The Growing Role of Innovation Intermediaries in Regional Innovation Based Economic Development (IBED)

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Rich Bendis BIO

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- ✧Founder & President of Kansas Technology Enterprise Corp
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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

Creating the Knowledge & Innovation Culture

- Knowledge Acquisition and Deepening – to reinforce science and technology teaching and resources at all levels of education
- Knowledge Creation – Develop Research Capability in all priority sectors of the economy
- Knowledge Transfer – to reinforce Science and Technology Capability in all priority sectors of the economy
- Innovation Culture - To encourage Innovation at all levels to help stimulate economic growth

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

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

Why Is Innovation Essential?

"INNOVATION DISTINGUISHES BETWEEN A LEADER AND A FOLLOWER."

-STEVE JOBS

Global Innovation Index

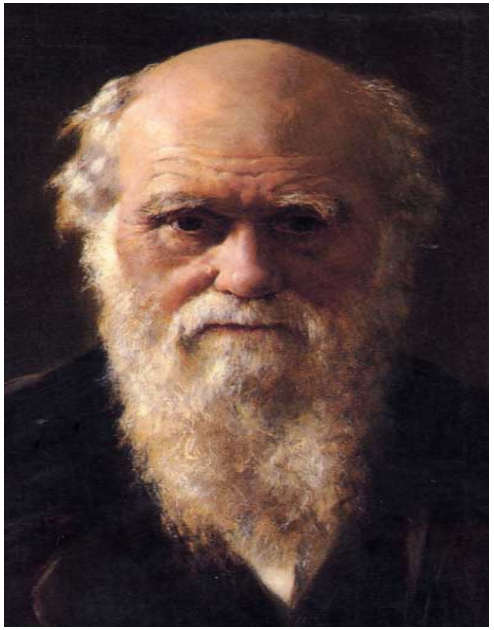
Rank	Country	Score
1	**Switzerland**	63.82
2	Sweden	62.12
3	Singapore	59.64
4	Hong Kong (SAR), China	58.8
5	Finland	57.5
6	Denmark	56.96
7	United States of America	56.57
8	Canada	56.33
9	Netherlands	56.31
10	United Kingdom	55.96
11	Iceland	55.1
12	Germany	54.89
13	Ireland	54.1
14	Israel	54.03
15	New Zealand	53.79
16	Korea (Republic of)	53.68
17	Luxembourg	52.65
18	Norway	52.6
19	Austria	50.75
20	Japan	50.32

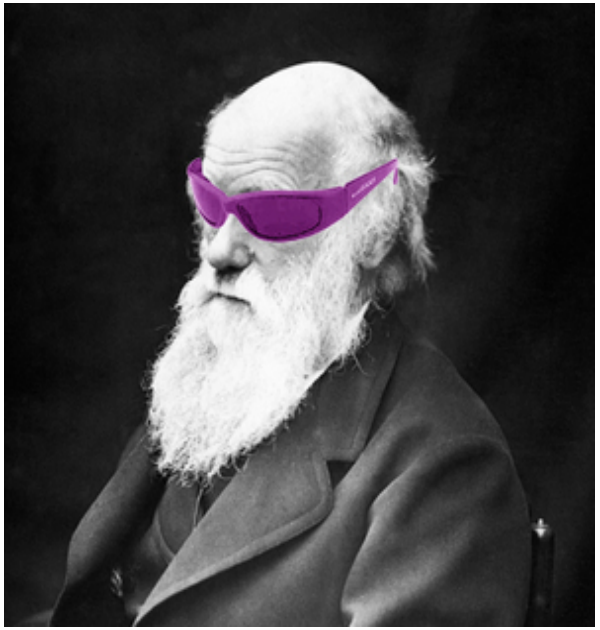
Source: INSEAD's 2011 Global Innovation Index

