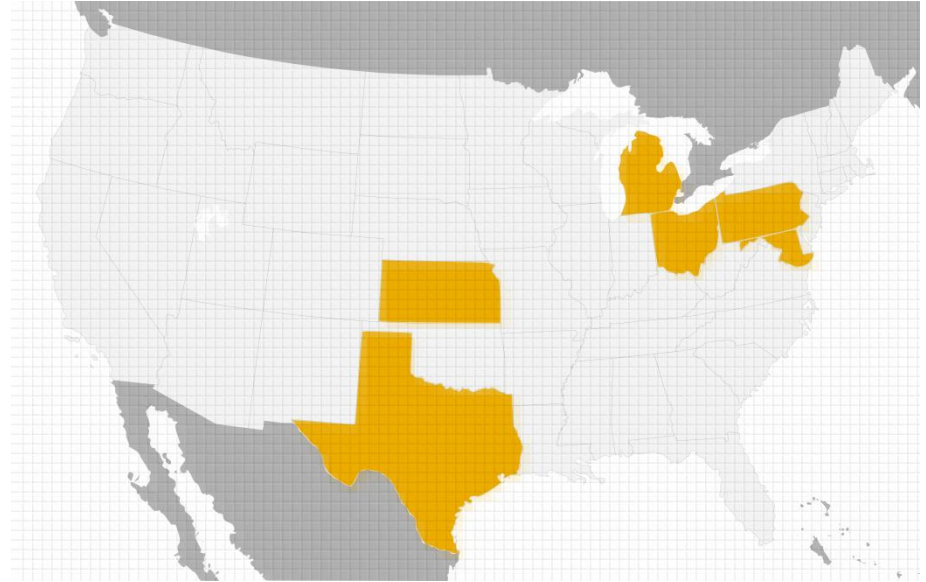


US News Rankings



# 10 U.S. Areas Trying To Recruit New Grads

- New York City, NY
- Niagara Falls, NY
- Pittsburgh, PA
- Baltimore, MD
- Cincinnati, Ohio
- Dayton, Ohio
- Houston, TX
- Michigan
- Omaha, Nebraska
- Rural Kansas



# 7 Paybacks an Alma Mater can Offer an Entrepreneur

1. Exploring hot ideas
2. Product research and prototype development
3. Business plan assistance
4. Early-stage funding
5. Legal guidance
6. Building a team
7. Connections to a mentor

# Colleges build to compete in business school 'arms race'

Today's students want a school that embraces technology and helps them get their business going.

- University of Missouri-Kansas City
- Arizona State
- Washington University in St. Louis
- Oklahoma State University
- University of Nebraska

# Accelerators Are the New B-school

As more young entrepreneurs find success from their business accelerator contacts, the usefulness of traditional business school is put into question.



Inc.com 10/26/2012

# Seed Accelerator Model May Be Relevant



- > 130 accelerators exist & spreading rapidly
- Could grow > 400 to 500 in 5 years
- Focus on emerging tech sectors





# Student Entrepreneurialism

- When asked the number of patentable or copyrightable student inventions occurring annually, 12% of surveyed schools reported more than 100, 18% reported 26 – 100, 44% reported 6 – 25, and 26% reported five or fewer.
- Ongoing efforts to support student entrepreneurship and/or invention on campus included a variety of programs:
  - Entrepreneurship classes, boot camps or other programs 84%
  - Business plan competitions 72%
  - Incubators for student-owned companies 50%
  - Student entrepreneurship funding 41%
  - NCIIA programs 10%
- 72% of universities and colleges provide resources to help students learn about and navigate intellectual property and commercialization issues.
- 70% have a formal policy and/or guidelines addressing ownership of student inventions.
- 36% have formal procedures for processing student inventions.
- 48% proactively inform faculty and staff about policies or guidelines relating to student ownership rights and how it could impact them.
- 51% proactively inform companies working with students on R&D, or involved in student education in any other way, about policies or guidelines relating to student ownership rights and how it could impact them

# 4 Mistakes Young Entrepreneurs Make

1. Spending too much time developing and not enough time selling
2. Being afraid that someone will steal your idea
3. Thinking that you are your customer
4. Trying to monetize ideas rather than monetize sales

# Entrepreneurial Lessons Learned from Bob Dylan

- Always have a passion for what you're doing
- See the big picture at all times and avoid the trap of the quick buck
- Don't be afraid to rock the boat
- Seek inspiration from others
- Know when to go back to basics



The Wall Street Journal 9/11/2012

# Six Distinct Organizational Paths for Entrepreneurs

- Lifestyle Business
- Small Business
- Scalable Startup
- Buyable Startup
- Large Company
- Social Entrepreneur



# Small Business Facts

- **SME's employ over 50%** of the country's private sector workforce, hire 40% of high tech workers, such as **scientists, engineers, and computer workers.**
- The number of **women-owned firms continues** to grow at twice the rate of all U.S. **firms (23% vs. 9%)**
- 70% of SME's say retaining customers cheaper than getting new customers.
- **7 out of 10** new employer firms last about two years and about half survive five years.



Source:SBA



# Small Business Biggest Obstacles

- Lack of willingness or ability to take **risks**
- **Time and effort** required
- Raising **capital**
- **Business management** skills
- **Knowledge** about how to start a business
- **Industry and market** knowledge
- **Pressure** to keep a stable job

[www.entrepreneur.com/dbimages/blog/entrepreneurship-risk.jpg](http://www.entrepreneur.com/dbimages/blog/entrepreneurship-risk.jpg)

# Keys to Small Business Success

## Courage

The willingness to take risks

## Perseverance

The capacity to power through tough times

## Ambition

The insatiable drive to reach your goal

## Understanding

The knowledge to make wise business decisions

## Innovation

The ability to improve on existing ideas

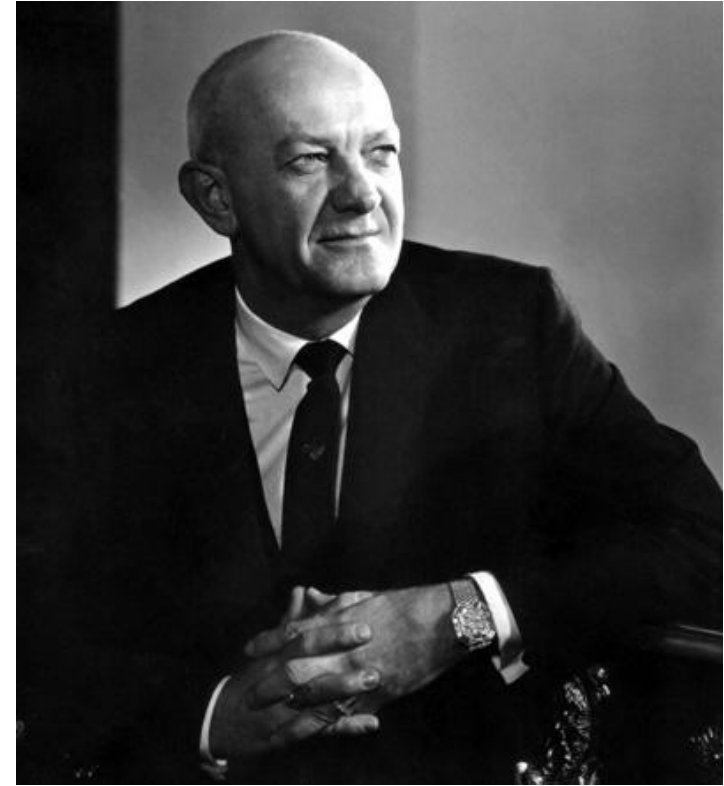
[www.entrepreneur.com/dbimages/blog/entrepreneurship-risk.jpg](http://www.entrepreneur.com/dbimages/blog/entrepreneurship-risk.jpg)

***“Treat others as you want to be treated.”***

***“Share life’s rewards with those who make them possible.”***

***“Give back to society”***

**Ewing Marion Kauffman**





# Crowdfunding

***Crowdfunding***—as its name implies—aims to reach a funding goal by getting many investors to put in small amounts.



# Will Crowdfunding work for University Startups?

- University spinouts often present high risk
- The more widely crowdfunding is used, the more challenging it will be for high tech, high risk startups to raise capital this way
- University spinouts could have an advantage using crowdfunding if they tap into alumni networks.

# Upstart

Upstart allows a startup to raise capital in exchange for a small portion of future income.

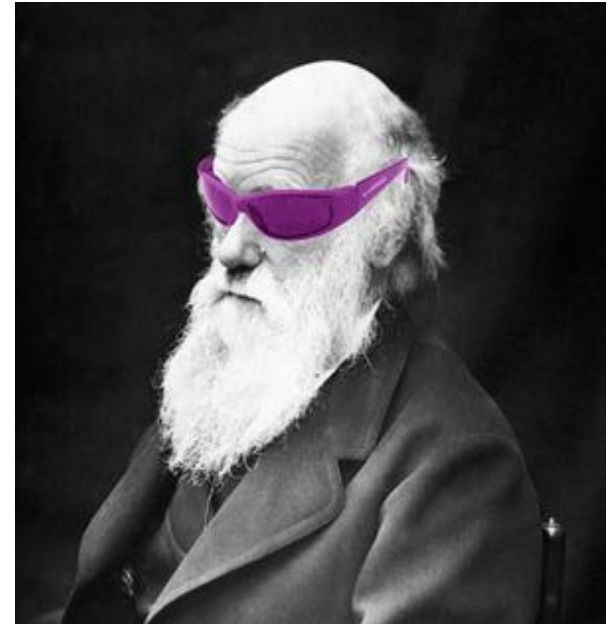
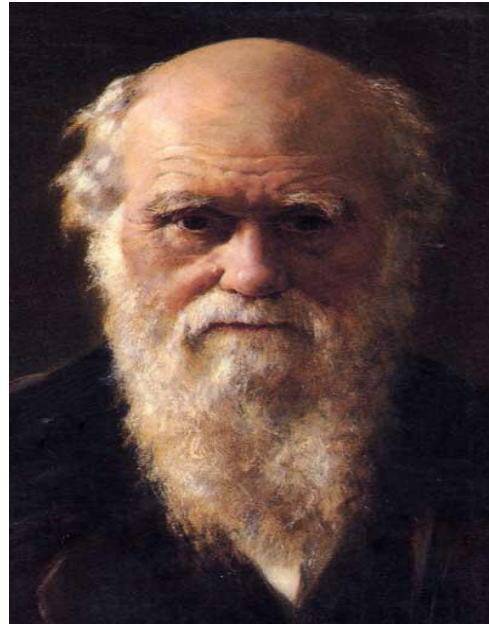


- Investors give money directly to startups in return for a percentage of future income
- Currently 5 universities participating
  - Arizona State University
  - Dartmouth College
  - Rhode Island School of Design
  - University of Michigan at Ann Arbor
  - University of Washington
- Entrepreneurs create profiles on site
- **Backers are advisors: Their goal is to make the startup successful**

# 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**



# Startup Act 2.0/Free Agency

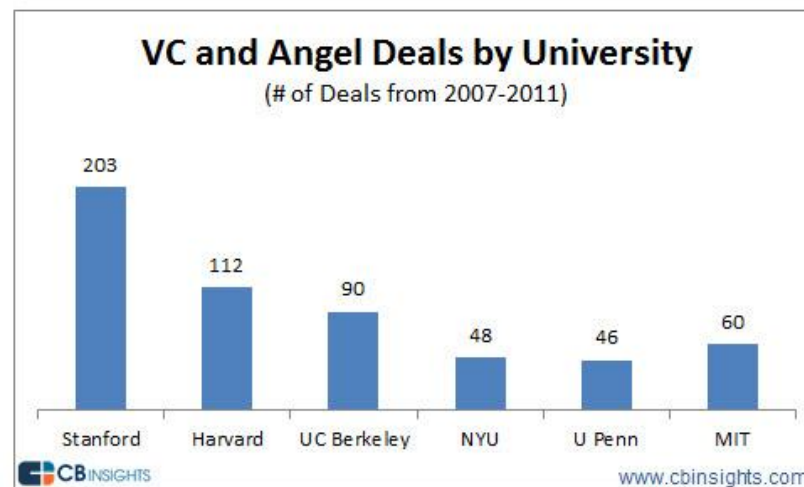
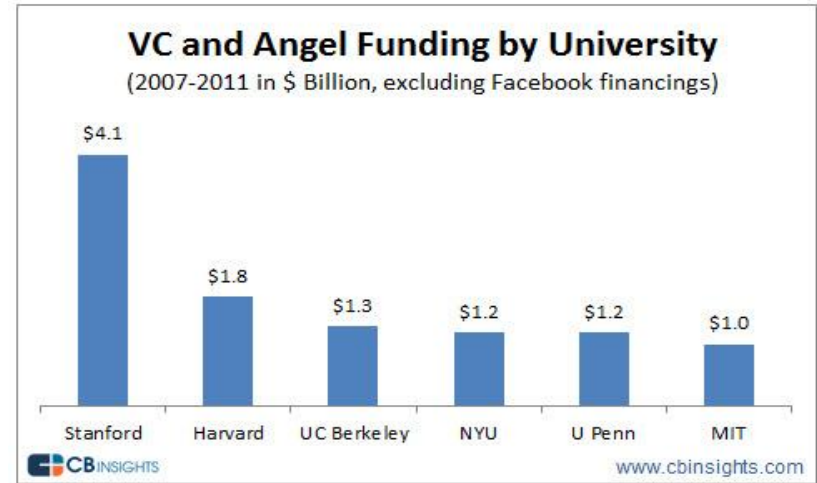
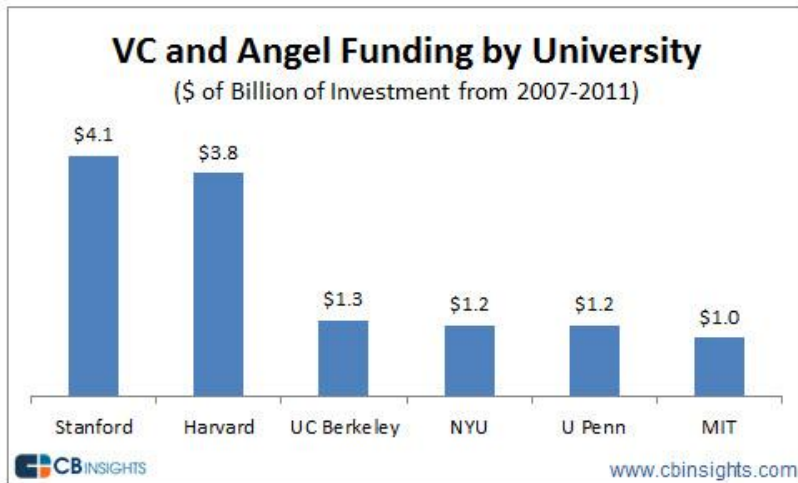
- **1980 Bayh-Dole Act**
  - University control over intellectual property developed through federally funded research
- **Startup Act 2.0**
  - University Professors choose their own agents for technology transfer
  - Capacity-building grants and Accelerator Grants

