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BioHealth Innovation, Inc.

Introduction

Richard Bendis, President & CEO

BioHealth Innovation, Inc.

7/11/2012

Rockville, MD



BioHealth Innovation

Maryland's Commercialization Collaborative

www.biohealthinnovation.org

The Problem--A National Challenge

America is falling behind the world it invented because we are:

- **Out-educated**
- **Out-built in infrastructure**
- **Out-invested in R&D**

by countries in both Europe and Asia.

--*“That Used to Be Us”* by Thomas Friedman, 2011

The Reverse Brain Drain

- ***“Opportunities in China Lure Scientists Home”*** --The Washington Post, February 20, 2008
- American returnees to India cited as reasons for going “back” to where they came from:
 - ***Better Economic Opportunities***
 - ***Family Ties***
 - ***Better Access to Markets***



National Leadership



President Obama:

- **Bioeconomy Initiatives**
- **America Invents Act (2011)**

- **America Invents Act**
- **Center for Advancing Translational Sciences** in NIH to advance commercialization (NCATS)
- Develop a **National Bioeconomy Blueprint**
 - Support R&D investments
 - Facilitate the transition from research lab to market
 - Reduce barriers, increase speed and predictability of regulatory process, and reduce cost.
 - Update training programs and align academic institutions incentives
 - Identify and support the development of PPPs and pre-competitive collaborations



State Leadership



Maryland Governor O'Malley:

- **BioMaryland 2020**
 - **Invest Maryland**
 - **Innovate Maryland**
-
- **Maryland Biotechnology Investment Tax Credit (\$6 m/yr)**
 - **BioMaryland 2020** blueprint
 - **Invest Maryland** (\$70 million)
 - Maryland Life Sciences Advisory Board
 - **The Maryland Venture Fund**
 - **Maryland Innovation Initiative**