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

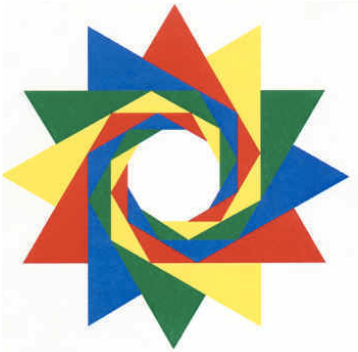




The Six Driving Forces of Change

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

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 hp invent Garage

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

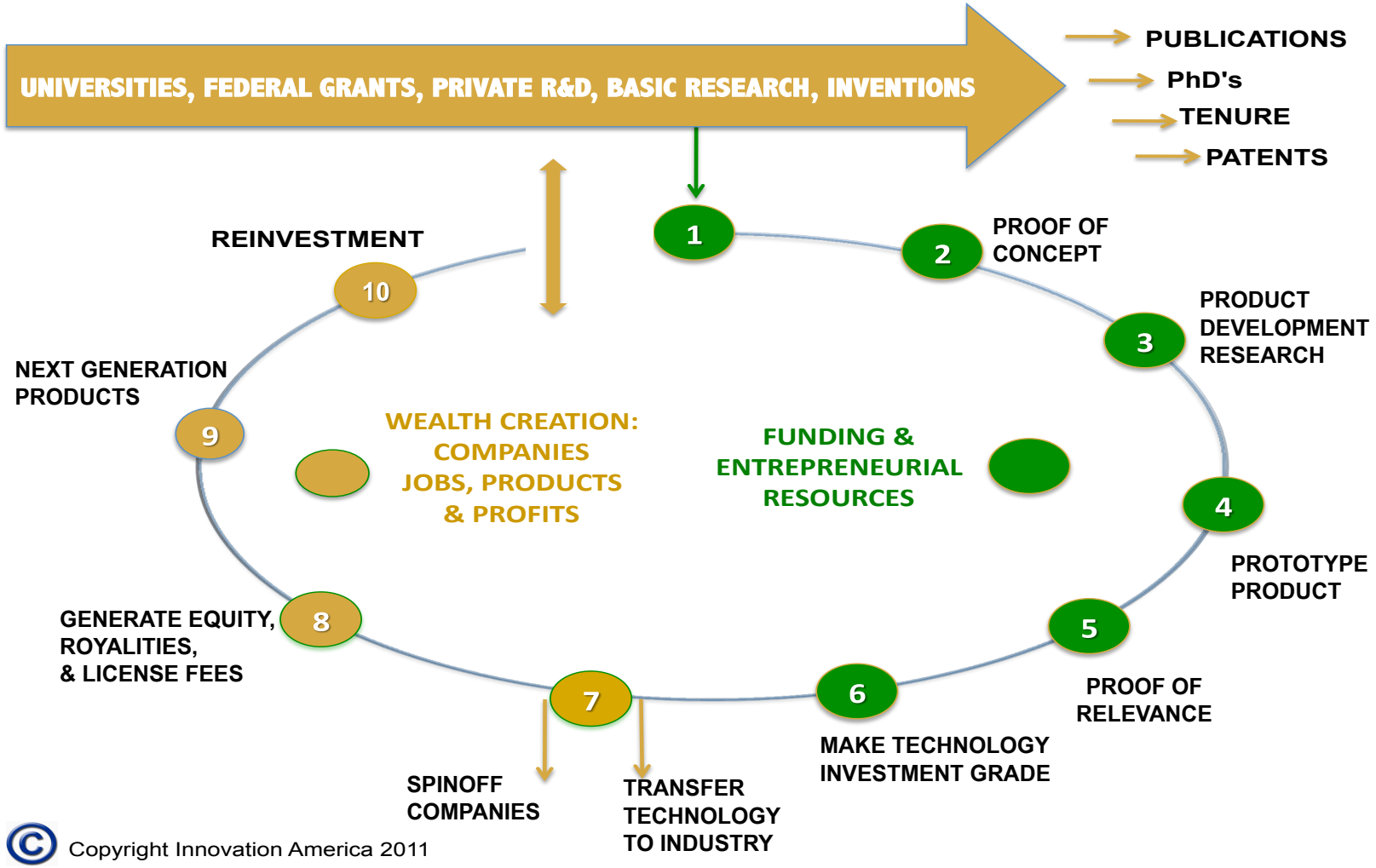
» Market risk

Commercial Enterprise

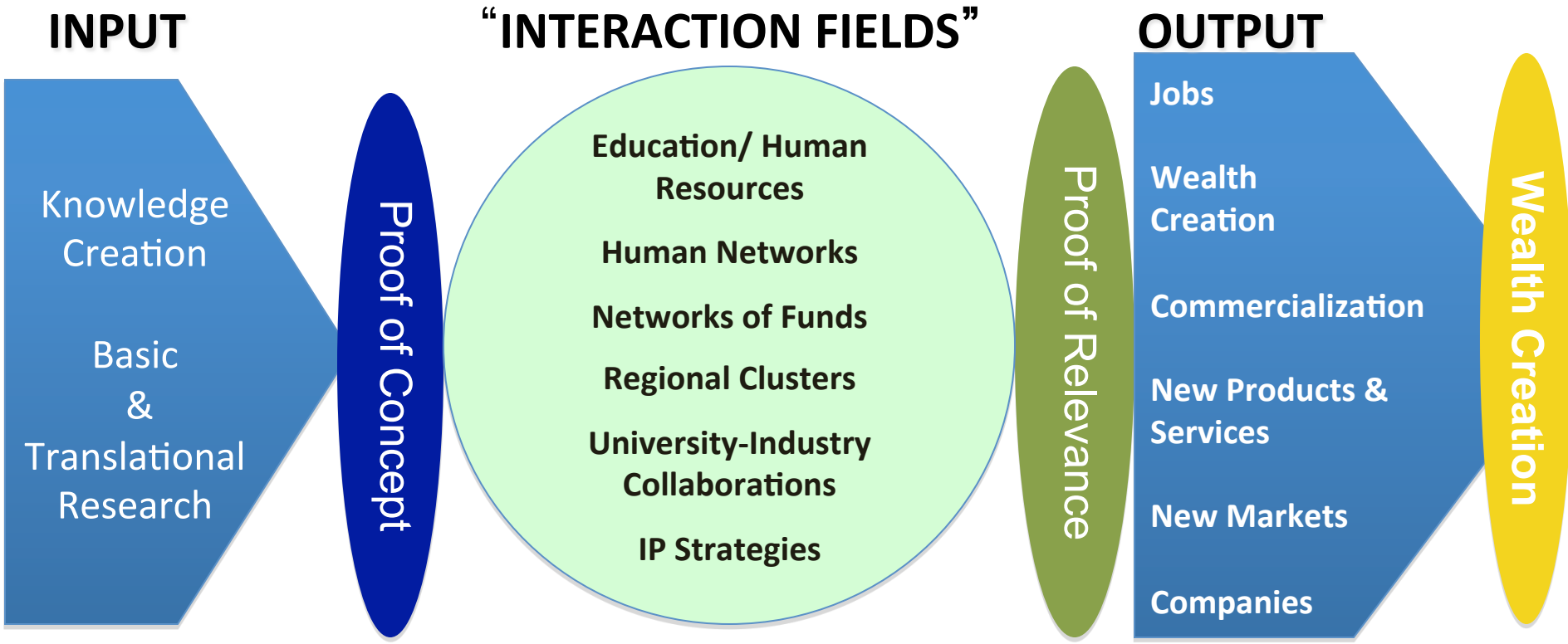
Investors Commercialize

- Angels
- VC's
- Corporations

Innovation America Commercialization Model

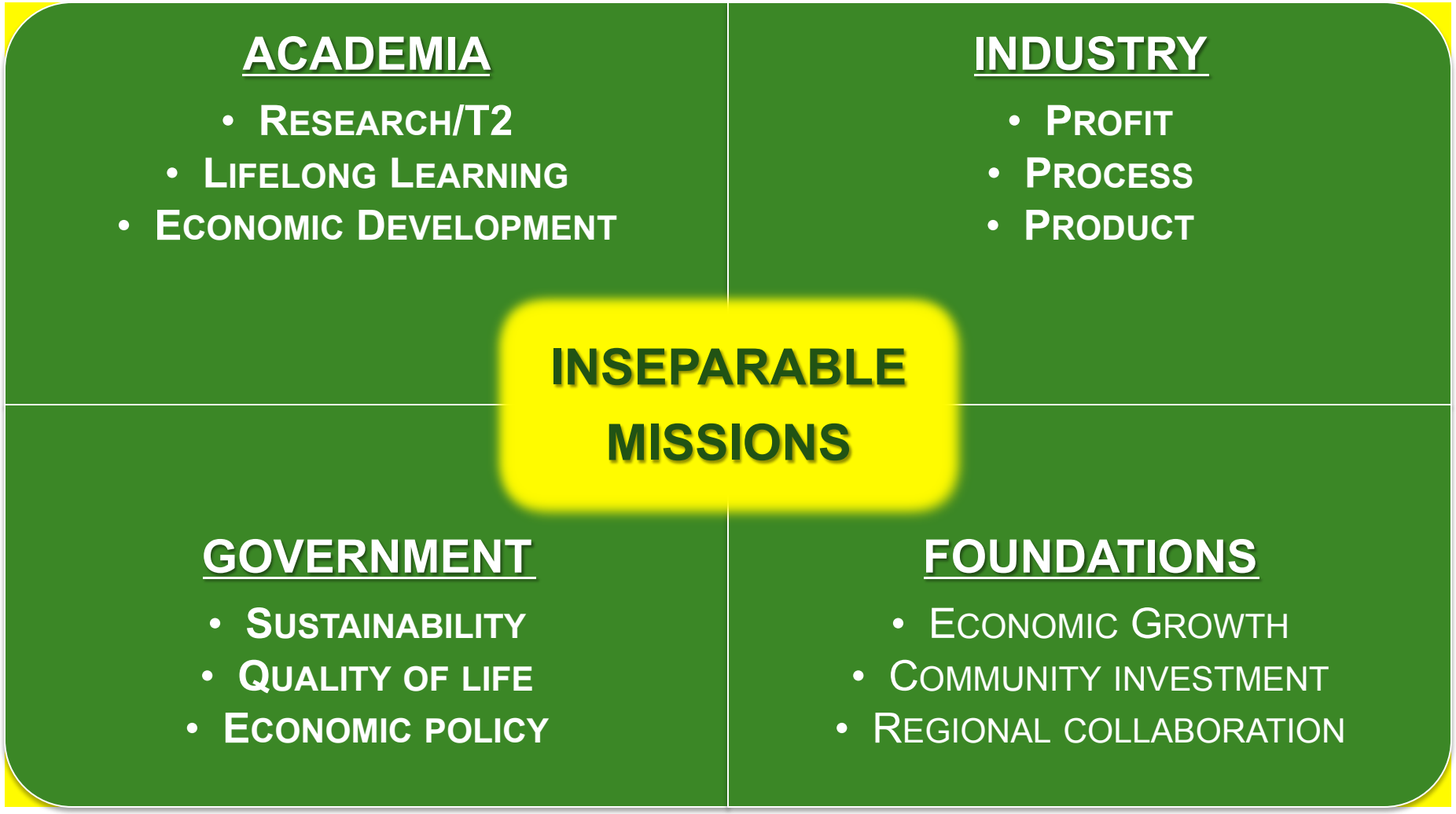


Innovation Ecosystem