# University of Maryland System Patents and Commercialization Tenure Reviews



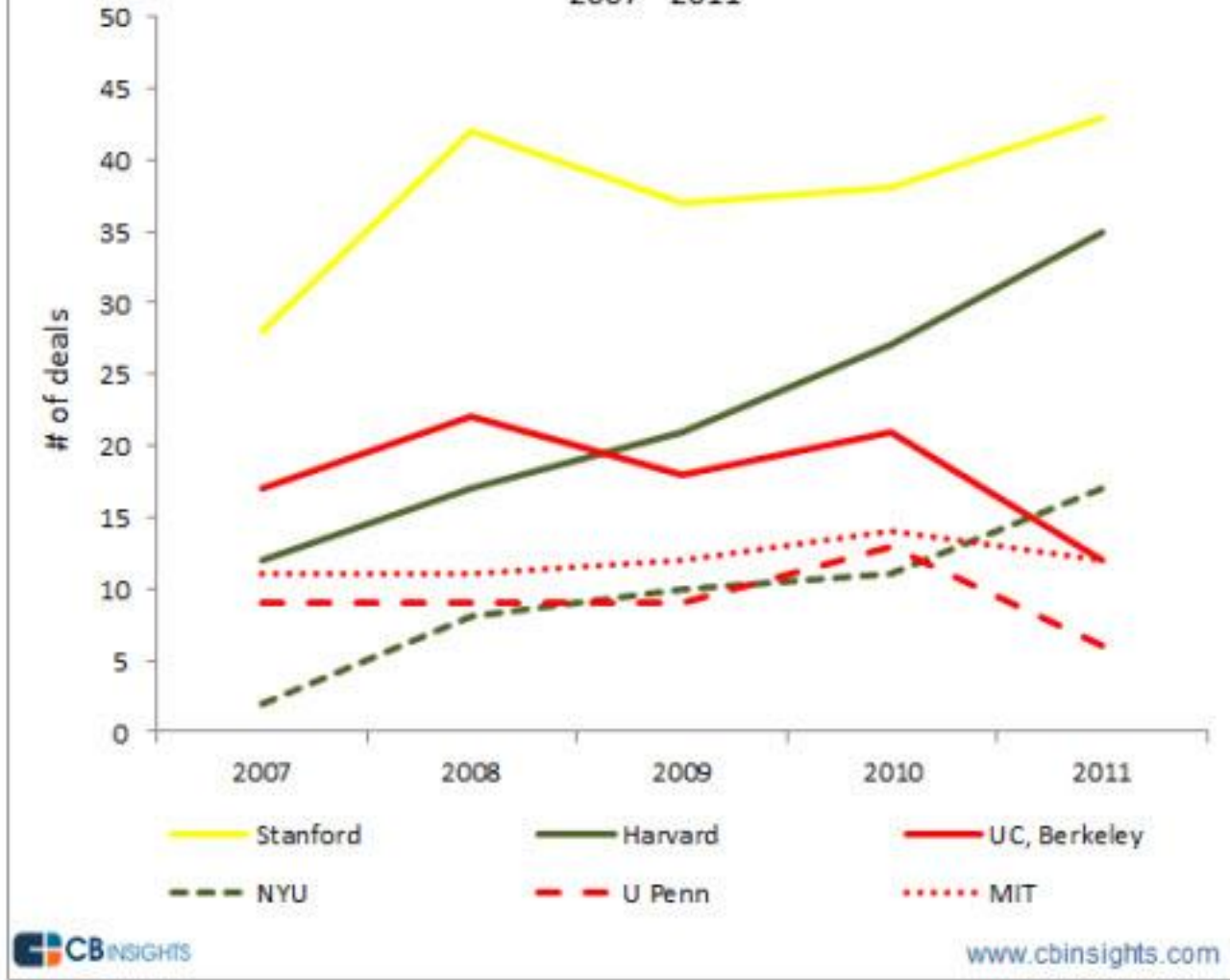
- Credit in tenure and promotion decisions for faculty work that leads to patents and other intellectual property applied in technology transfer.
- Texas A&M and approximately 24 other institutions nationally now recognize such activities for tenure.
- Maryland System set a tenure goal of creating 325 new companies based on academic research or helped along by university economic development programs.