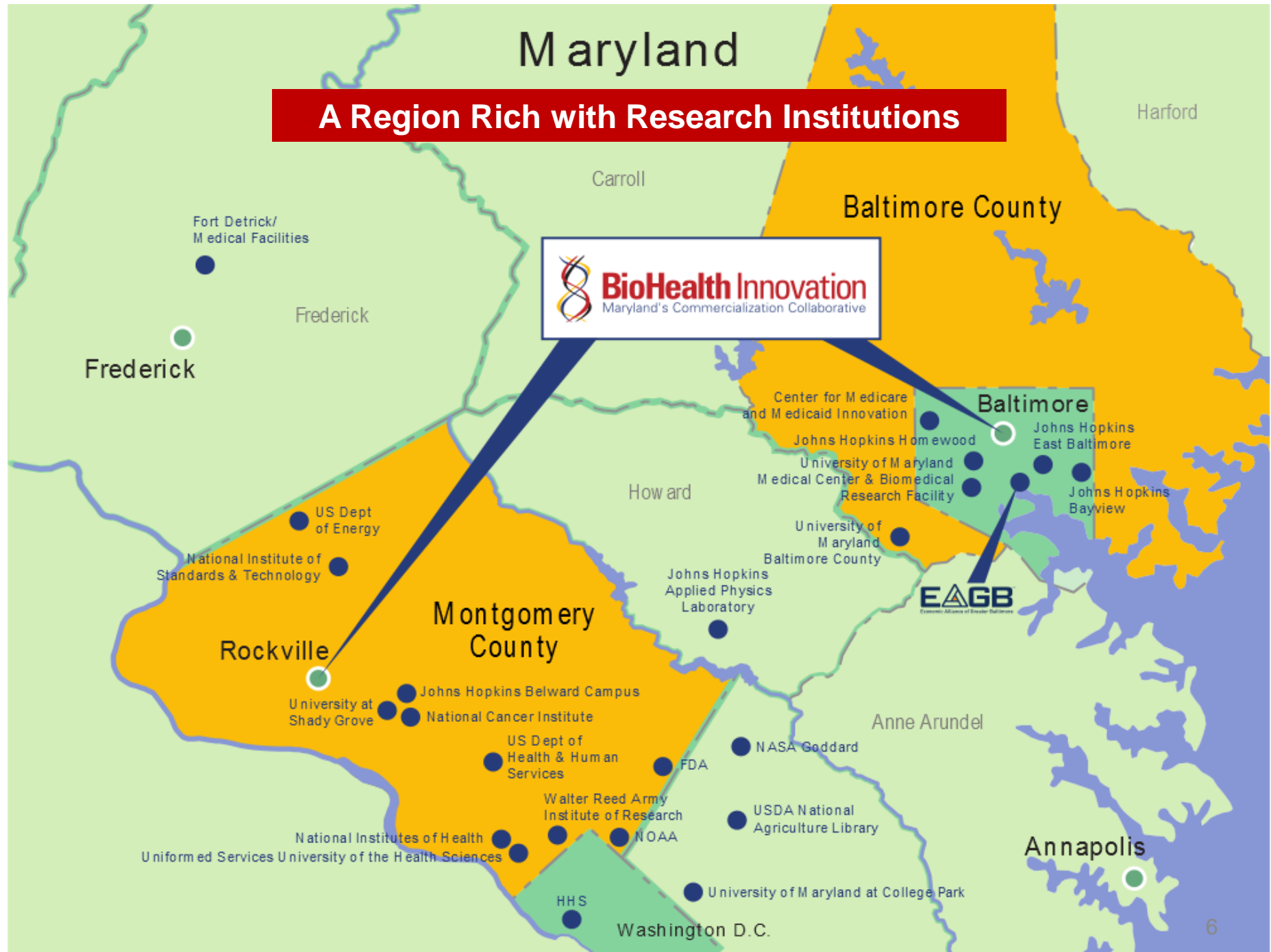
“The Region”--Central Maryland

Unrivaled Research Assets
Unfulfilled Commercial Promise



Maryland

A Region Rich with Research Institutions



Fort Detrick/
Medical Facilities

Frederick

Frederick

Carroll

Baltimore County

Harford

Center for Medicare
and Medicaid Innovation

Baltimore

Johns Hopkins Homewood

Johns Hopkins
East Baltimore

University of Maryland
Medical Center & Biomedical
Research Facility

Johns Hopkins
Bayview

University of
Maryland
Baltimore County



Howard

Johns Hopkins
Applied Physics
Laboratory

National Institute of
Standards & Technology

US Dept
of Energy

Montgomery
County

Rockville

University at
Shady Grove

Johns Hopkins Belward Campus

National Cancer Institute

US Dept of
Health & Human
Services

FDA

NASA Goddard

Walter Reed Army
Institute of Research

USDA National
Agriculture Library

NOAA

National Institutes of Health
Uniformed Services University of the Health Sciences

HHS

University of Maryland at College Park

Washington D.C.

Anne Arundel

Annapolis

BioHealth Regional Innovation Cluster Assets



National Biodefense Analysis and Countermeasures Center



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 a STEM Workforce

BHI Value Proposition

Connects regional innovation
assets

Develops an entrepreneurial
talent and support pipeline

Attracts funding for technology
commercialization

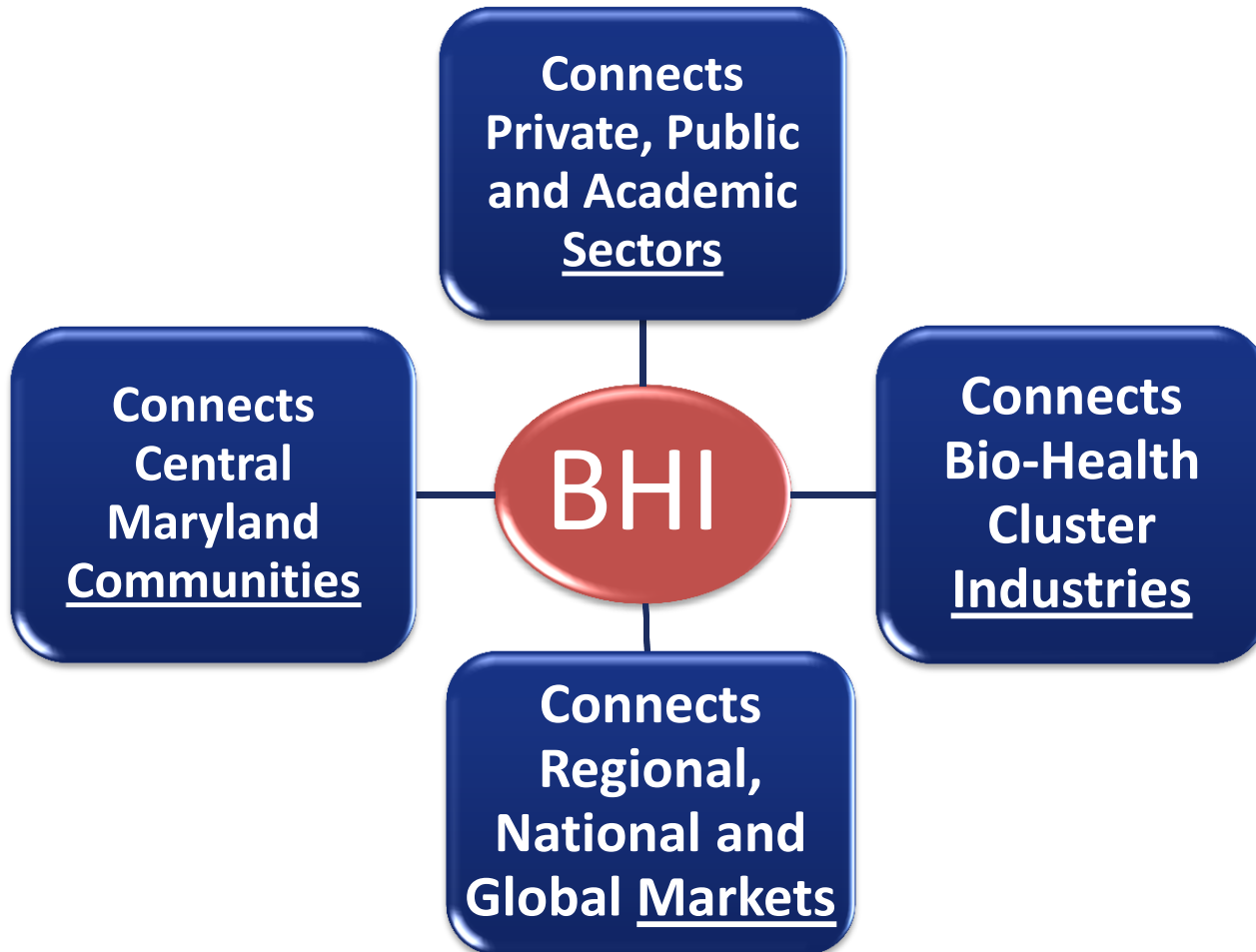
Develops a continuum of
innovation workforce

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



Regional BioHealth Ecosystem Partners



BHI Partners and Sponsors



JOHNS HOPKINS
UNIVERSITY



NEA®



BHI Funding Sources:

- private sector
- universities and foundations
- public sector



BHI Board of Directors

Michael J. Baader, Esq.