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



Government's Role in Innovation

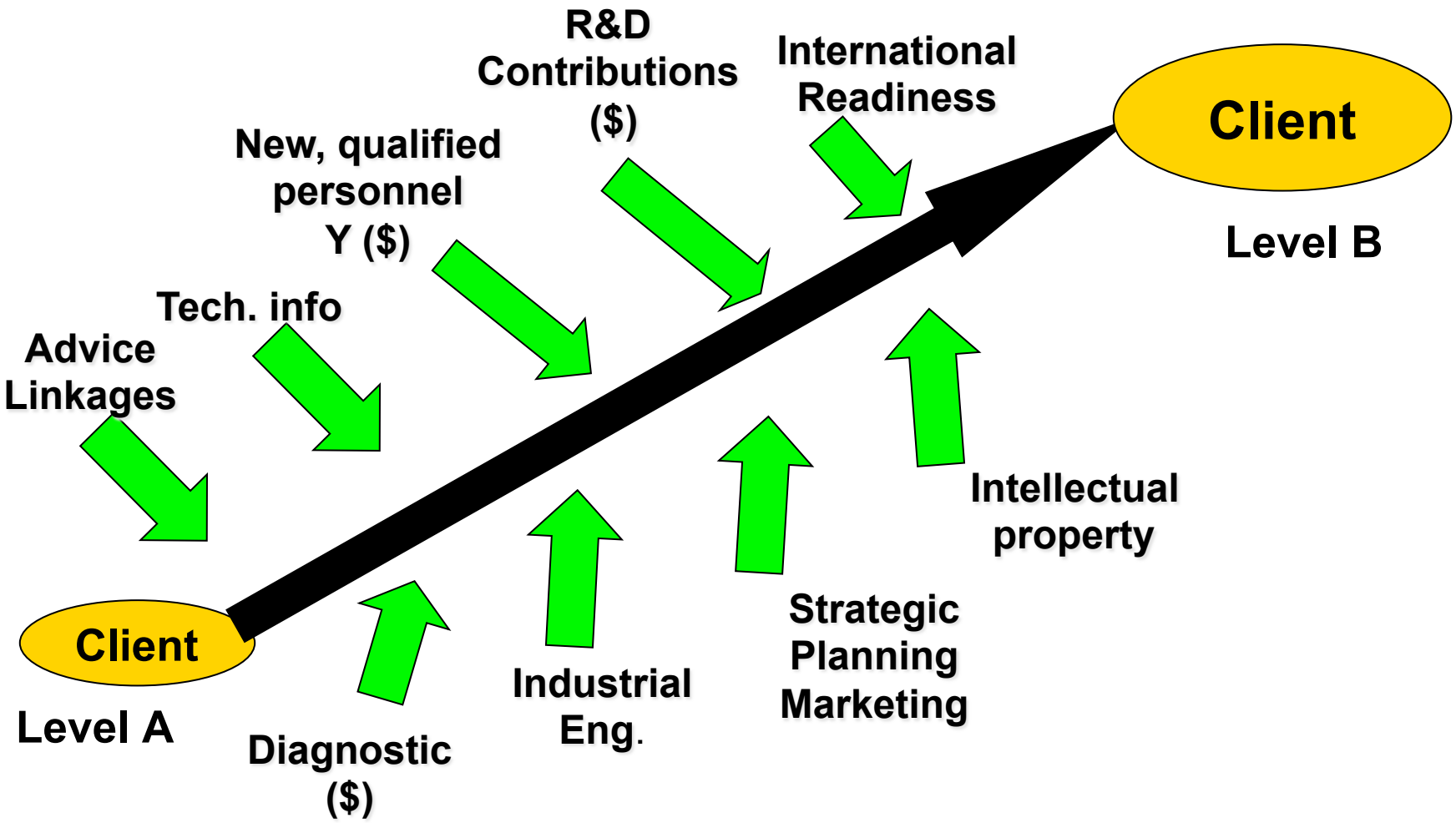
- Long term vision and planning
- Identify gaps and trends in science, technology, innovation and SME development
- **Be a catalyst through long-term strategic investments and partnering**
- Develop a balanced and flexible research and development investment portfolio
- Encourage private sector innovation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

NRC IRAP Focus

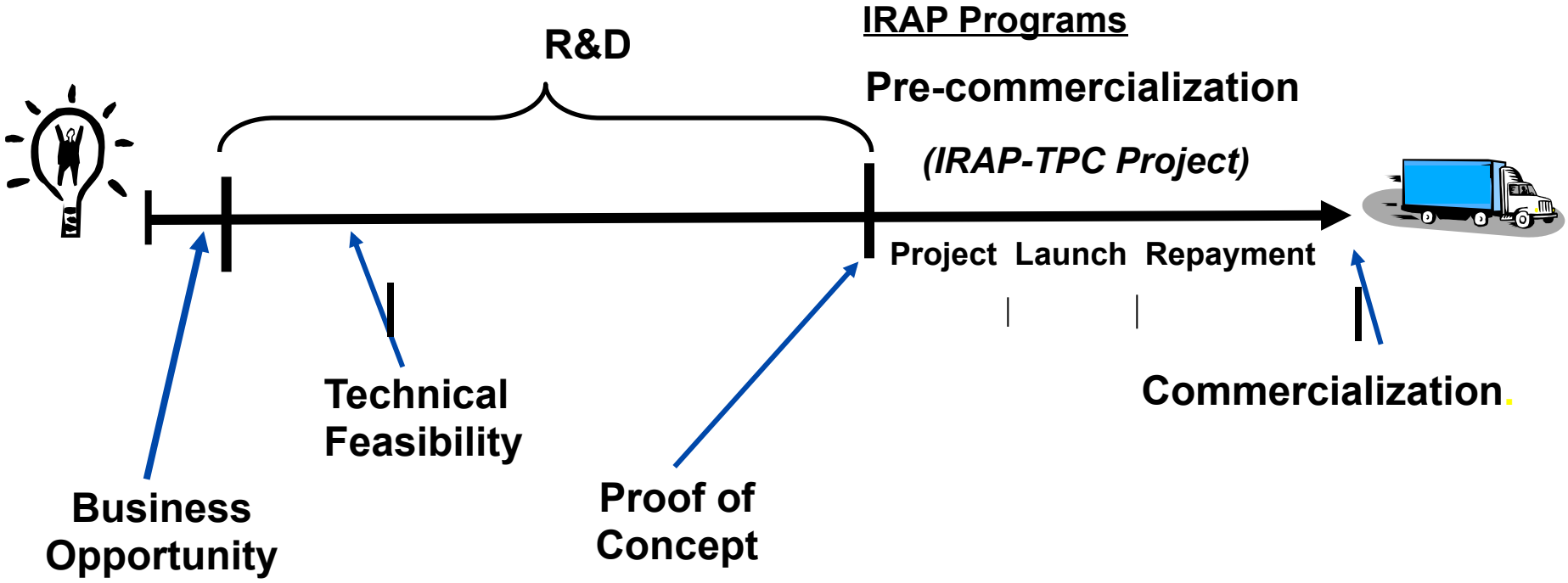
Supporting Innovative Canadian SMEs grow stronger, faster, bigger through Technology