# The University Entrepreneurship Report



# Financing Deal Activity by University

2007 - 2011



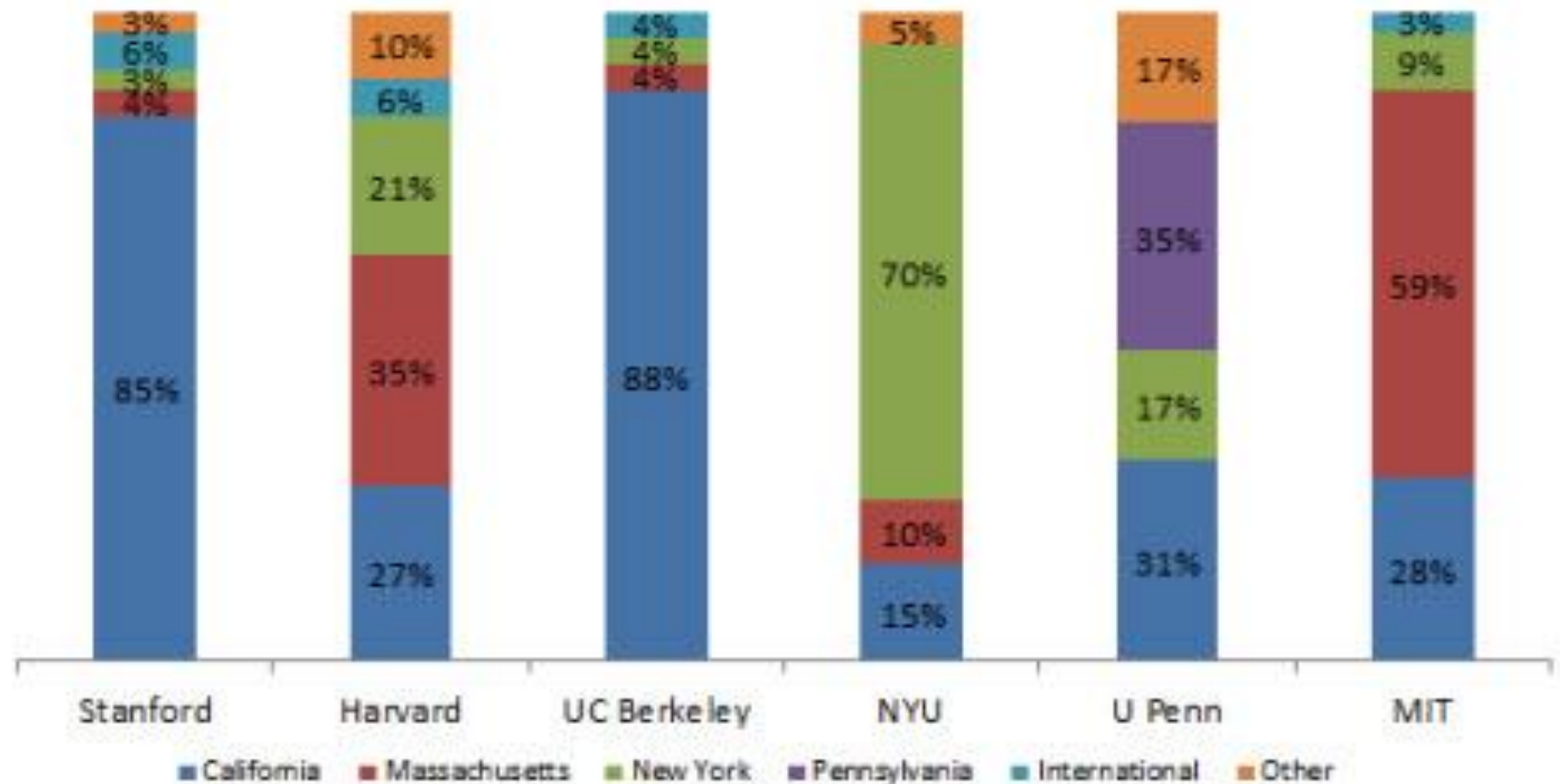
CBINSIGHTS

www.cbinsights.com

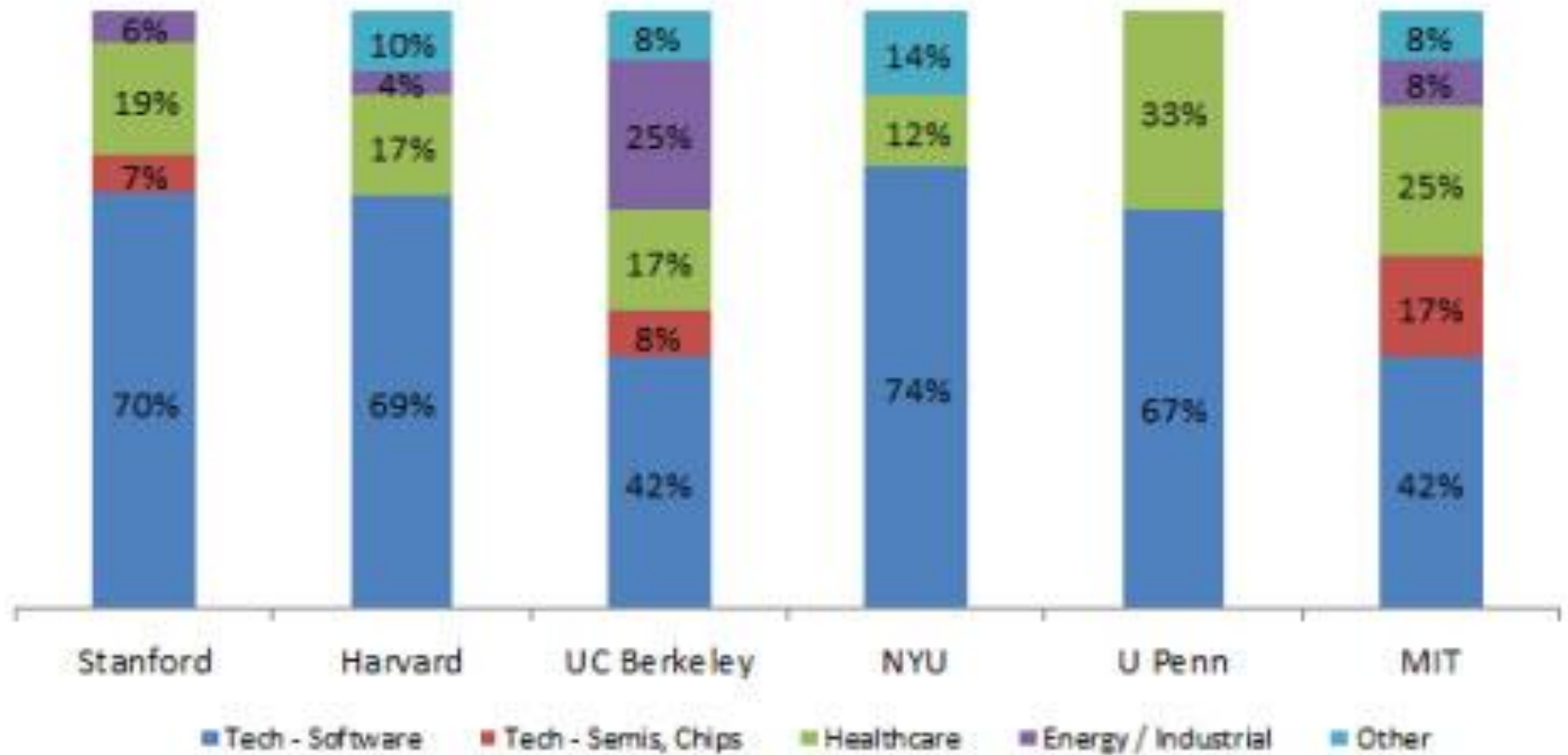




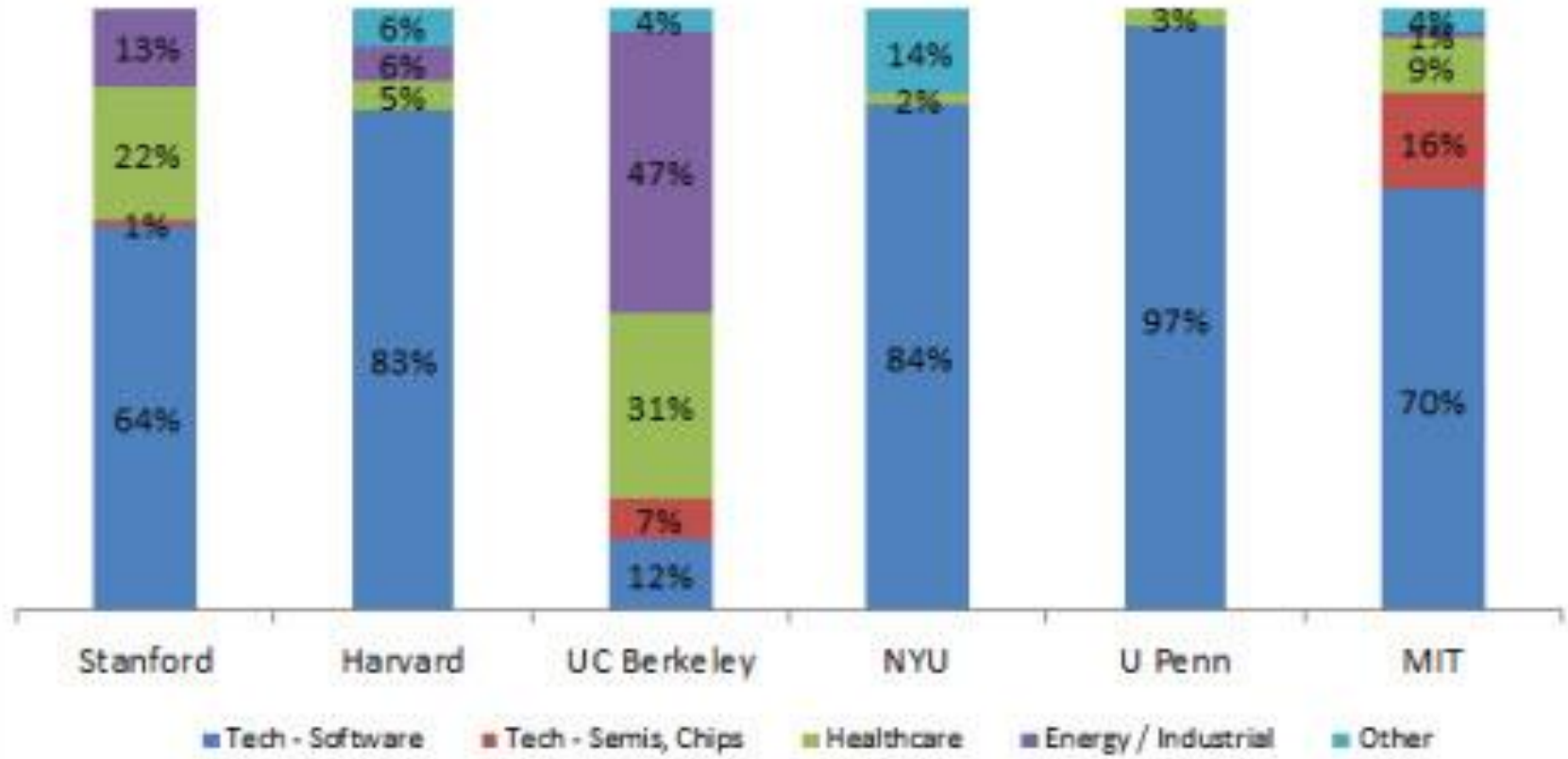
# Where do University alumni set up their companies?



# University Deal Volume by Sector, 2011



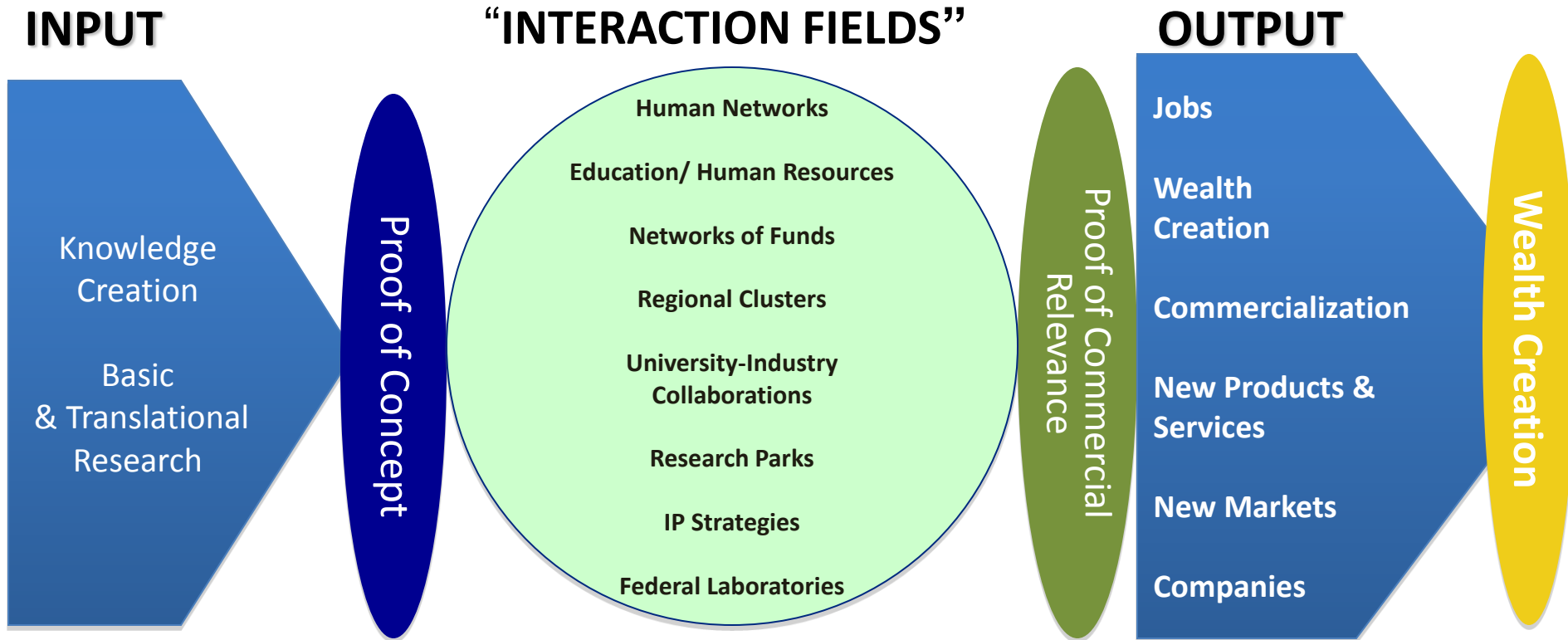
# University Funding by Sector, 2011



# The Secret Recipe to Building an Innovation Ecosystem

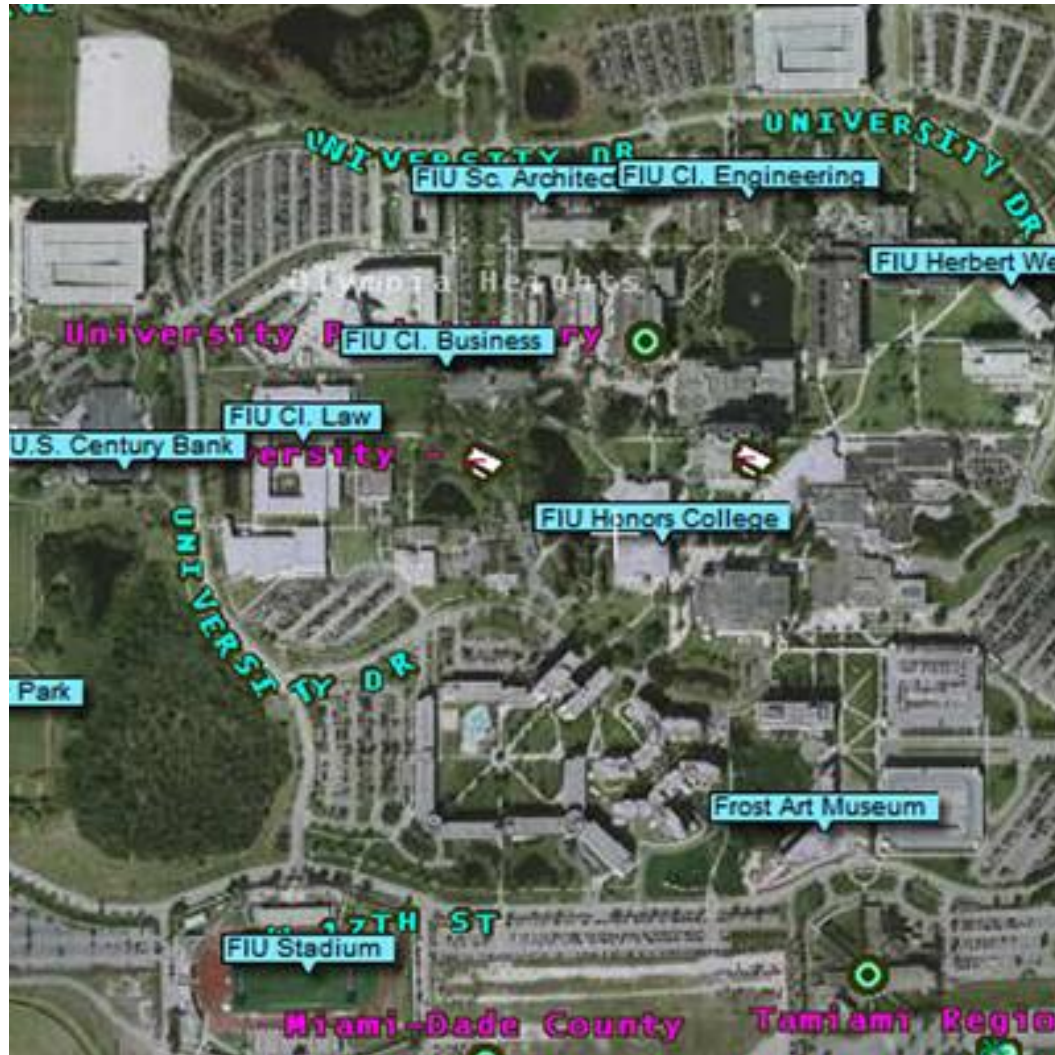
- There is none.
- Key Ingredients: Universities, Governments, NGOs, Incubators, and Startups
- These are nothing compared to:  
A committed group of people with a high degree of trust, collaboration, sharing, and interdependency

# 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.

# Growing an innovation ecosystem at FIU



# NSF Research Alliances

Nearly \$6 million Accelerating Innovation Research Awards  
awarded for 8 emerging projects



Nanoplasmonic Metamaterial Antennae for Efficient Wireless Power Transmission



Industry-Academia Research Partnership for Developing & Implementing Non-Destructive Characterization and Assessment of Pharmaceutical Oral Dosages in Continuous Manufacturing



Advanced SiNWs: Partnerships for Innovative Research in Energy (ASPIRE)



Accelerating Commercialization of the Solid State Transformer through Strategic Partnership



Transitioning Novel Polymeric Membranes for Natural Gas, Air, and Hydrogen Separations



Architectures for the Future Cellular Networks



CREST-I/UCRC-Industry Ecosystem to Pipeline Research



CASA Warning System Innovation Institute

# University Economic Development Association (UEDA) 2012 Award of Excellence winners



**Kemper Military School Redevelopment Project**



**Sustainable Economies Program**



**Kansas Opportunity Innovation Network (KOIN)**



**Linking Innovation, Industry and Commercialization (LIINC)**

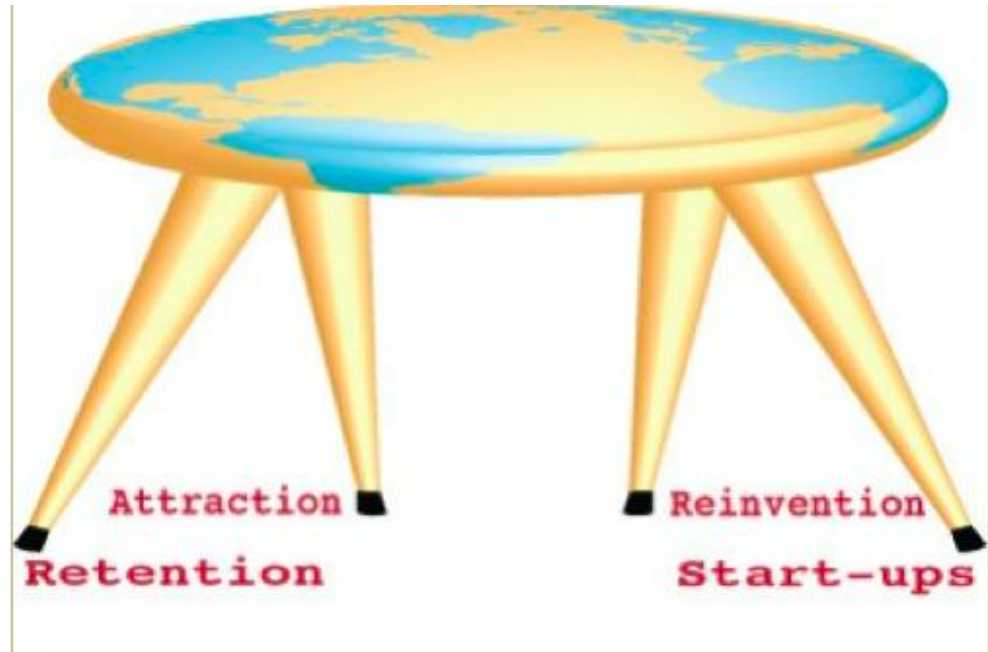


**Developing Analytics & Operations Research Practitioners**



# 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!



# 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)***

# Convergence of Traditional Eco Devo & IBED

## Traditional

## Innovation

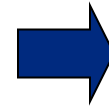
Assets:

PHYSICAL

KNOWLEDGE

Competitive Basis:

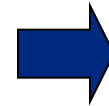
Natural resources  
Highways / Rail  
Proximity  
Costs



Specialized talent  
Networks, Clusters,  
University research  
Industry partnerships  
Commercialization, Market  
Positioning Globalization

Key values/offerings:

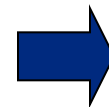
University Research  
Parks  
Incentives



Research Parks  
Workforce competencies  
Lifestyle

Lead Organization:

Chambers /  
EDCs



Economic developers

**INNOVATION INTERMEDIARIES**

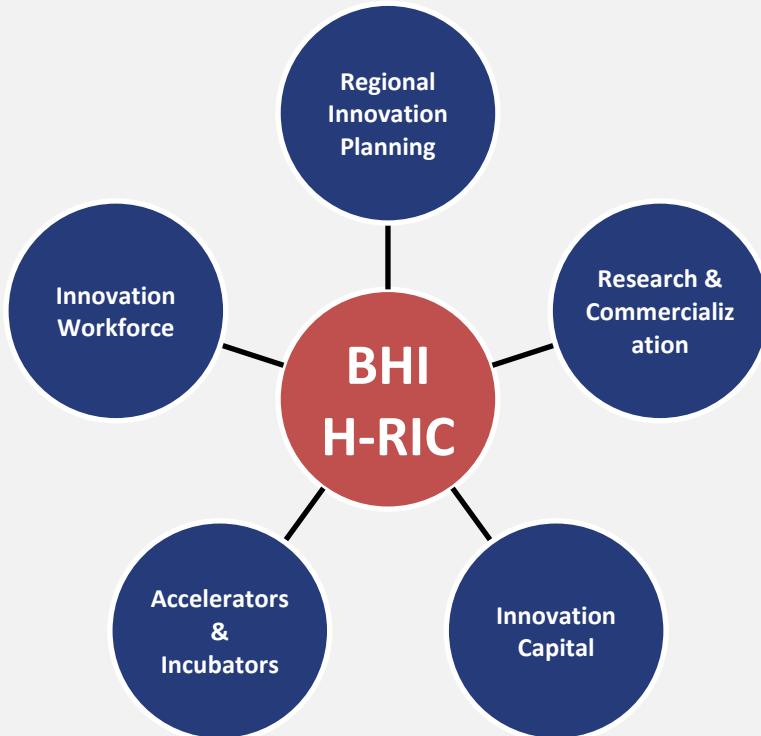


# What is A Regional Innovation Intermediary?

- An organization at the Center of the region's, state's and country's efforts
  - Align local technologies, assets and resources
  - Advance Innovation
- Regionally-oriented
- Private-public partnership, 501(c)(3) nonprofit
- Market-driven, private sector-led
- Neither a government initiative, nor a membership organization



# BHI H-RIC Model

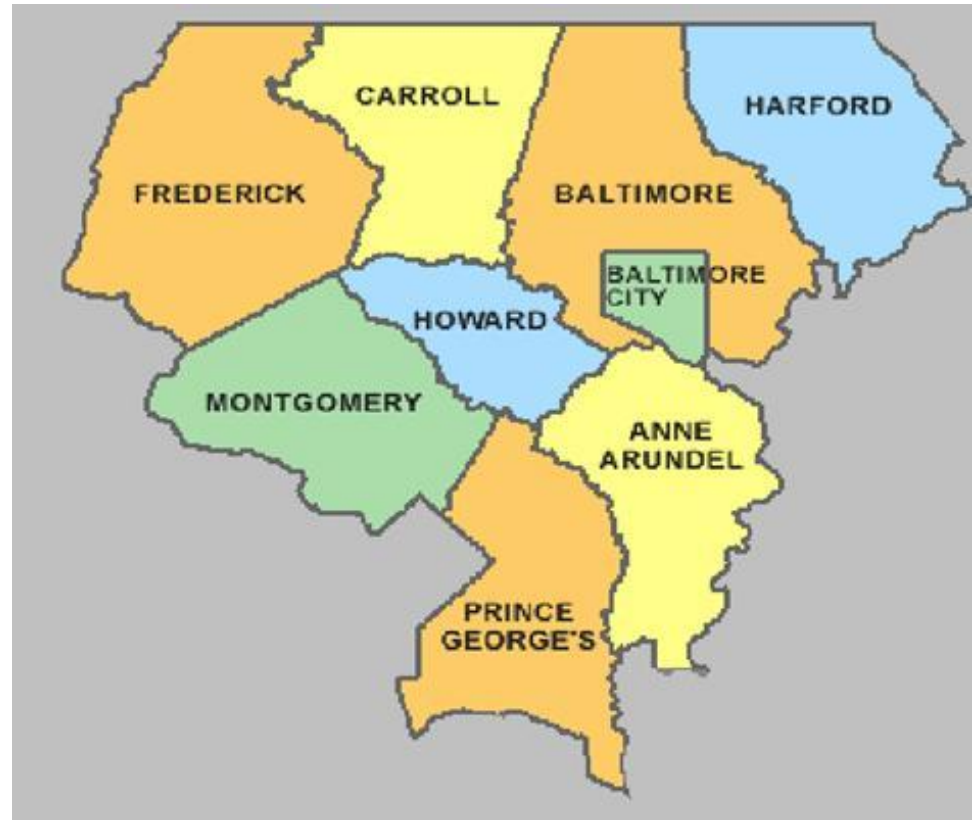
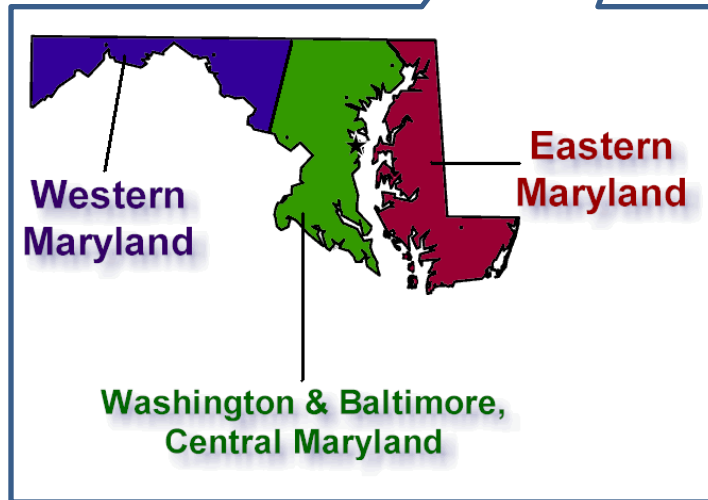
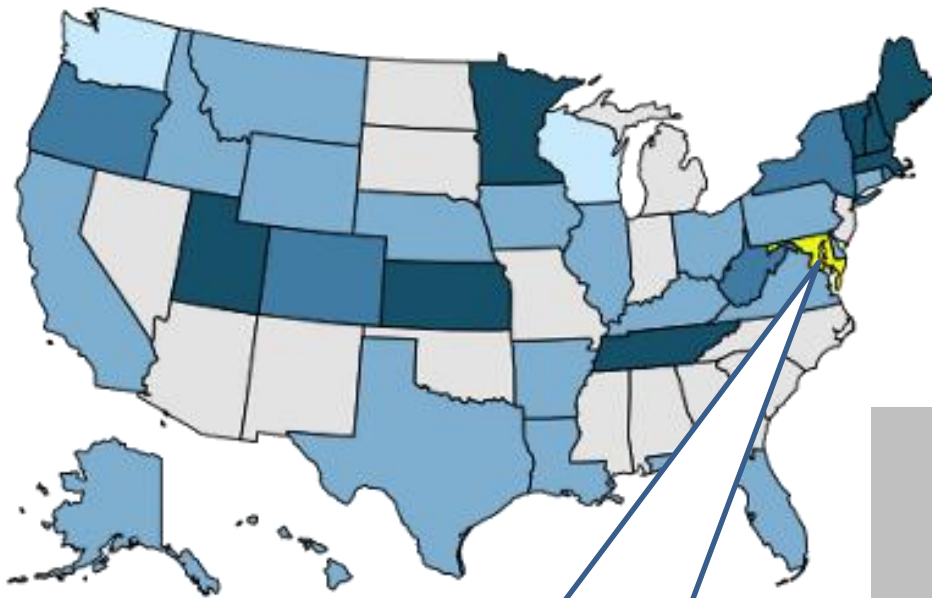


## Health Regional Innovation Cluster (H-RIC)

- Regional, cluster-based economic development model
- Modeled after the Department of Energy's Regional Innovation Cluster
- Connects innovation assets to related industries
- Advances human health and economic prosperity

# Maryland

Population:  
5.828 million people



# Alignment of National, State, and Regional Policies



**Obama  
Administration**



**Governor  
O'Malley  
(Maryland)**



**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

# State of Maryland: Federal & University Resources



**59 Federal Laboratories, Centers, & Institutes in Maryland**

**Maryland Federal R&D investment exceeding \$12 billion annually**



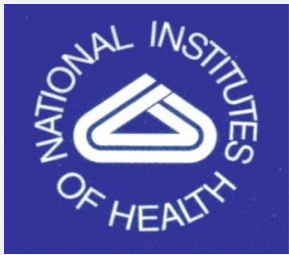
**JHU and USM represent another \$3.5 billion in annual R&D**





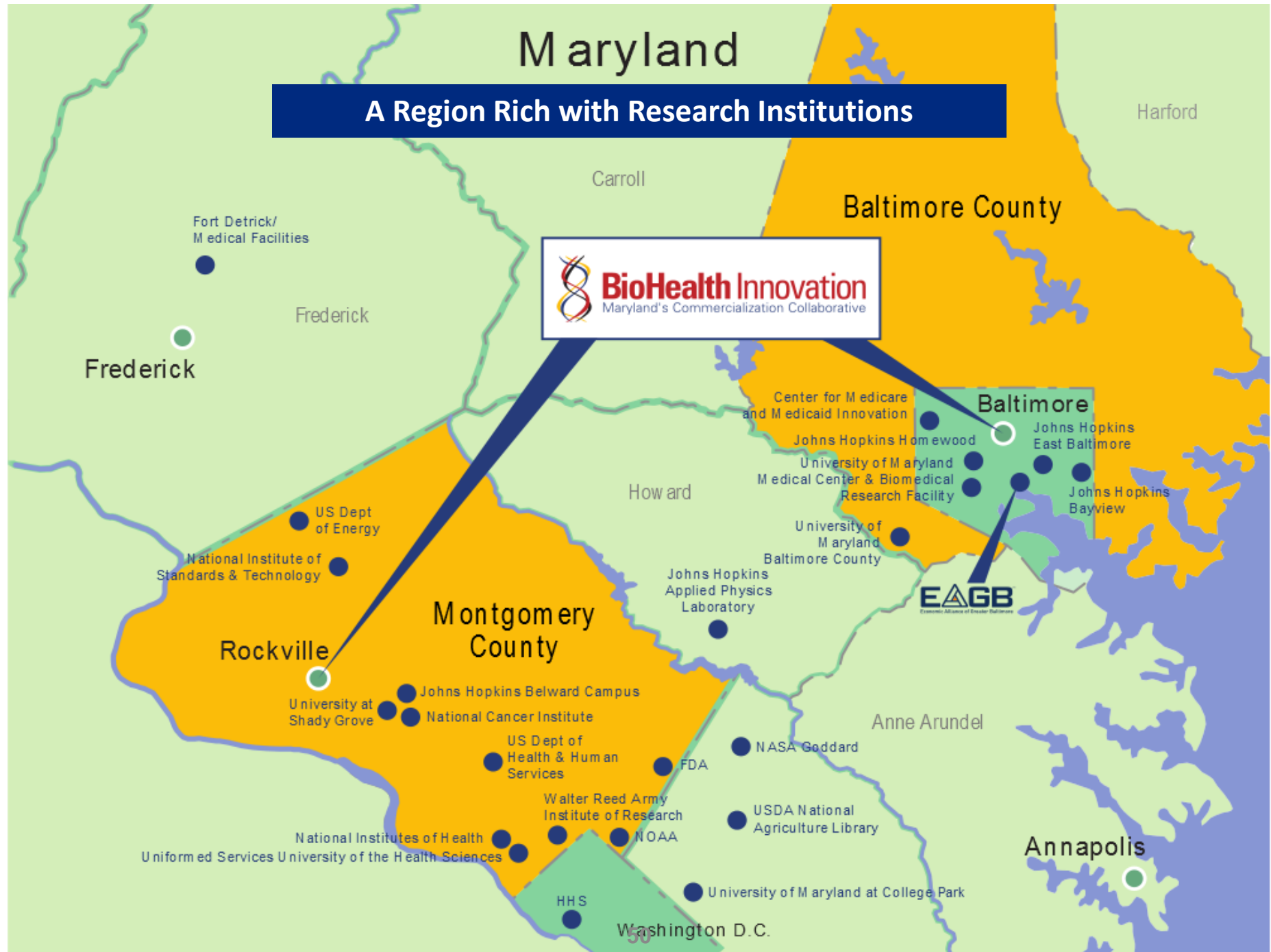
# “The Region”--Central Maryland

**Unrivaled Research Assets**  
**Unfulfilled Commercial Promise**



# Maryland

## A Region Rich with Research Institutions



Fort Detrick/  
Medical Facilities

Frederick

Frederick

Carroll

Baltimore County

Harford

National Institute of  
Standards & Technology

US Dept  
of Energy

Rockville

Montgomery  
County

University at  
Shady Grove

Johns Hopkins Belward Campus

National Cancer Institute

US Dept of  
Health & Human  
Services

FDA

Walter Reed Army  
Institute of Research

NOAA

National Institutes of Health  
Uniformed Services University of the Health Sciences

HHS

Washington D.C.