Managing Director, Venable LLP

Richard Bendis

President & CEO, BioHealth Innovation, Inc.

Scott Carmer (Chair)

Executive Vice President of
Commercial Operations, MedImmune

Kenneth Carter

Chair, Noble Life Sciences

Ronald J. Daniels

President, Johns Hopkins University

David M. Gillece (Secretary)

Regional Managing Principal, Cassidy Turley

William E. Kirwan

Chancellor, University System of Maryland

Douglas Liu

Senior Vice President of Global Operations,
Qiagen

David Mott

General Partner, New Enterprise Associates

Jerry Parrott

Vice President, Corporate Communications and
Public Policy, Human Genome Sciences

William G. Robertson (Treasurer)

President & CEO, Adventist Healthcare

J. Thomas Sadowski

President & CEO, Economic Alliance of Greater
Baltimore

Thomas Street

Assistant Chief Administrative Officer,
Montgomery County Government

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)

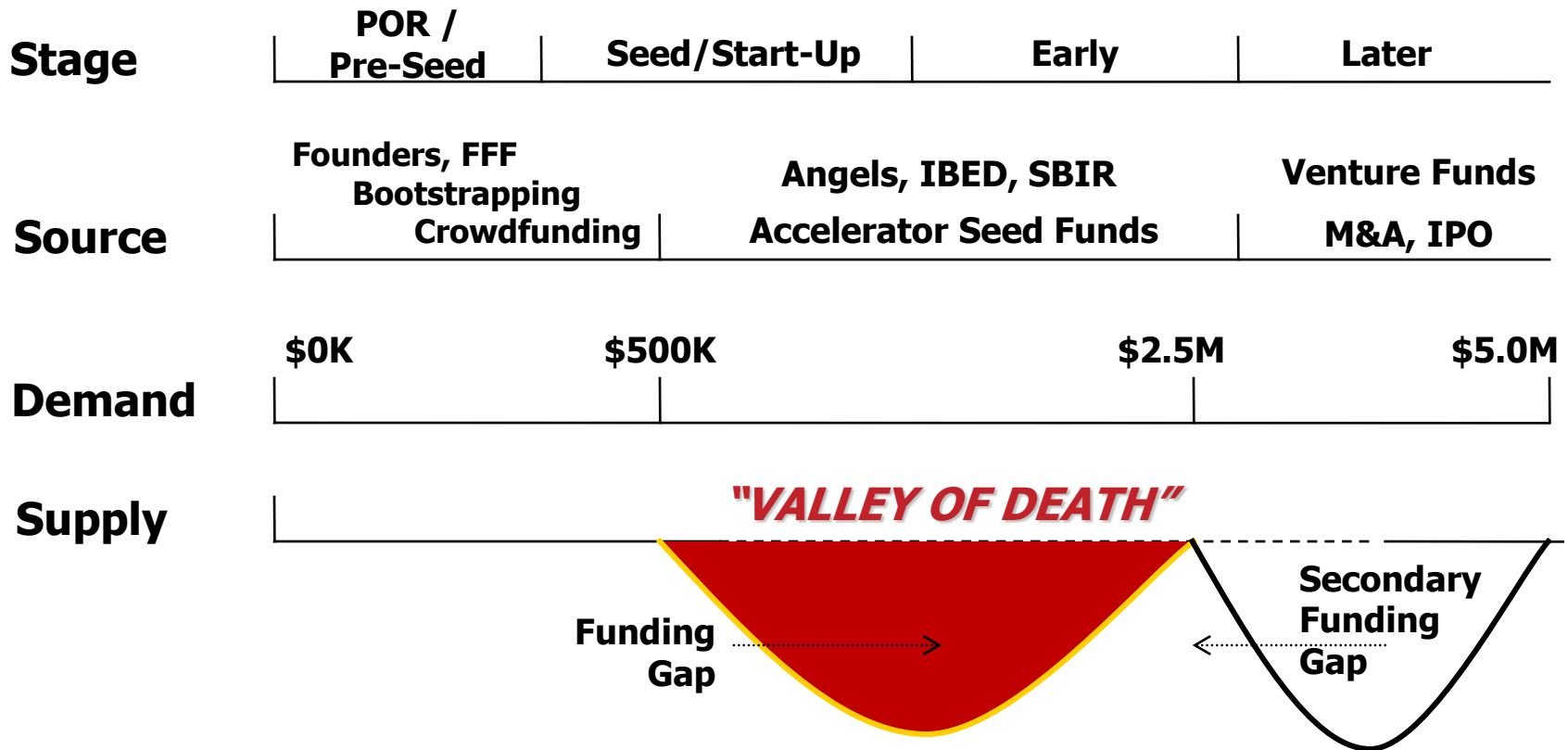
“It Works To Solve A Problem”

“I’ll Buy It”










Innovation Capital

“VALLEY OF DEATH”