- By supporting development and adaptation of technology that produces products, services and processes that have the potential to be commercialized
- Invest in, advise and mentor SMEs that can sustain their success and growth over time

IRAP Business Model
Increase the Innovation Capability of SMEs

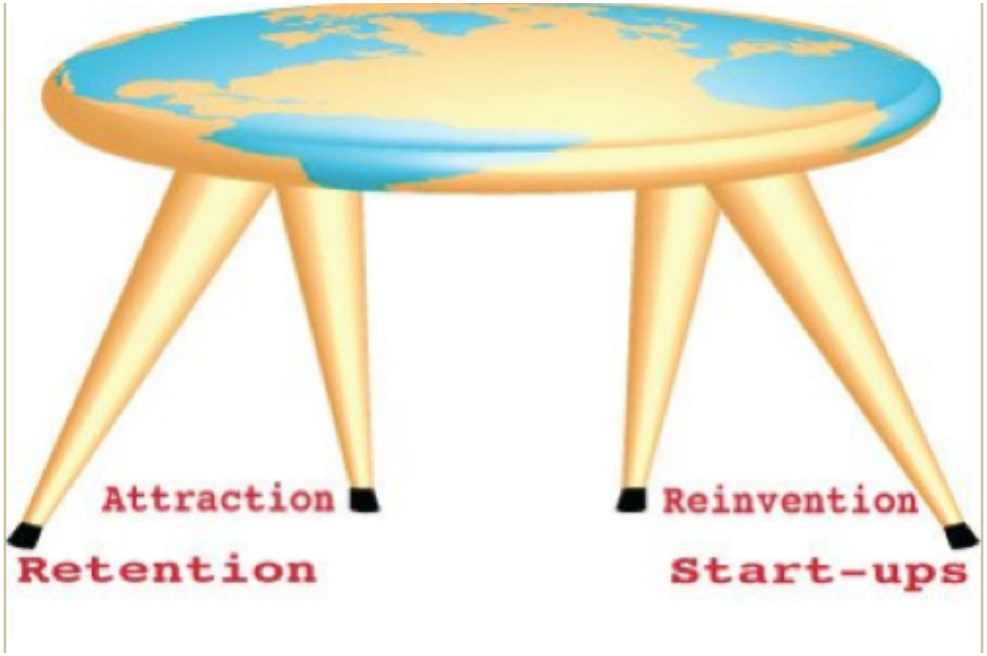


Financial Contributions– Relationship To Business Development Stage



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!



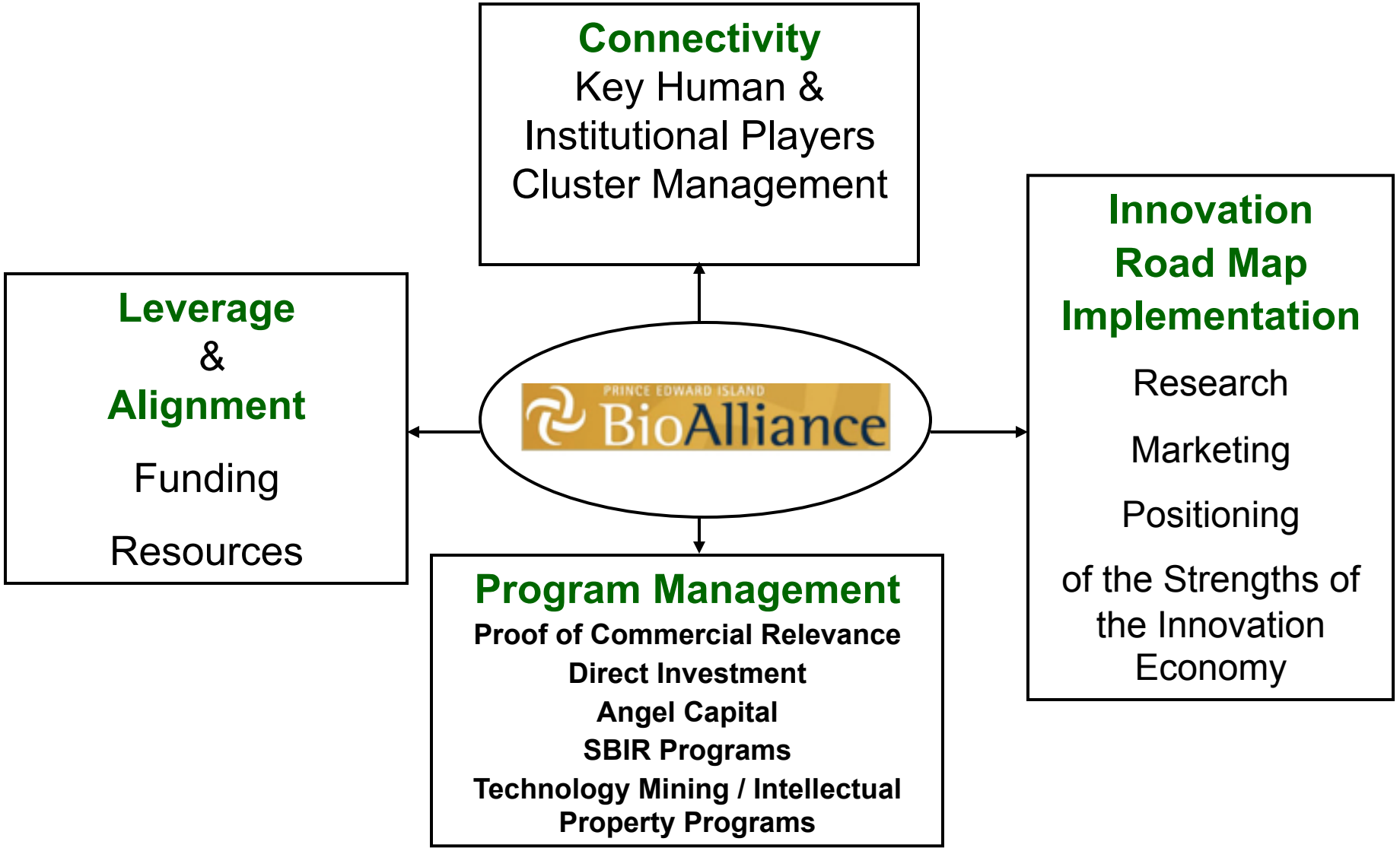
Convergence of Traditional Eco Devo & IBED