Howard

Johns Hopkins  
Applied Physics  
Laboratory

Center for Medicare  
and Medicaid Innovation

Johns Hopkins Homewood

University of Maryland  
Medical Center & Biomedical  
Research Facility

University of  
Maryland  
Baltimore County

Baltimore

Johns Hopkins  
East Baltimore

Johns Hopkins  
Bayview

EAGB  
Economic Alliance of Greater Baltimore

Anne Arundel

NASA Goddard

USDA National  
Agriculture Library

Annapolis

University of Maryland at College Park

# Challenges to Innovation Economy

Lack of connection of innovation resources

Lack of an entrepreneurial culture and C-level executives

Lack of early-stage funding for commercializing technologies

Lack of spin-offs from federal and university R&D

# BHI Value Proposition

Connects regional innovation assets

Develops an entrepreneurial talent and support pipeline

Attracts funding for technology commercialization

Evaluate commercially relevant federal and university technology for new spin-offs

# BioHealth Regional Innovation Cluster Assets



National Biodefense Analysis and Countermeasures Center



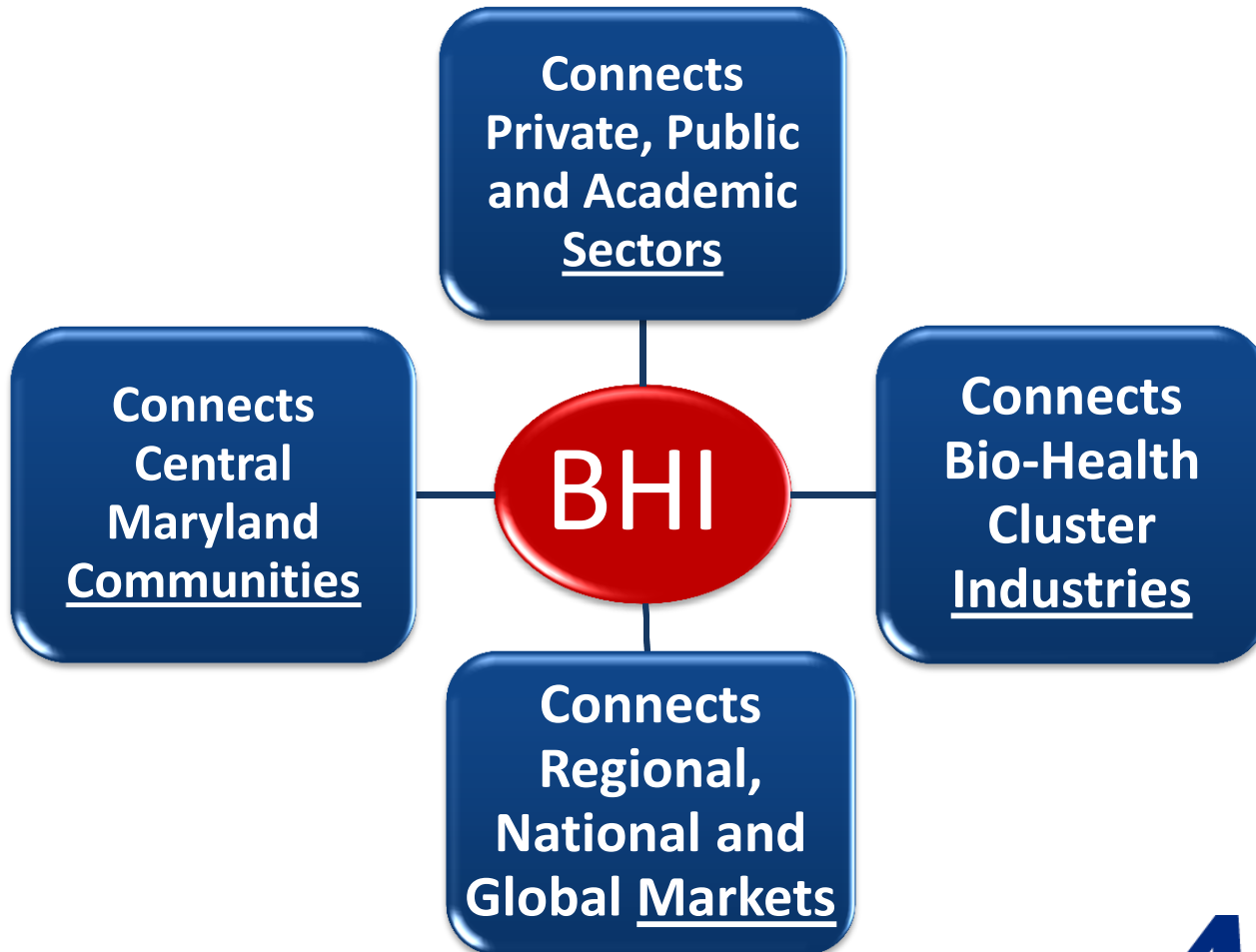
J. Craig Venter INSTITUTE



Bio BIOTECHNOLOGY INDUSTRY ORGANIZATION



# **BHI: An Innovation Intermediary that Connects Sectors, Industries, Communities, & Markets**



# Regional BioHealth Ecosystem Partners



# BHI Partners and Sponsors



JOHNS HOPKINS  
UNIVERSITY



MedImmune



NEA



ERNST & YOUNG



VENABLE<sup>®</sup>LLP



# BHI Board of Directors



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**Kenneth Carter**  
Chair, Noble Life Sciences



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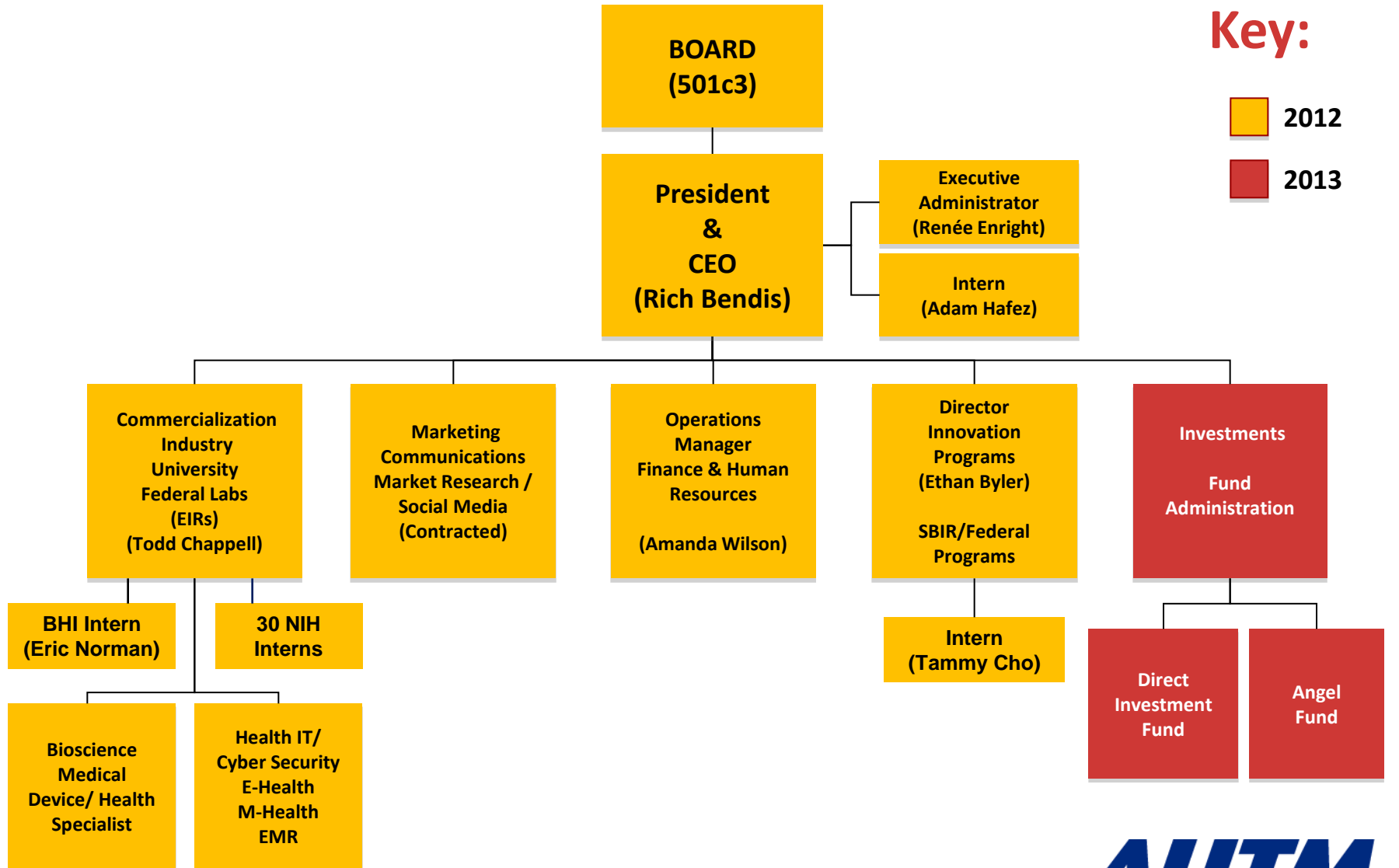


**Daniel J. Abdun-Nabi (Pending)**  
CEO, Emergent BioSolutions





# BHI Organizational Chart



# BHI/EIR Technology Focus

- **Therapeutics**
- **Diagnostics**
- **Medical Devices**
- **Healthcare Services**
- **E-Health**
- **Mobile Health**
- **Electronic Medical Records**
- **Health Informatics**
- **BioHealth Cyber Security**