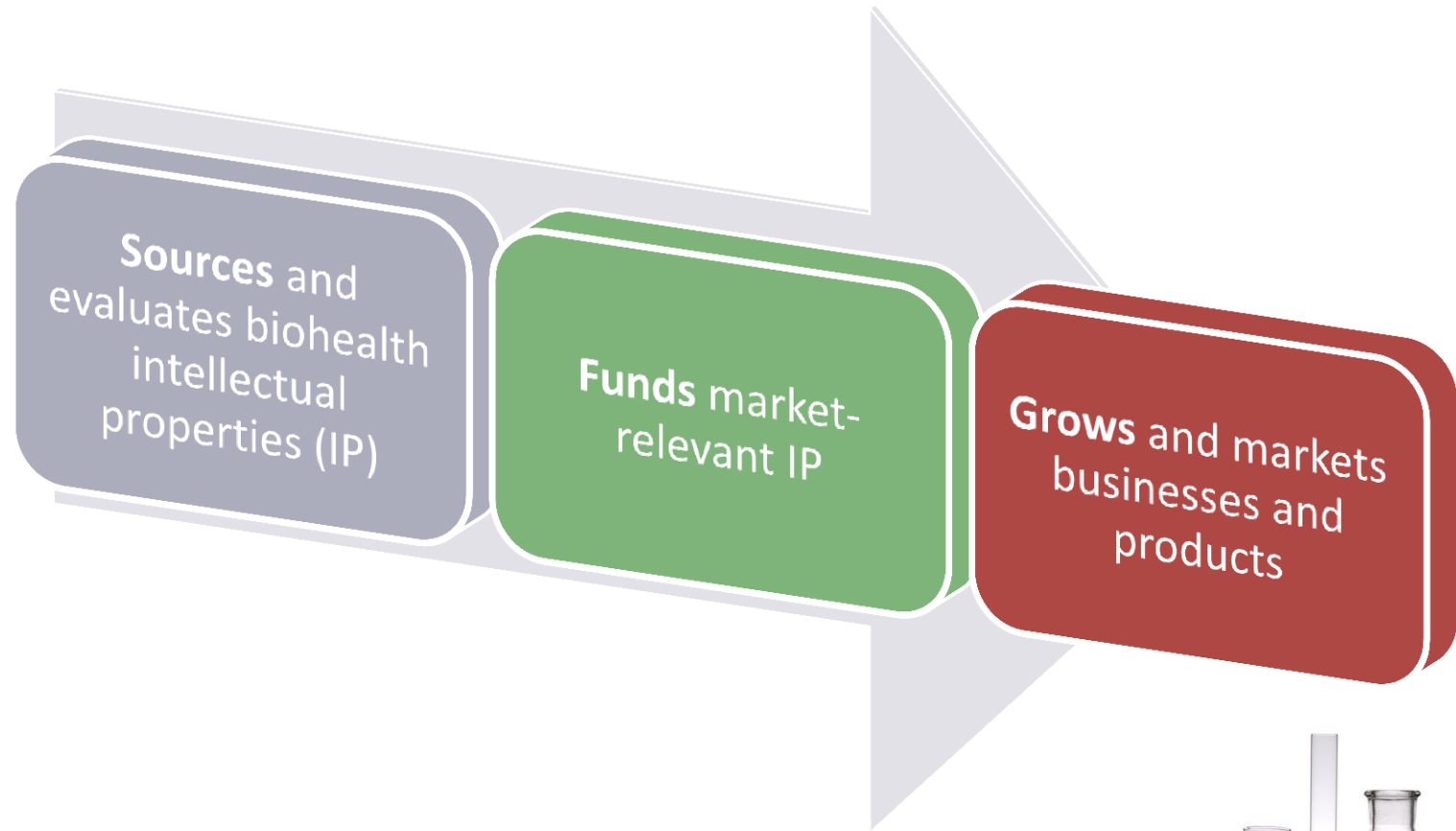


Connect Funding Sources at Every Stage to Fill Gaps

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

How does **BHI** work?