	Traditional		Innovation
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



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

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

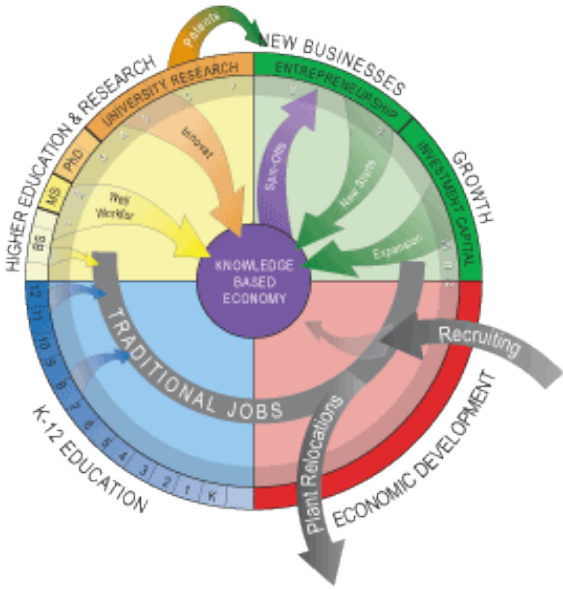
U.S. State Innovation Programs

Population: 2,800,000 Kansas Bioscience Authority

- $581 million state-funded independent bioscience TBED organization
  - $75.5 million program budget; $3.5 million operating budget
  - 18 employees (8 “deal” people)

- Investment priorities
  - Expand the quantity and quality of bioscience research
  - Focus on the commercialization of bioscience discoveries
  - Foster formation and growth of bioscience companies
  - Position Kansas for international leadership in key clusters

KANSAS BIOSCIENCE AUTHORITY

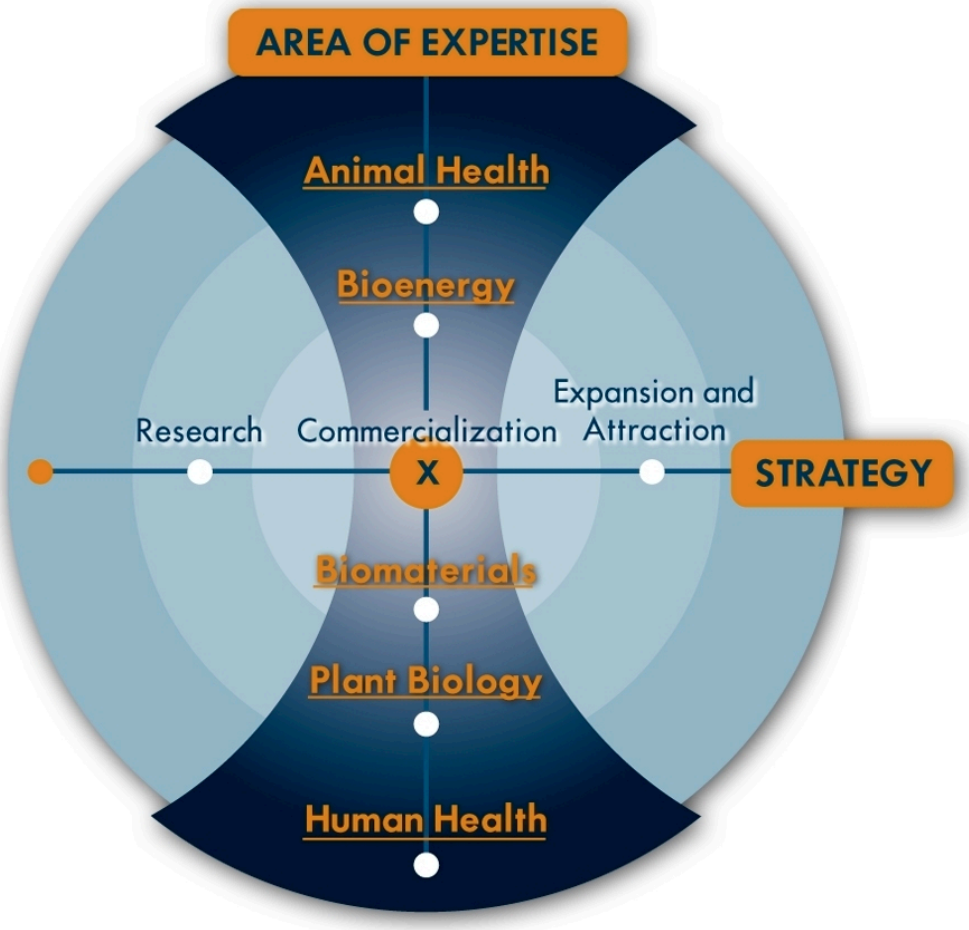


PRINCE EDWARD ISLAND BioAlliance

KANSAS BIOSCIENCE AUTHORITY

First Principles

- Highly focused
- Diversified
- Game-changing potential
- Evaluative process
- Partnership approach
- Outcome oriented



KBA's Investment Tools

- Kansas Bioscience Eminent Scholars
- Kansas Bioscience Rising Stars
- Kansas Bioscience Matching Fund
- Bioscience Centers of Innovation
- Heartland BioVentures
- Kansas Bioscience Growth Fund
- Kansas Bioscience R&D Vouchers
- Kansas Bioscience Attraction and Retention

Kansas Bioscience Authority – Economic Impact

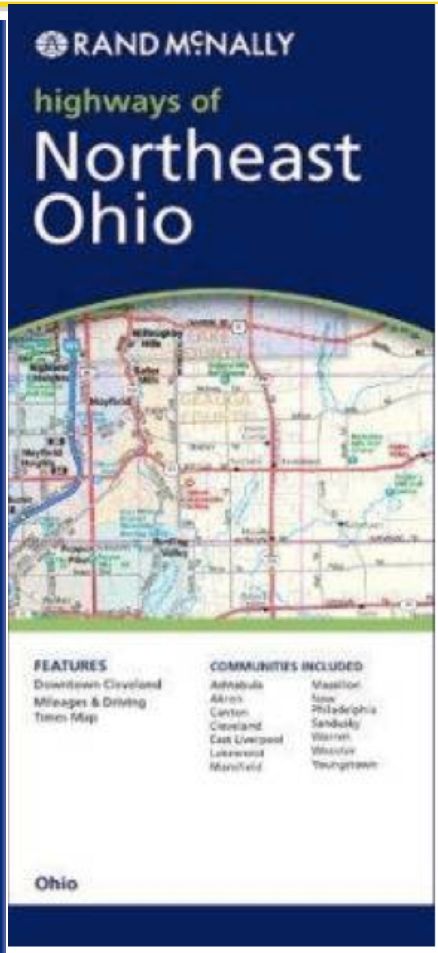
Through June 2010, KBA investments have helped generate:

- **1,195** new **jobs**
- **$212.6 million in capital expenditures**
- **$86.6 million in new research funding**
- **$48.3 million in equity investments**
- ***Including estimated wages of jobs, that represents a $9.41 return to the state's economy for each $1 invested by the KBA***

KANSAS BIOSCIENCE AUTHORITY

Regional IBED Intermediaries

Map of Northeast Ohio



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.