# Innovation Paradigm Shift

**PROOF OF CONCEPT**  
(Technological Feasibility)

**Laboratory Push**

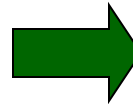
**“It Works!”**



**PROOF OF COMMERCIAL RELEVANCE**  
(Market Pull)

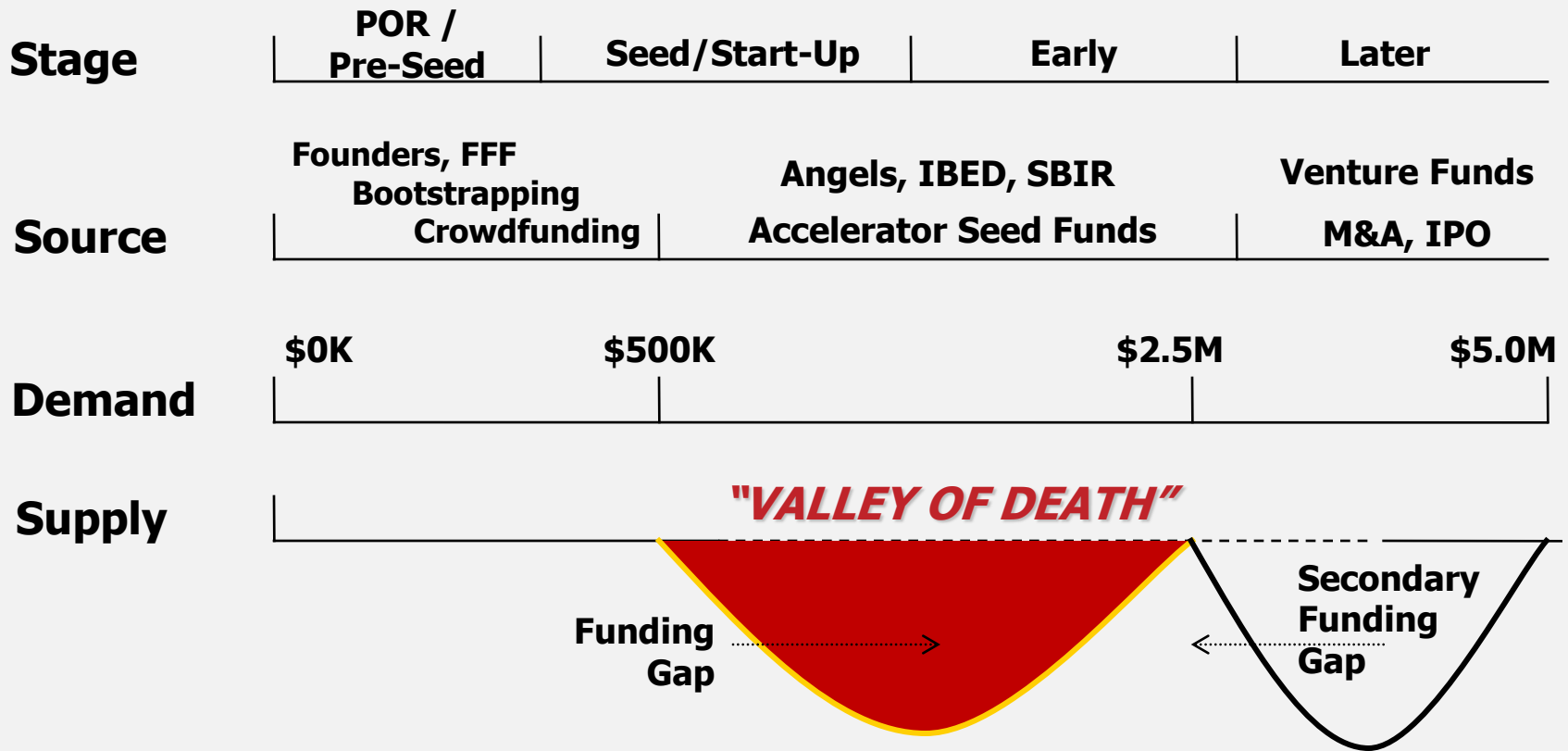
**“It Works To Solve A Problem”**

**“I’ll Buy It”**



# Innovation Capital

**"VALLEY OF DEATH"**



# Central Maryland Innovation Capital Map

## Capital Sources by Investment Stage

Pre-Proof of Concept \$25K - \$1.5M (over 5 years)	Translational Research / Proof of Concept \$15K - \$2M	Proof of Commercial Relevance / Pre-Seed \$50K - \$500K	Seed / Start-Up \$50K - \$1M	Early Stage \$250K - \$2M	Later Stage \$2M+
<ul style="list-style-type: none"> <li>NIH R01</li> <li>NIH R03</li> <li>NIH R21</li> <li>Small Business Technology Transfer Research Grant (STTR) Phase I</li> <li>Innovate Maryland</li> </ul>	<ul style="list-style-type: none"> <li>NIH Center for Accelerated Innovations (CAI)</li> <li>NCATS Cures Acceleration Network (CAN)</li> <li>Small Business Innovation Research Grant (SBIR) Phase I</li> <li>Maryland Stem Cell Research Fund (MSCRF)</li> <li>TEDCO University Technology Development Fund (UTDF)</li> <li>TEDCO TechStart</li> <li>Maryland Biotechnology Center's Translational Research Award</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Industrial Partnerships (MIPS @ UMD)</li> <li>Maryland Biotechnology Center's Biotechnology Commercialization Awards</li> <li>TEDCO Maryland Technology Transfer and Commercialization Fund (MTTCF)</li> <li><b>BHI SBIR/STTR Commercial Relevance</b></li> <li><b>BHI Commercial Relevance Fund (CRF)</b></li> </ul>	<ul style="list-style-type: none"> <li>Dingman Center Angels (UMD)</li> <li>TEDCO Johnson &amp; Johnson Joint Investment Program</li> <li>Propel Baltimore Fund</li> <li>SBIR / STTR Phase II</li> <li><b>BHI Central Maryland Angel Fund</b></li> <li>National Association of Seed &amp; Venture Funds (NASVF)</li> <li>Angel Capital Association (ACA)</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Health Care Product Development Corporation (MHCPDC)</li> <li>Invest Maryland: Maryland Venture Fund</li> </ul>	<ul style="list-style-type: none"> <li>Maryland Venture Fund Authority</li> <li>ABS Capital Partners</li> <li>Greenspring Associates</li> <li>Novak Biddle Venture Partners</li> <li>Sterling Venture Partners</li> <li>Harbert Venture Partners</li> <li>JMI Equity</li> <li>National Venture Capital Association (NVCA)</li> </ul>
<ul style="list-style-type: none"> <li>Association of University Resource Parks (AURP)</li> <li>Association of University Technology Managers (AUTM)</li> <li>Licensing Executive Society (LES)</li> </ul>			<ul style="list-style-type: none"> <li>New Enterprise Associates (NEA)</li> <li>TDF</li> <li>Abell Venture Fund</li> <li>MMG Ventures LP</li> <li>Mid-Atlantic Venture Association (MAVA)</li> </ul>		

### Funding Type Key

- Academic
- Associations
- BioHealth Innovation, Inc.
- State of Maryland
- Accelerator
- Federal
- Innovation-based Economic Development (IBED)
- Venture Capital

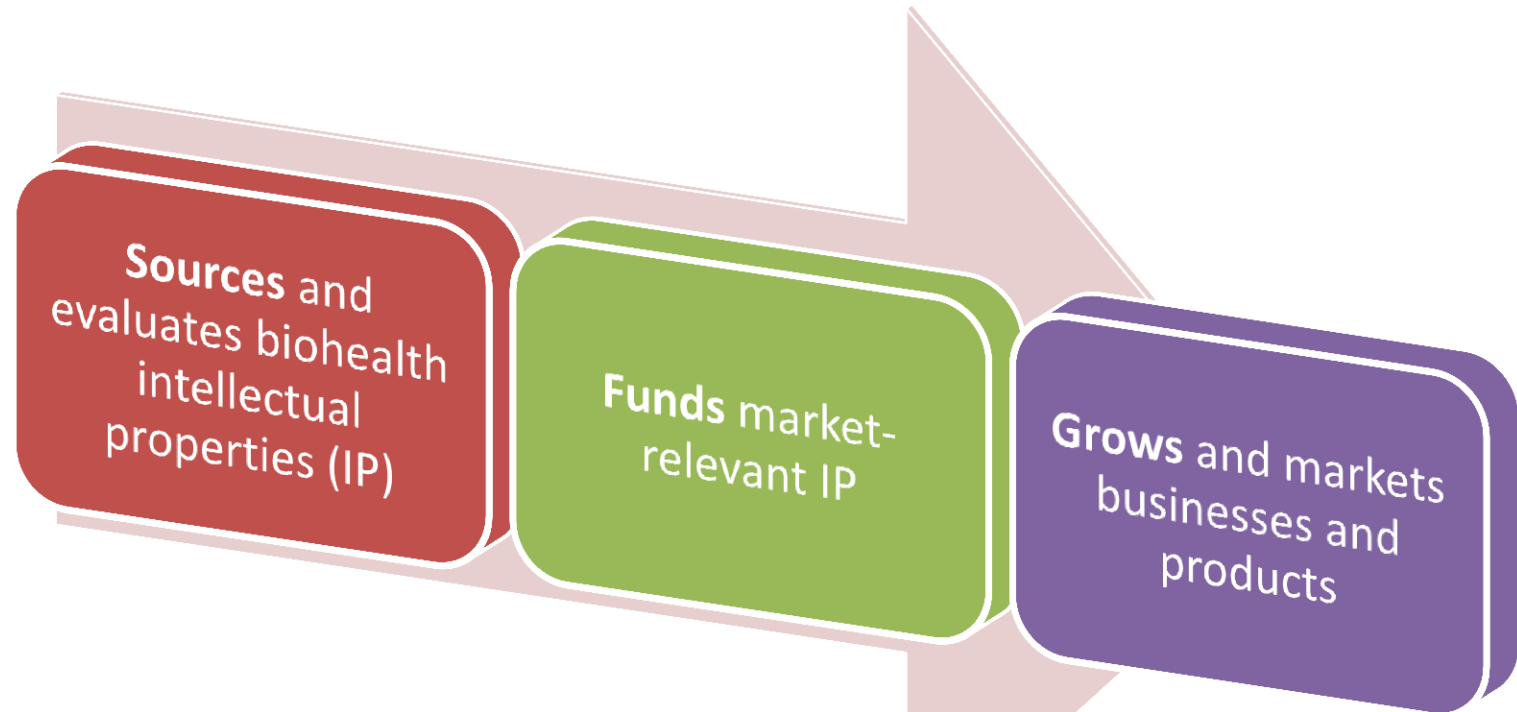
### Tax Credits

- Maryland Biotechnology Investor Tax Credit
- Montgomery County Biotechnology Investor Tax Credit



# How does BHI work?

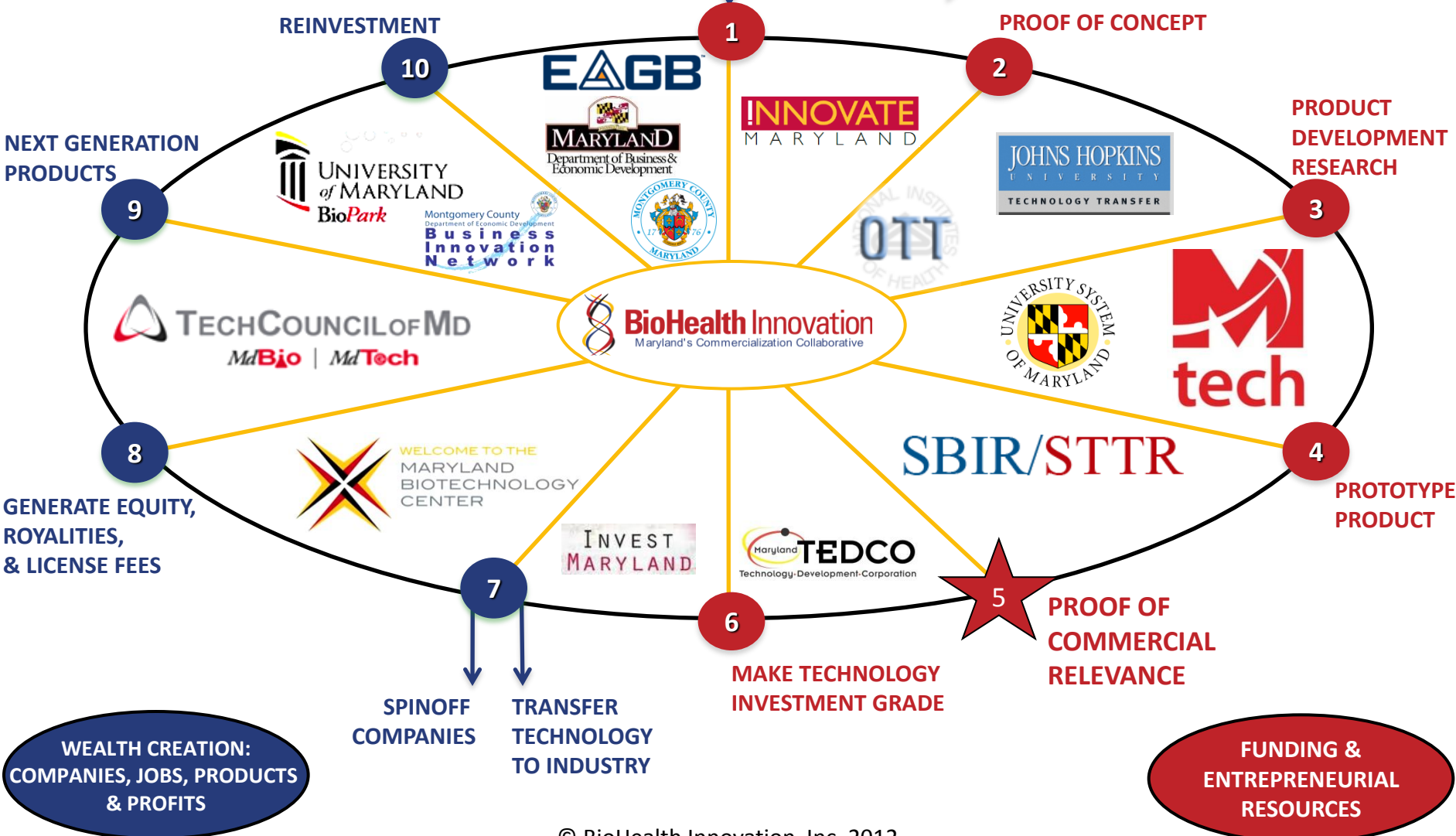
## Commercialization Pipeline



# BHI Commercialization Model

UNIVERSITIES, FEDERAL GRANTS, PRIVATE R&D, BASIC RESEARCH, INVENTIONS

PUBLICATIONS  
PhD's  
TENURE  
PATENTS



# BHI Deal Goals

## 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.

SEED  
CAPITAL





# Partnership Intermediary Agreement (PIA)

- PIA between BHI and NIH's Office of Technology Transfer that supports the 27 NIH institutes' \$3 billion intramural research and the Food and Drug Administration.
- **To promote and foster cooperative research and accelerate technology commercialization** among NIH/FDA, businesses, and universities.

# Partnership Intermediary Agreements (PIA)



- **PIA between BHI and NIH's Office of Technology Transfer (OTT)** that supports the 27 NIH institutes' \$3 billion intramural research and the Food and Drug Administration to **promote and foster cooperative research and accelerate technology commercialization** among NIH/FDA, businesses, and universities.
- **PIA between BHI and the Telemedicine & Advanced Technology Research Center (TATRC)** to capture USAMRMC and TATRC research outcomes and promote further research, product development, commercialization, and economic development opportunities.
  - TATRC has funded 241 MD based projects over the last 12 years.