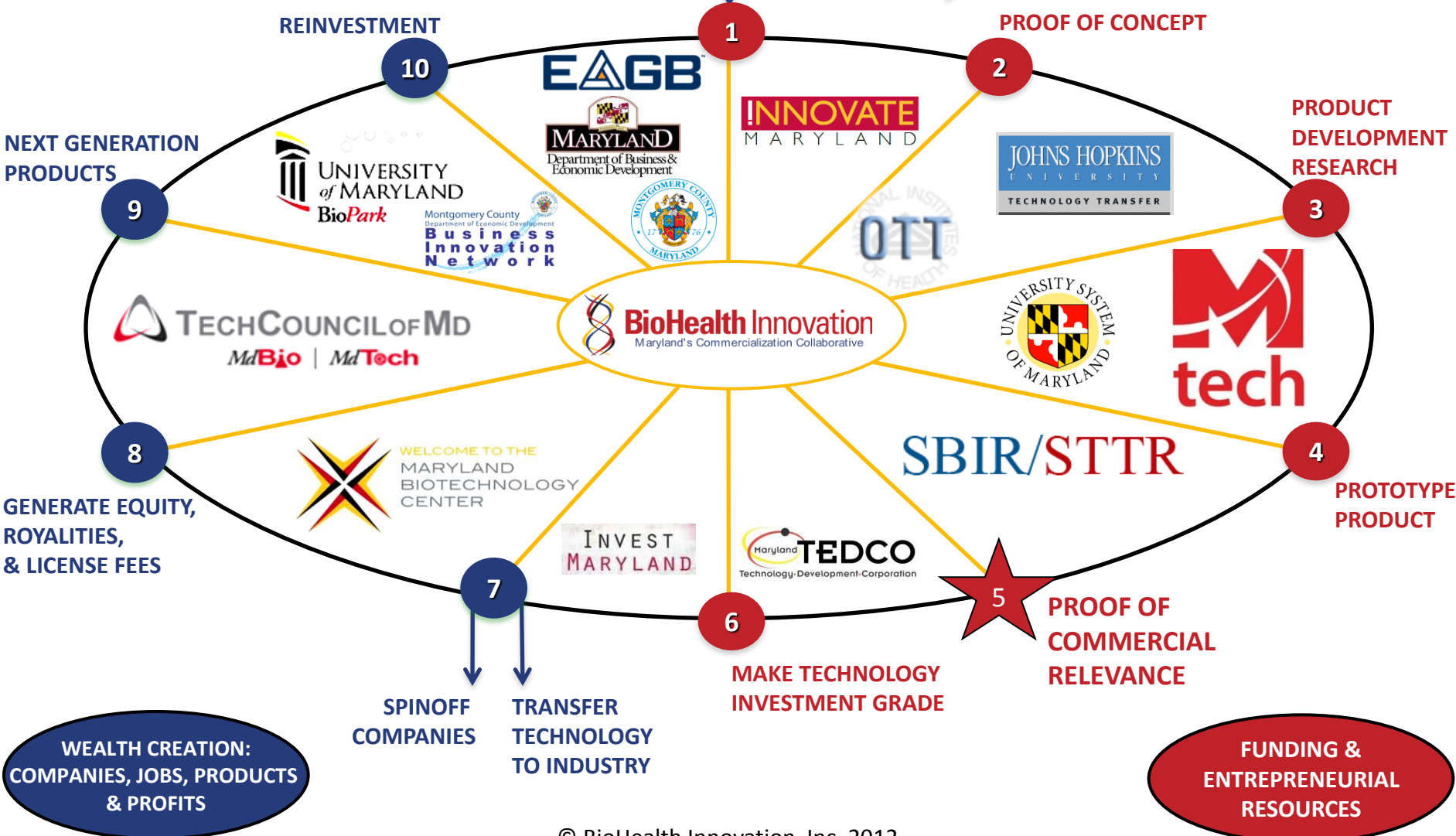
Commercialization Pipeline



BHI Commercialization Model

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

PUBLICATIONS
PhD's
TENURE
PATENTS



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.

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.**

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
- **Proactively** identifies and commercializes **market-relevant** intellectual properties from:
 - federal labs
 - universities
 - private sector



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**

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**

Example of EIR Interaction

! INNOVATE

Maryland's Innovation Initiative

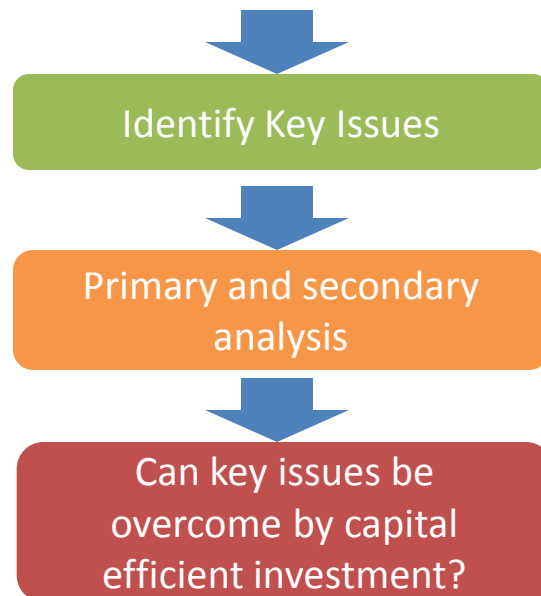
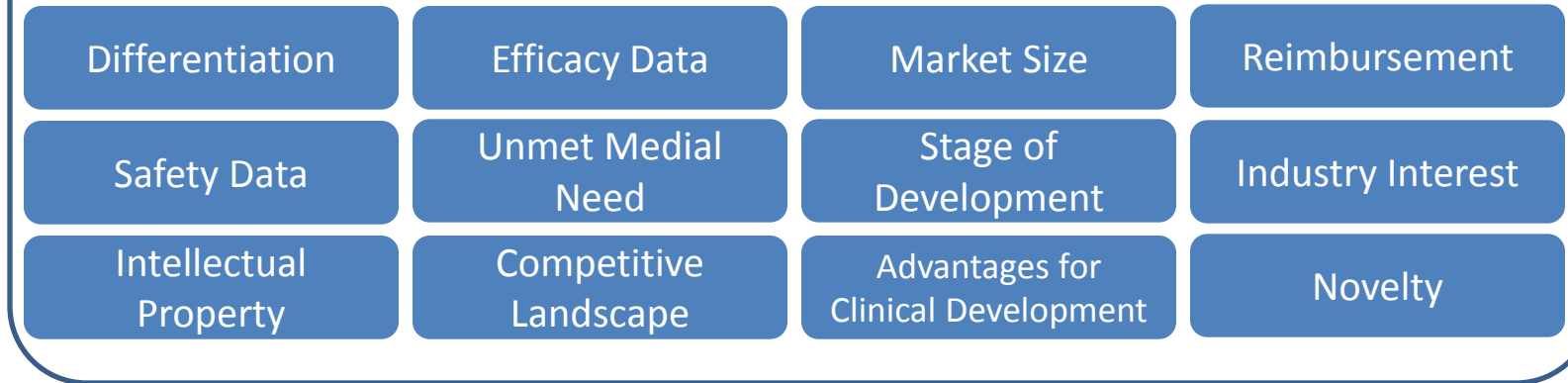
- **\$5.8M budget**
- **5 University partners**
- **5 University site miners**
- **40 University pre proof-of-concept technologies funded**
- **\$25-\$150K funded per technology**