Population 2,000,000 BioEnterprise Initiative - Cleveland

Vision

Make region a **nationally recognized** center for **health care innovation and commercialization** (e.g., Minneapolis, Research Triangle)

Mission

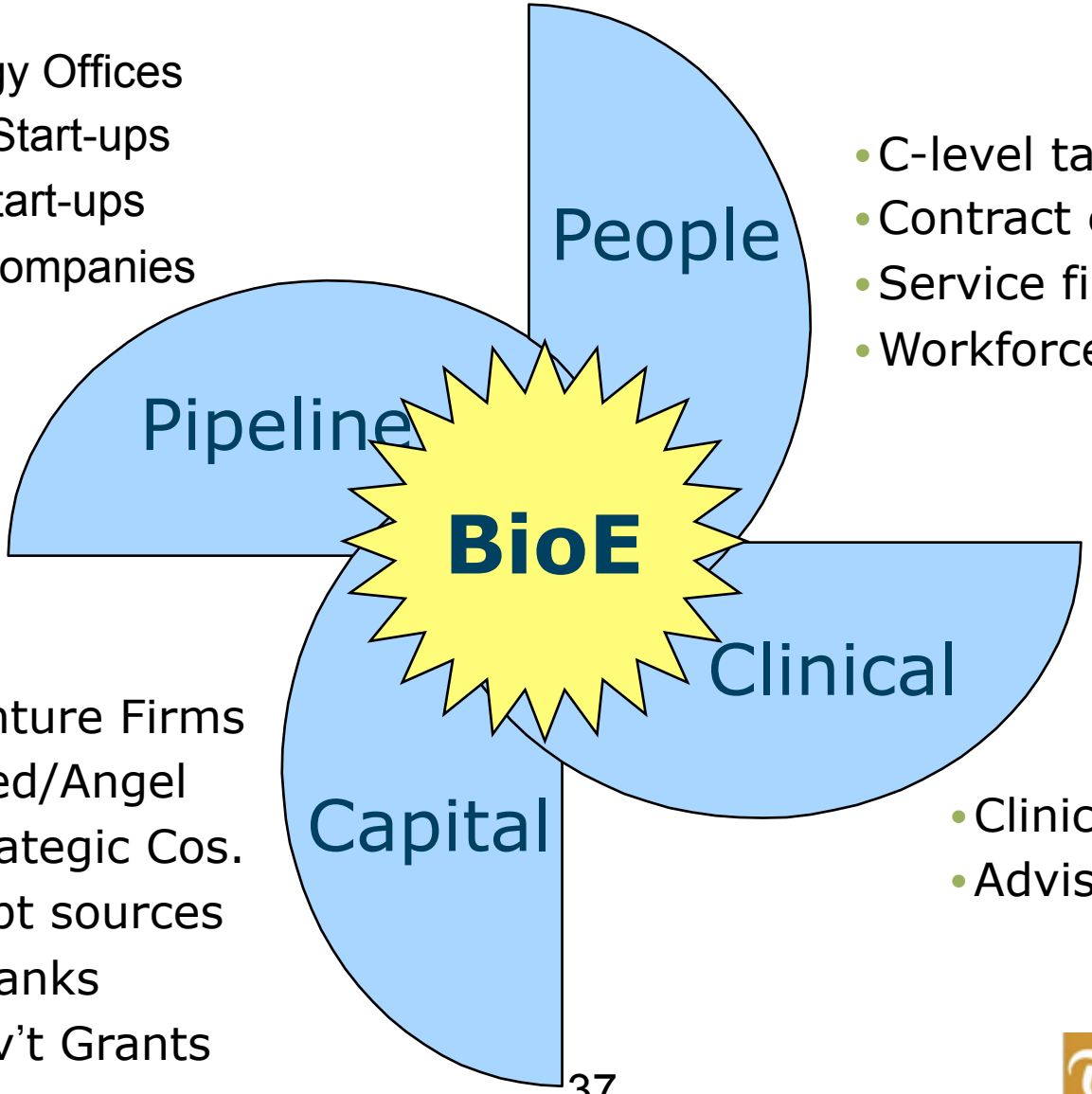
Be the leader in biosciences industry growth focused on recruiting and attracting entrepreneurs, **creating, accelerating, and retaining start-ups**, and **nurturing and promoting a vibrant business environment**

Performance Metric and Target

Capital raised by health care companies in region
>$150 million invested in region annually

Business Acceleration

- Technology Offices
- Regional Start-ups
- Foreign Start-ups
- Existing Companies



- C-level talent
- Contract executives
- Service firms
- Workforce programs

- Venture Firms
- Seed/Angel
- Strategic Cos.
- Debt sources
- I-banks
- Gov't Grants