# Entrepreneur-in-Residence (EIR)

- A team leader who combines scientific, financial/VC and entrepreneurial management experience to:
  - Perform due diligence
  - Develop biohealth project-focused companies



Todd Chappell

**Proactively** identifies and commercializes **market-relevant** intellectual properties from:

- Federal Labs
- Universities
- Private Sector

## **Progress (6 months into Program)**

- 73 Innovations identified and initially screened
- 7 Progressed to Secondary Analysis (Safety & Efficacy Profiling, IP Diligence, Regulatory & Development Pathways) and 12 to Primary Analysis
- 32 No De-prioritized, 22 still Under Review
- Goal to fund the operation of more EIRs

# Entrepreneur-in-Residence (EIR)

- Identify market viable biohealth assets
- Act as liaison among federal labs, academic, industry, venture capital, and non-profit
- Detailed commercial evaluation of most valuable technologies
- Provide early-stage developmental strategies
- Nurture relationships with scientists, mentor to ensure research becomes commercially valuable, and track progress
- Identify creative funding to advance exciting, novel technologies
- Create new BioHealth companies

# EIR Criteria

- **Senior management in an early stage life sciences startup**
  - **Entrepreneurial life science start up or spin out activity**
- **Management in a organization that specializes in startup companies**
- **Experience in a seed stage venture capital firm**
- **Served in a business development role in a high performing university or business development organization that successfully formed new ventures**
- **Served in a business development role, product development role, or other capacities for biotech products or services that enable substantial knowledge of the earliest stages of development for a new technology startup company**

# EIR Expectations



- **Assist OTT in the evaluation of existing technologies**
  - **Provide an entrepreneurial perspective to OTT in its evaluation of new licensing proposals**
  - **Advise OTT on opportunities for new ventures based on NIH/FDA technologies**
  - **Assist with developmental strategies**
  - **Mentor scientists to help ensure their research becomes commercially valuable**
- **Identify market viable innovations from NIH and other regional institutions**
  - **Act as liaison among regional biohealth stakeholders and NIH**
  - **Primary and secondary commercial analysis of lead technologies**
  - **Develop novel technologies that are at conceptual stage**
  - **Act as catalyst to license most interesting technologies and fund start-up companies**

# Maryland Innovation Programs

- A new annual \$5.8 million state Innovate Maryland program
- **Innovation Discovery Program** — provides funding that will enable the schools to engage “Site Miners,” who will be tech commercialization experts responsible for identifying promising technologies.
- **Innovation Commercialization Program** — provides funding to support the commercialization of university technologies:
  - Pre-commercial translational research (Phase I)
  - Commercialization planning (Phase II)
  - Early-stage product development (Phase III).
  - Up to \$215,000 for a single qualifying university,
  - Up to \$270,000 will be available to joint applications

<http://www.bizjournals.com/baltimore/news/2012/10/22/maryland-innovation-initiative-names.html>

# Maryland Universities/EIR Interaction

**! INNOVATE**

Maryland's Innovation Initiative

- **\$5.8M budget**
- **5 University partners**
- **5 University site miners**
- **40 University pre proof-of-concept technologies funded**
- **\$25-\$150K funded per technology**



- **Regular meetings between BHI/EIR and site miners**
- **BHI identifies most commercially relevant technologies**
- **BHI and INNOVATE MD partnership opportunities**





# EIR Integration into NIH System

- **Office at the central Office of Technology Transfer (OTT)**
  - Volunteer status
  - Report to Director and Deputy Director of centralized OTT
  - Full access to NIH campus and staff
- **Active participant in Technology Review Groups at top three institutions**
  - Review of patent prosecution decisions for new and existing inventions
- **Active participant in Technology Development Coordinator meetings**
  - Key decisions on selected technologies
- **Access to database (SYNAPSE) detailing invention filings**

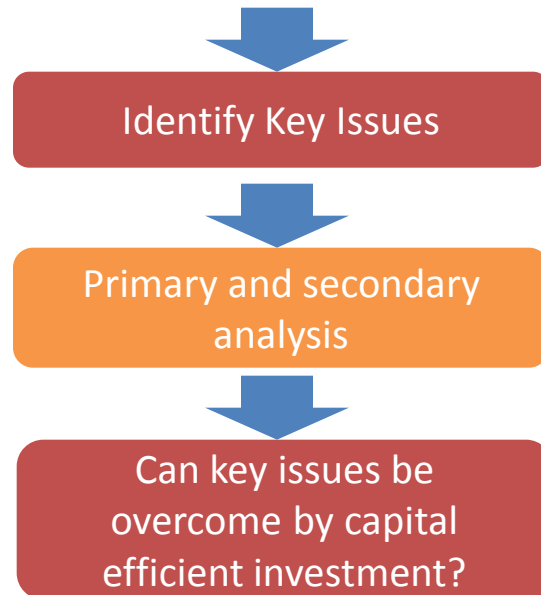
# NIH Overview

- **Intramural budget is approximately \$3B per year**
  - 6,000 scientists
  - 27 institutes and centers (ICs)
- **Three largest centers: NCI, NIAID, and NHLBI**
  - In aggregate represents more than half of invention filings
- **Centralized Office of Technology Transfer**
  - Responsible for patenting
  - Technology transfer specialist at each institution
  - ~150 licensing staff members at NIH

# Early-Stage Analysis of Commercial Relevance

## Selected Criteria for Value Proposition

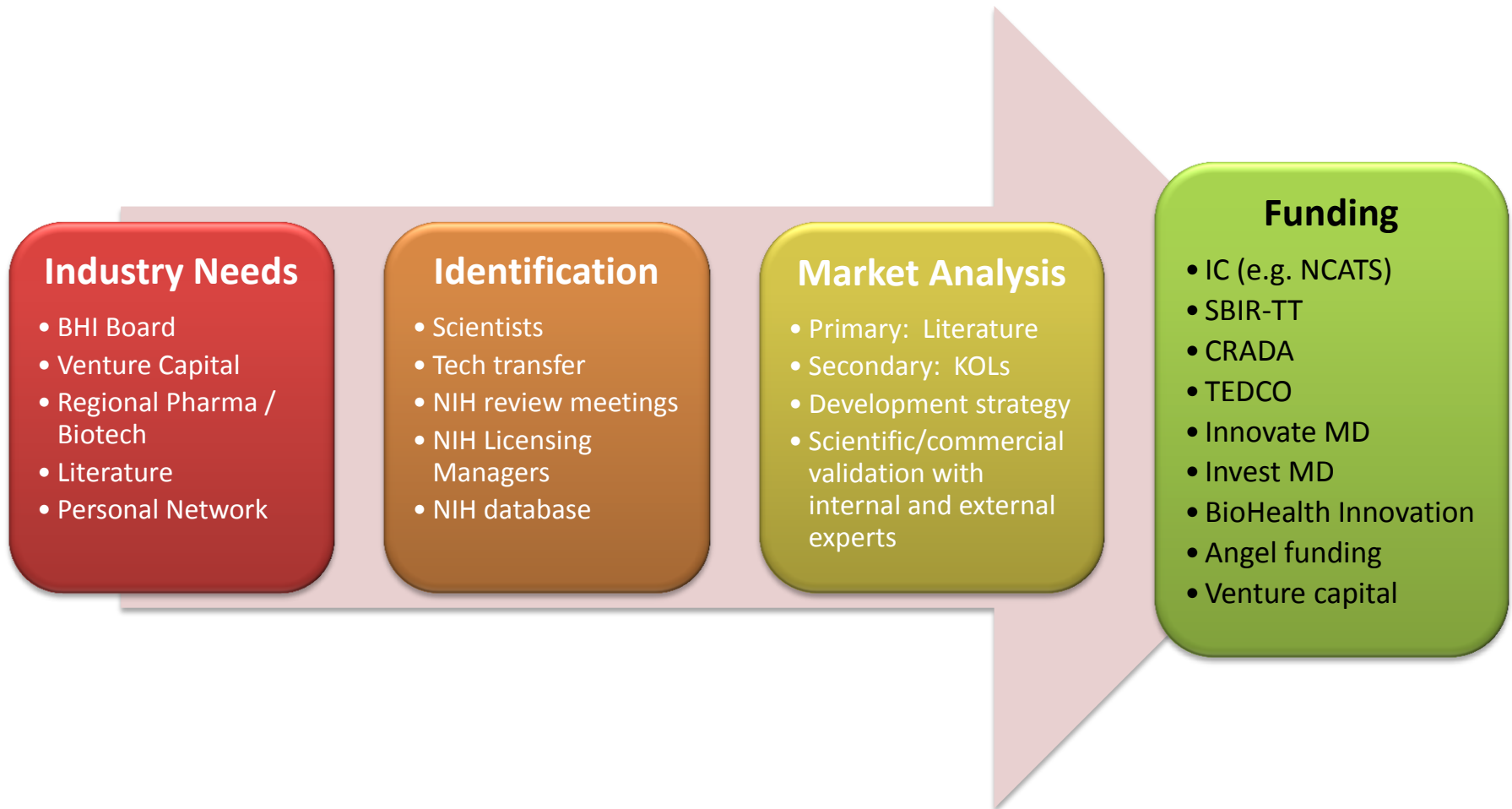
Differentiation	Efficacy Data	Market Size	Reimbursement
Safety Data	Unmet Medical Need	Stage of Development	Industry Interest
Intellectual Property	Competitive Landscape	Advantages for Clinical Development	Novelty



# Key Considerations for Technology Focus

- Clear unmet need that benefits public health
- First-in-class, best-in-class therapies
- Target therapeutic areas that reflect strategic objectives
- Clinical development advantage
- Relevance to strategic needs

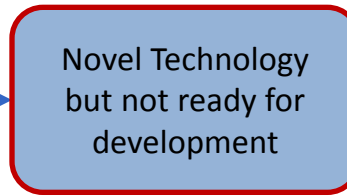
# What is the Overall Process for Licensing / Creating Company?



# BHI Approach to Progressing NIH Assets

EIR...

- 1) Identifies NIH Asset
- 2) Conducts Scientific & Commercial Due Diligence
- 3) Interacts with Inventor & NIH OTT

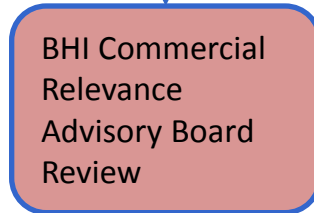


BHI...

- Continues to track / monitor progress. Additional experimentation likely required
- Creative funding
  - NIH programs
  - Institution investment

BHI Commercial Relevance Board...

- 1) Provides Industry Input & Commercial Expertise
- 2) Makes recommends on commercial next steps i.e. NewCo formation, capital raising, etc.

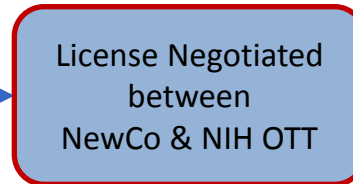
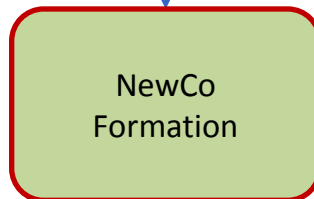


BHI...

Works with Regional Companies to scout technologies for their own pipelines. When an asset is identified, companies will perform their own due diligence and investigate a licensing deal

BHI Staff & appropriate Board & other parties...

- 1) Assist in building NewCo Management Team, Board of Directors, & Scientific Advisors
- 2) Provides ongoing commercial strategy and support to the NewCo
- 3) With BHI support, NewCo files application to license technology with the NIH OTT



BHI...

Is a silent partner to licensing process with NIH OTT. Any exclusive licenses are required to be posted on the Federal Register

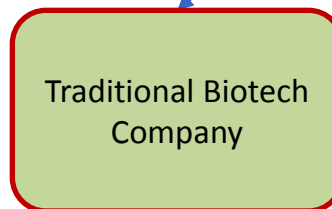


BHI...

Supports NewCo with capital raise including Angel, Venture Capital, SBIR/STTR and Federal Funding, Foundation Resources, State Funding Programs, TEDCO, Accelerator, etc.

BHI...

Assists with finding appropriate laboratory space locally and other local partners appropriate for development

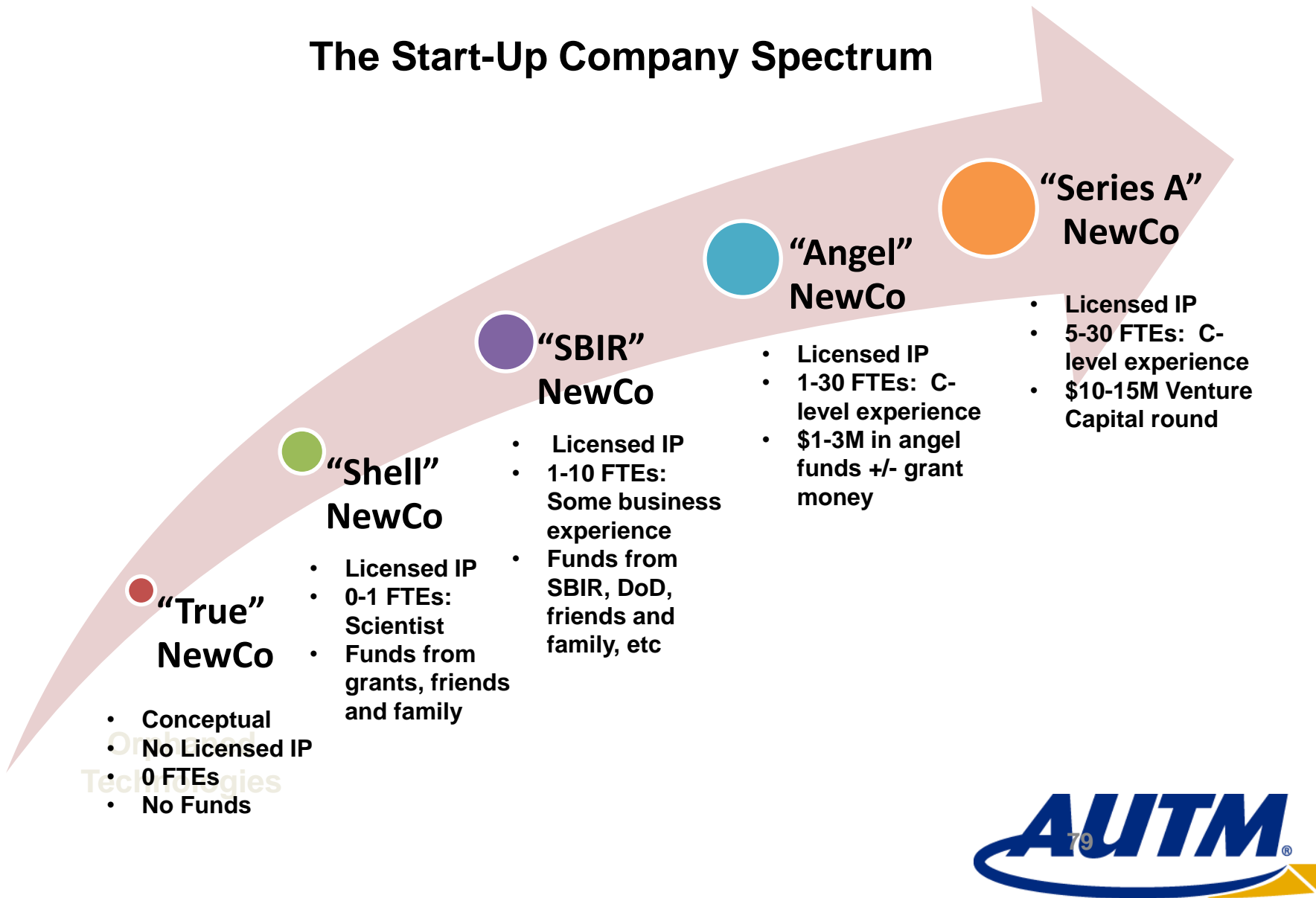


BHI...