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

Early-Stage Analysis of Commercial Relevance

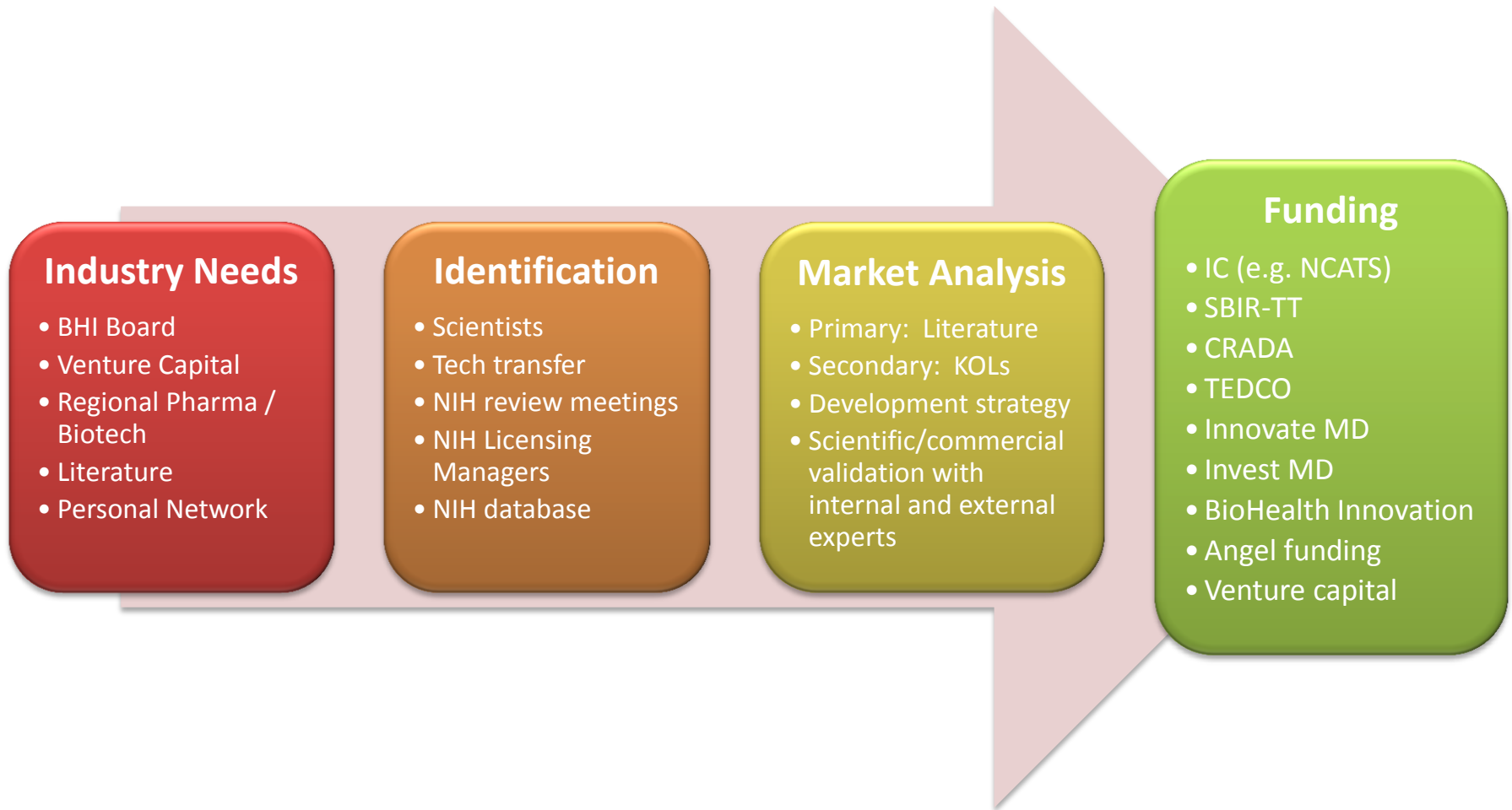
Selected Criteria for Value Proposition

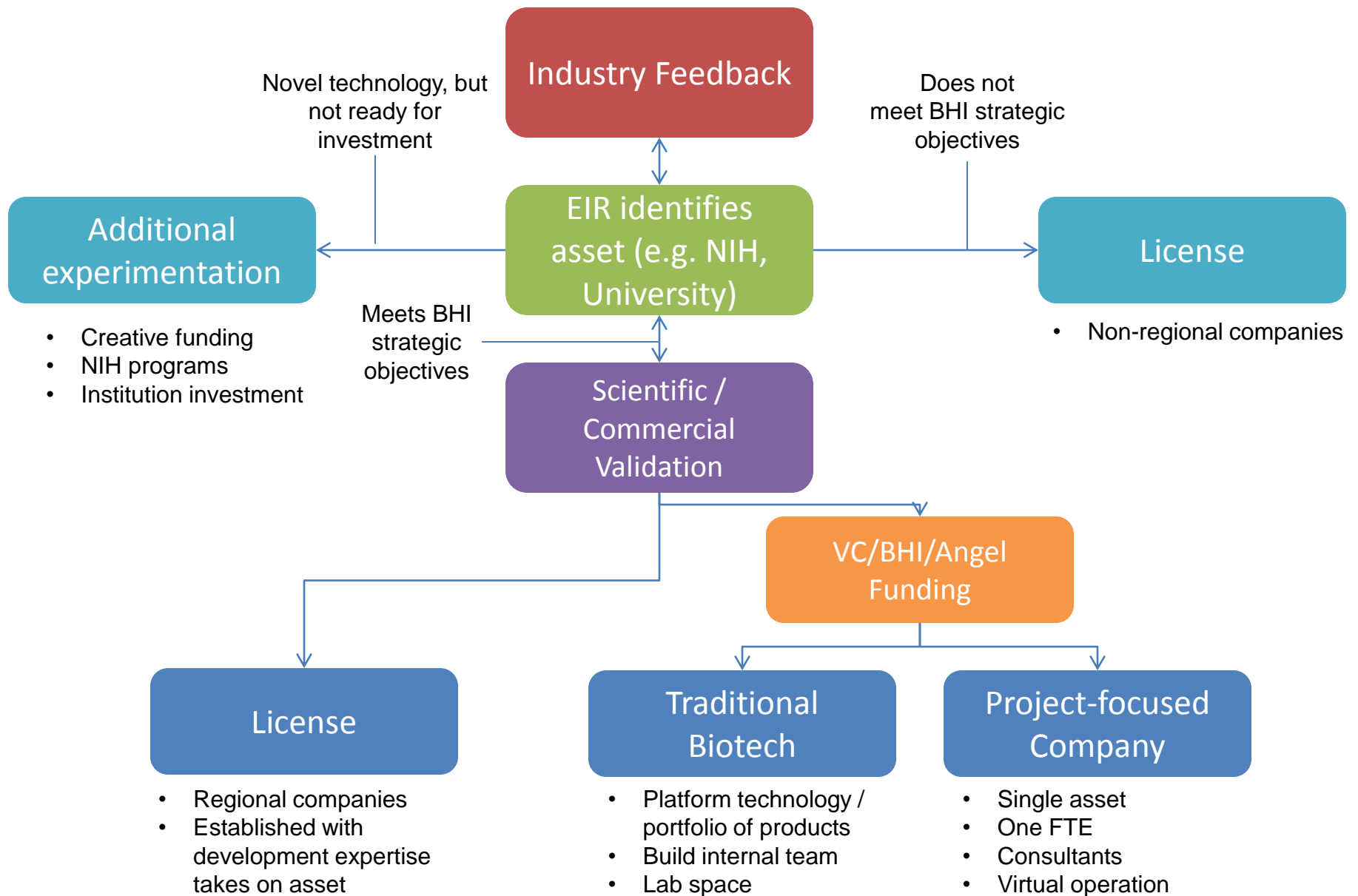


Key Considerations for Technology Focus

- **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?



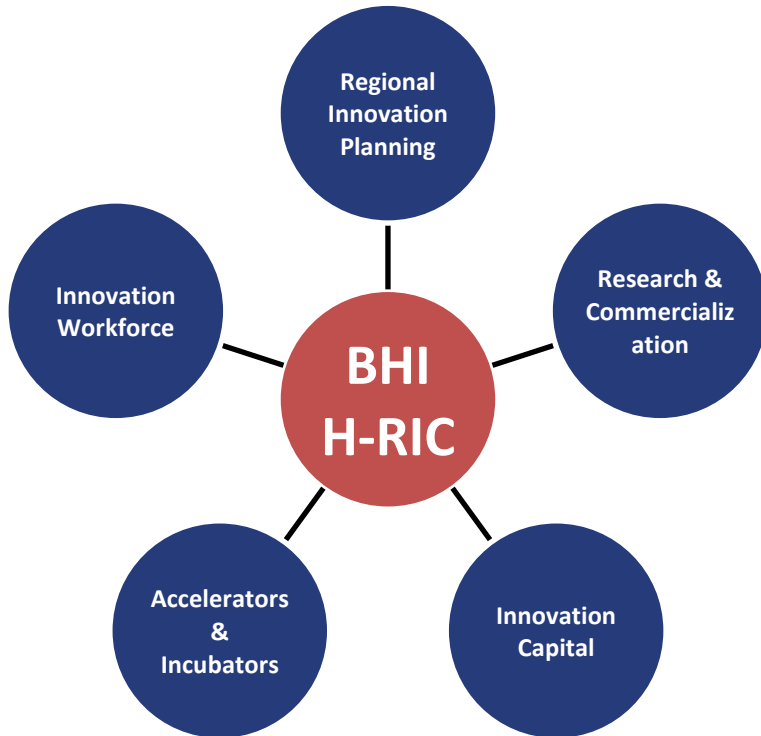


Funding Mechanisms



- **Institution or Center participates in direct funding of innovation**
- **Cooperative Research and Development Agreement (CRADA)**
 - Written agreement between a private company and a government agency to work together on a project
 - Allows the Federal government and non-Federal partners to optimize their resources, share technical expertise, share intellectual property emerging from the effort, and speed the commercialization