- Clinical champions
- Advisory boards

Market-Driven Approach

Choose/create opportunities that are fundable…

- Regional entrepreneurs
- Institutions
- Foreign recruitment
- Company creation

BioEnterprise

to raise capital…

–Experienced management support

–Clinical and research collaborations

–Business development

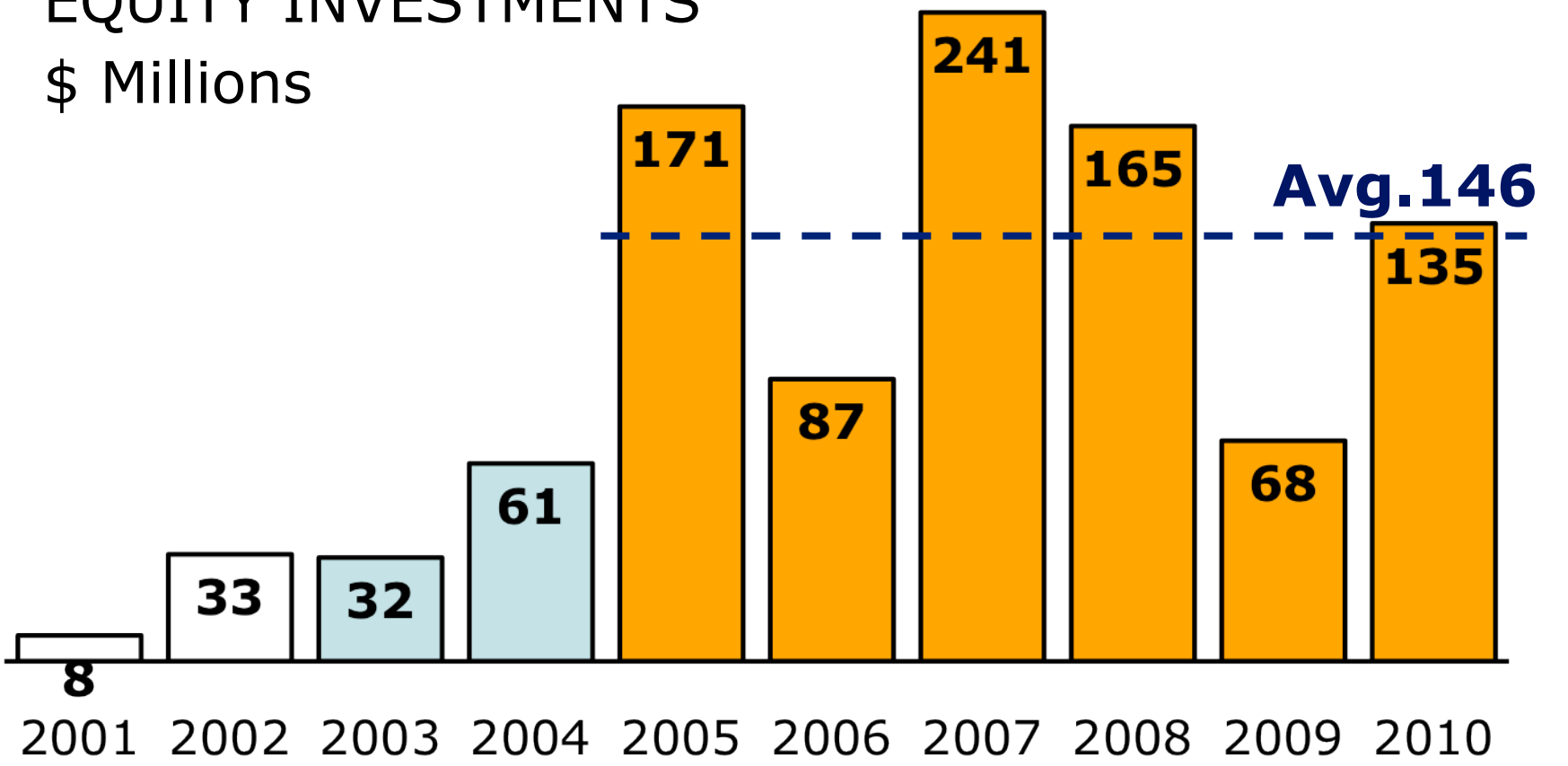
–Network of bioscience capabilities

…from targeted, interested investors

- Access to capital
  - Venture/equity
  - Strategic
  - Debt
  - Grant

Market-back Approach

Growth in Innovation



BioEnterprise

Results

- Health Care Venture ~ Research Triangle
  - ~$150 million per year over last 6 years
  - 45 Healthcare Funding Sources in Ohio
  - 80% of funding from outside region

- Industry Growth
  - Now at 600 companies
  - Several dozen firms started/attracted each year
  - Over 20,000 employed in industry
  - 29 “Exits”

- National Recognition

University of Akron
Regional Assets, Challenges and Opportunities

The Assets . . .

- UA: world's largest polymer program; a **top producer of chemistry PhDs; high productivity in IP and start-up businesses**
- Strong Industrial Clusters (Advanced Materials)

The Challenges . . .

- Manufacturing base in transition
- Risk averse
- Lack of investment capital

The Opportunities . . .

- Strong (but underutilized) research assets
- Growing entrepreneurship potential
- Globalization
- Converging private and public interests
- Focus on differentiation and productivity

University of Akron Guiding Framework

Relevance

– Utilize all University disciplines

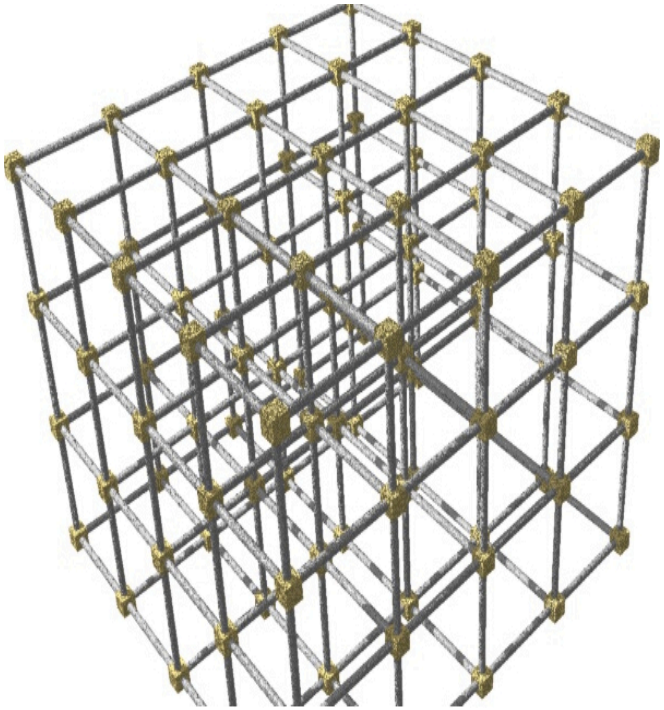
Connectivity

– Link University to community assets and partners

Productivity

– New Metrics

- Value added, not exclusion-based
- Output per unit of input
- Scaled metrics



University Of Akron Lessons Learned

1. Assemble “weak” assets to create strengths.
2. Organize “guerrilla” entrepreneurial talent.
3. Identify and coalesce uncommon, synergistic partners.
4. Involve city and community as integral partners.
5. Coordinate closely with other regional assets to pursue unique opportunities.
6. Expand concept of university’s product line and “tool chest.”
7. Focus university efforts on relevance, connectivity and productivity.
8. Recognize and resolve:
   - Conflict of egos,
   - “Partnering Paranoia,”
   - Relationship fatigue, and
   - Relinquishing short-term control to gain long-term leverage.
9. Become “silo busters.”