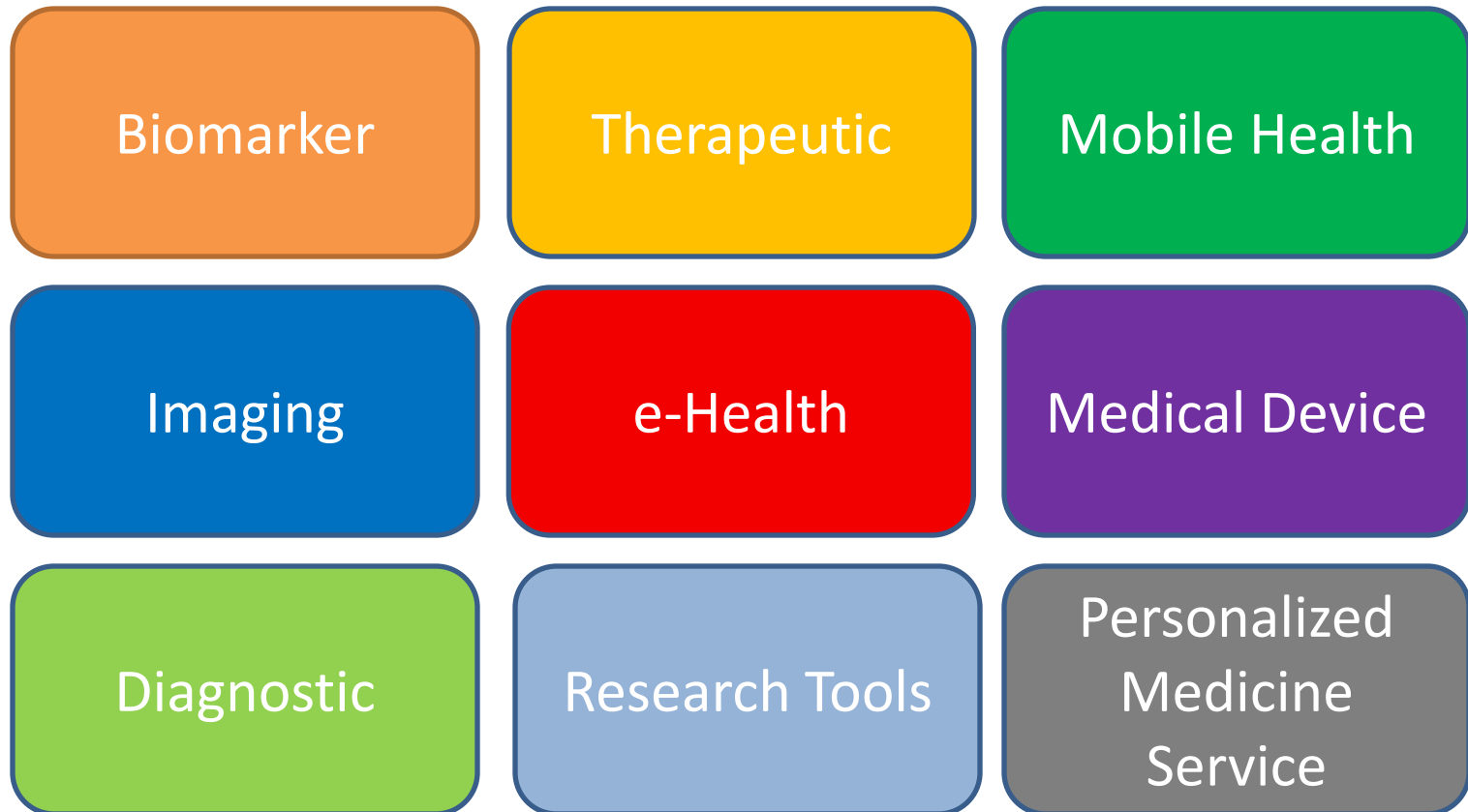
Assists with referring appropriate development partners, consultants, and virtual services

# EIR Value Proposition

## The Start-Up Company Spectrum



# Different Technologies = Different Strategy

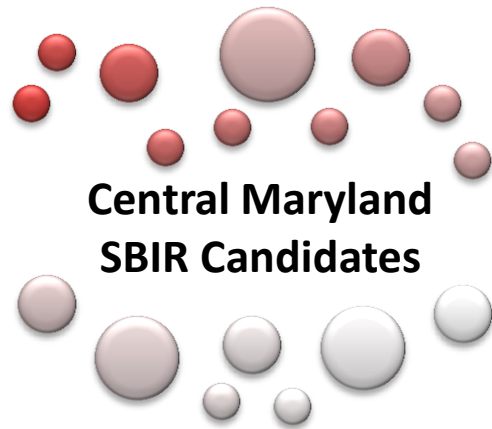




# BHI SBIR Commercial Relevance Program

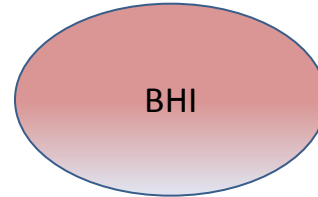
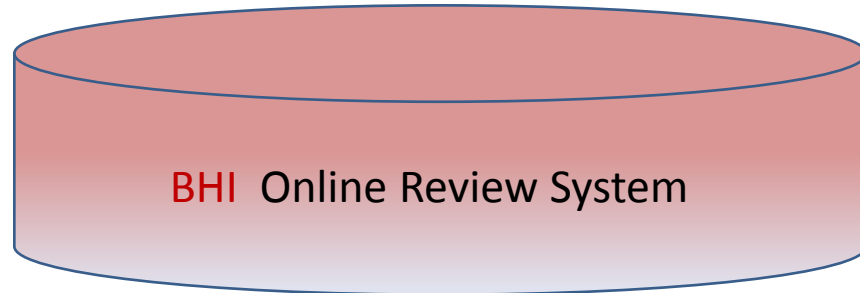
- SBIR/STTR Pre-Application Form submitted by small businesses in Central Maryland
- Scoring and feedback provided on Pre-Application by 3 qualified reviewers from a national pool using an online evaluation system
- BHI Committee reviews and determines whom to work with from a perspective of nurturing commercially relevant startups
- Financial grant considerations offered to assist in preparing full SBIR/STTR submission

# BHI SBIR/STTR: Commercial Relevance Program (CRP)



1. Phase I Awardees
2. Pre-Phase I (Phase Zero) – Early Commercial Relevance Indication

*Companies Invited by BHI to submit SBIR concept*



*Mentoring \$\$\$*

*Reviews, Feedback, Troubleshooting, Strategy*

# BHI News & Website



## BHI Web site

The BHI Web site has news, an events calendar, research publications, regional organization feature stories and resources for the biohealth industry.

<http://www.biohealthinnovation.org>



## BHI News

BHI's weekly e-newsletter highlights the Central Maryland Region's news articles, national biohealth trends and feature stories.

<http://www.biohealthinnovation.org/news>

# Innovation Resource Guide

## *“Financing and Entrepreneurial Resource for Montgomery County and the Greater Baltimore Region”*

- Entrepreneur and Innovation Resource Network
- Innovator Financing Guide
- The Startup’s Guide to Intellectual Property



### Central Maryland Biohealth Entrepreneur’s Resource and Finance Guide

- Provides **businesses and entrepreneurs** with information to access resources necessary to **grow** their biohealth businesses.
- **A-Z directory** of relevant businesses, organizations and resources for business assistance, economic development, innovation research, investment and technical assistance.
- A **comprehensive financing guide** designed to prepare businesses and entrepreneurs to navigate the complicated world of financing and investment.
- A **startup’s guide to intellectual property** that will introduce entrepreneurs to the complex issues surrounding patents, trademarks, copyrights and trade secrets.
- The guide will be **free** and available in both **print and electronic** formats.



#### Benefits of Inclusion:

- Exposure to businesses, entrepreneurs, non-profit organizations and government leaders.
- Opportunity to market assistance and investment programs to a large audience.

#### Benefits of Sponsorship:

- Company logo printed on the inside cover of the guide.
- Exposure to 1,000s of businesses, organizations and government leaders through distribution of the guide.

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- Half-to-full-page detailed ads available to market your company or organization.
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**To advertise, sponsor or be included in the guide, please contact:**

Michael Combs  
Economic Alliance  
of Greater Baltimore  
410-637-4105  
mcombs@greaterbaltimore.org



Central Maryland Biohealth Entrepreneur’s Resource and Finance Guide is a joint effort between BioHealth Innovation and the Economic Alliance of Greater Baltimore.

**For more information, visit:**

[www.biohealthinnovation.org](http://www.biohealthinnovation.org)  
[www.greaterbaltimore.org](http://www.greaterbaltimore.org)

# BHI Innovation Capital

- **SBIR/STTR Assistance Program** - The BHI SBIR/STTR Assistance Program (in development) will provide assistance to biohealth-driven companies in the Central Maryland region in preparing for high-quality SBIR/STTR grant proposals for submission to federal funding agencies.
- **BHI Angel Fund** - The BHI Angel Fund (in development) will be a member-managed private equity investment fund that bridges the gap between pre-seed investments and institutional venture capital serving the Central Maryland region entrepreneurial needs.
- **BHI Commercial Relevance Investment Fund** - The BHI Commercial Relevance Investment Fund (in development) will be a pre-seed and early-stage, equity-based innovation capital fund to help grow, attract, retain and connect Central Maryland biohealth innovation-based companies that need financing to grow their enterprises.

# How is Success Measured?

## BHI Metrics – First 5 Years

	Now	In 5 Years
<b>VC Funding for Biotech</b>	<b>\$79 Million</b>	<b>\$150</b>
<b>Government Funding for Biotech</b>	<b>Increased SBIR proposals &amp; success</b>	<b>Improve Maryland's ranking</b>
<b>Source Prospective Deals Annually</b>	<b>30</b>	<b>150</b>

**Improve return on R&D investment by leveraging equity investment**

**Create and retain 1,300 jobs**

**Recruit entrepreneurs, experienced managers and businesses**

**Commercialize biohealth technologies and create biohealth companies**

# BHI: The Triple Bottom Line

**Grows** high-paying jobs and businesses

**Expands** tax base; **improves** economic vitality

...and **Benefits** human health!

# Are you pulling alone or...



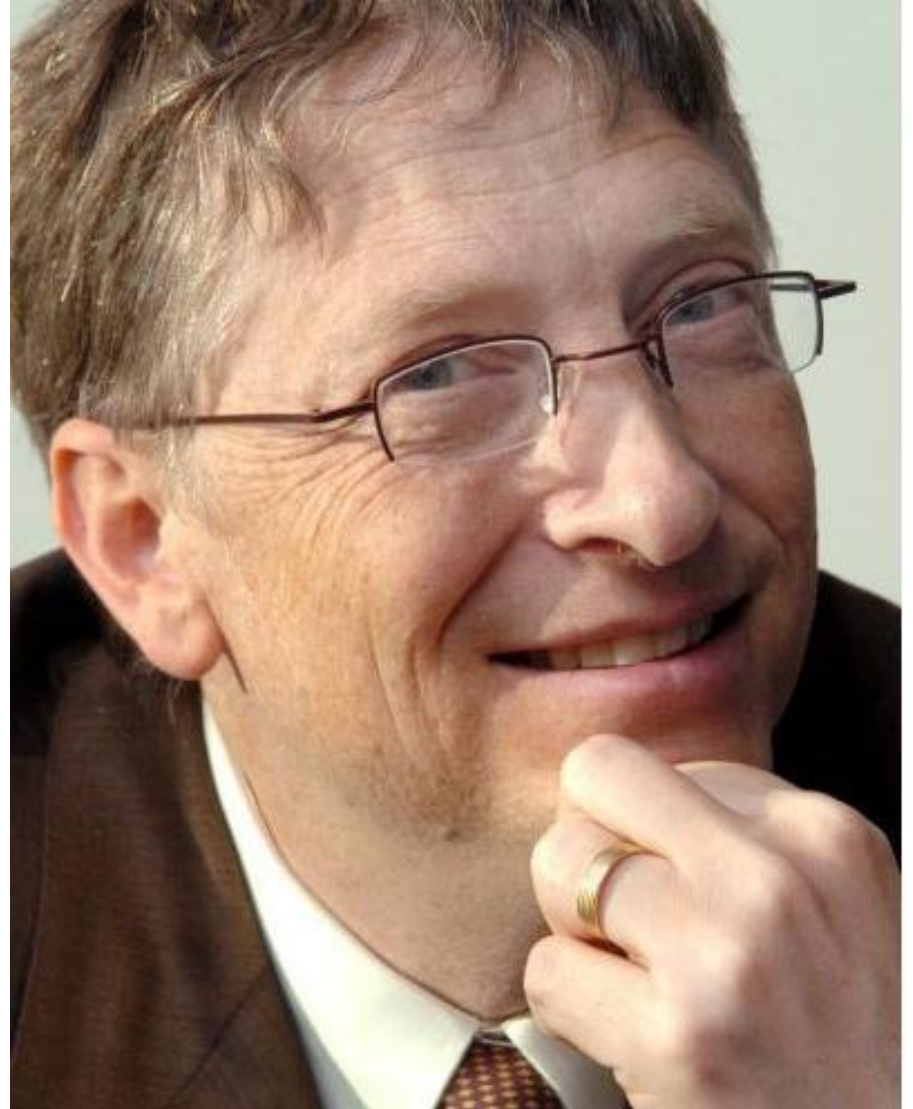


# Are we all pulling together for success?



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

**Bill Gates**



"Coming together is a beginning, staying together is progress, and working together is success."



## Henry Ford

# Contact Information

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President & CEO

Innovation America

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