BHI H-RIC Model

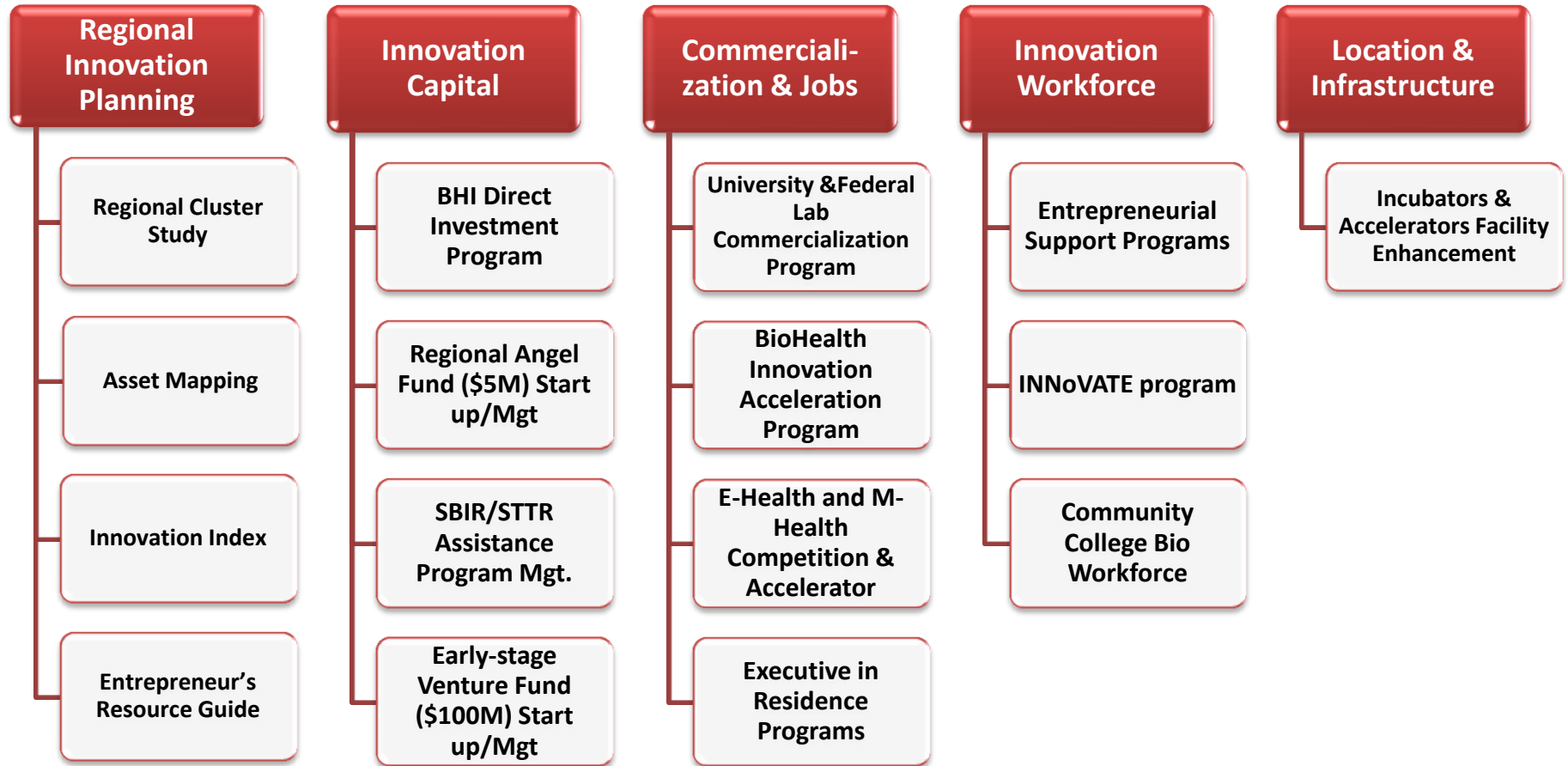


Health Regional Innovation Cluster (H-RIC)

- 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

BHI Road Map & H-RIC

Implementation Strategy



BHI Resources



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>



BHI & EAGB Innovation Resource Guide

This guide will include the Entrepreneur and Innovation Resource Network, Innovator Finance Guide, and the Startup's Guide to Intellectual Property.



How is Success Measured?

BHI Metrics – First 5 Years

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

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!

BHI Staff

Richard Bendis

President & CEO

(215) 593-3333

rbendis@bendisig.com

Todd Chappell

Entrepreneur-In-Residence

(978) 933-1622

tchappell@biohealthinnovation.org

Ethan Byler

Director, Innovation Programs

(202) 664-2679

ebyler@biohealthinnovation.org

Renée Enright

Executive Administrator

(301) 639-6742

renright@biohealthinnovation.org

Amanda Wilson

Operations Manager

(315) 481-0136

awilson@biohealthinnovation.org

Richard Miller

Marketing Consultant

(609) 314-4008

ramair@me.com

JT Koffenberger

Social Media Consultant

(302) 559-8711

Jt.Koffenberger@delmarvagroup.com

Adam Hafez

Student Intern

(301) 801-4317

ahafez@biohealthinnovation.org

BioHealth Innovation, Inc.

22 Baltimore Road | Rockville, MD 20850

bhi@biohealthinnovation.org



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