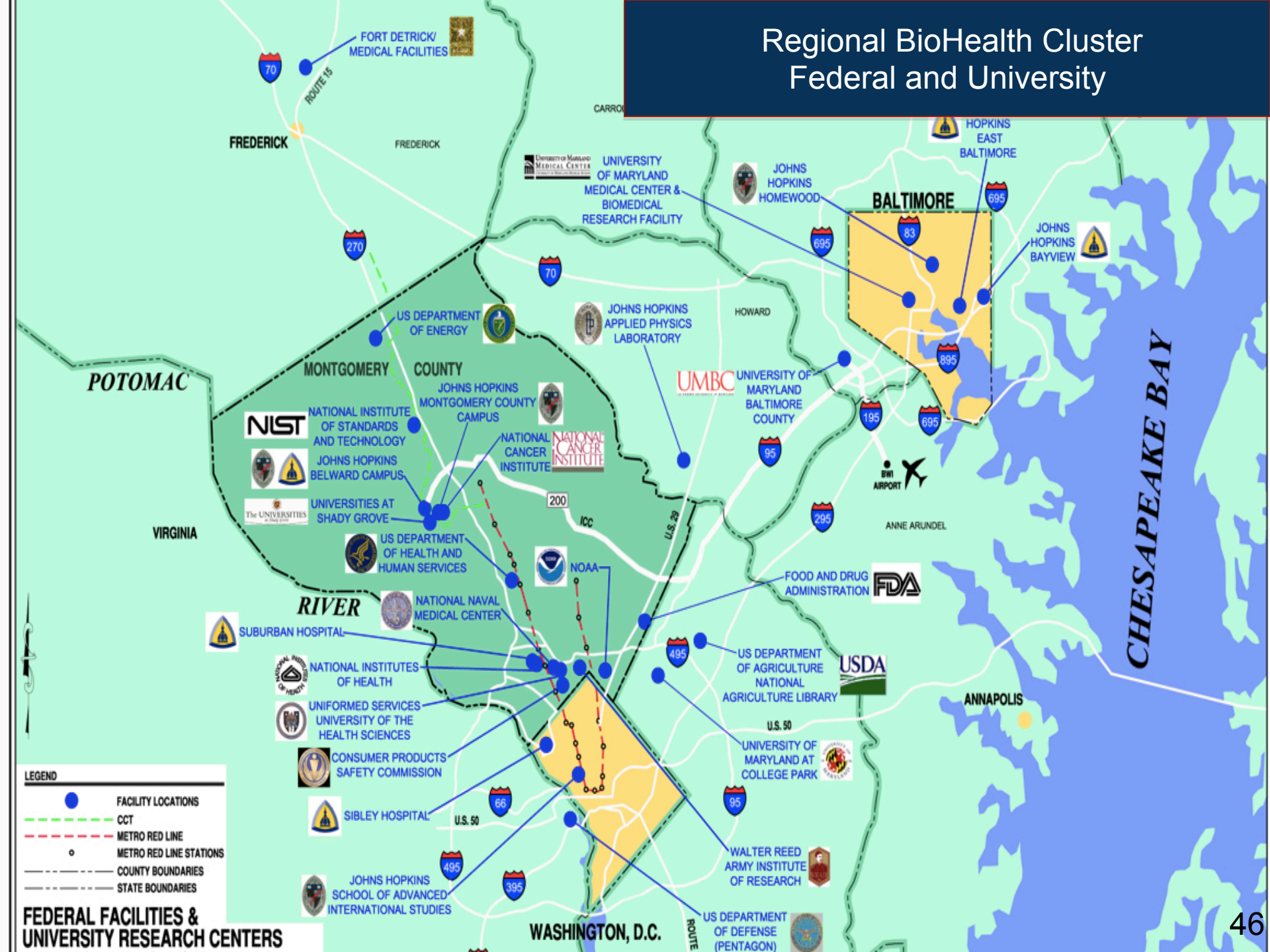
21st Century Role of Universities

- Key role in knowledge-conceptual economy
- Convener
- Developer
- As "Anchor" for Clusters of Innovation
  - **Generate creative capital**
  - **Generate knowledge capital**
  - **Train human capital**
  - **Build social capital**
  - **Attract financial capital**
  - **Preserve natural capital**
- Common challenges and models; unique opportunities

(from Michael Crow, ASU; Proenza & Zimpher, in preparation)

BioHealth Innovation℠

Regional BioHealth Cluster
Federal and University



Maryland Partners in BioHealth

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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	O	N/A	N/A
3. Bioscience Seed Fund	—	+	O	O	O	O	O	O	+	+	—
4. Direct Incentives / Business Costs	O	+	O	—	—	—	O	+	—	+	+
5. Enhanced R&D Tax Credits	O	+	—	—	—	—	+	O	—	+	+
6. Efficient Tech Transfer Policies	—	—	+	+	+	O	O	—	+	+	O
7. SBIR Support Program	—	+	—	O	O	O	+	N/A	N/A	N/A	N/A
8. Early-stage & VC capital availability	—	—	+	+	+	+	—	+	—	+	—
9. Commercialization Institutes	—	—	+	O	O	+	—	O	O	O	—
10. Established Public-Private Partnership (Innovation Intermediary)	—	+	+	+	—	+	O	+	+	+	+

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

BioHealth Innovation Goal

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:

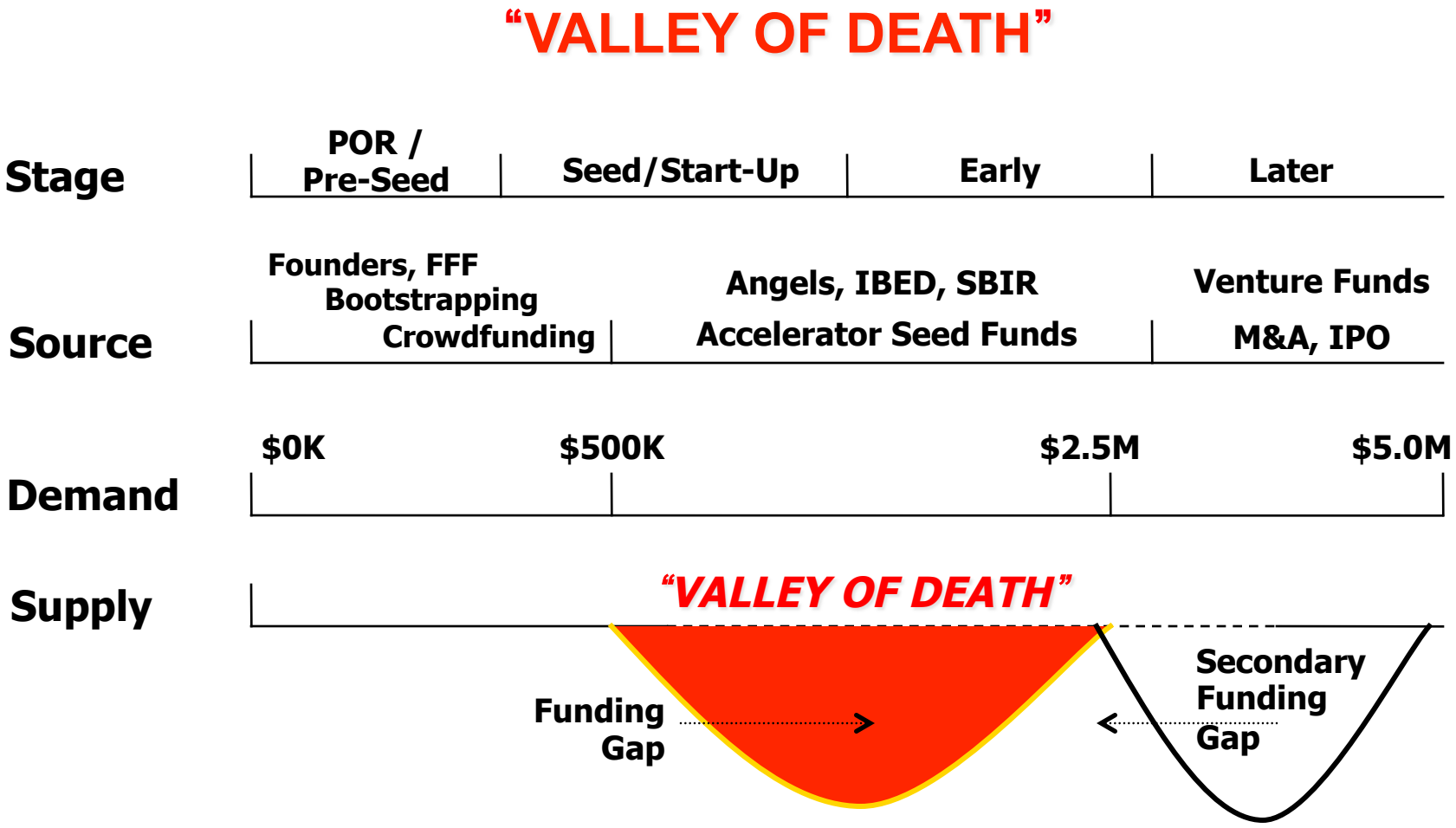
$4.3 million per start-up

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.

Innovation Capital Valley of Death



Six Distinct Organizational Paths for Entrepreneurs

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

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	$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

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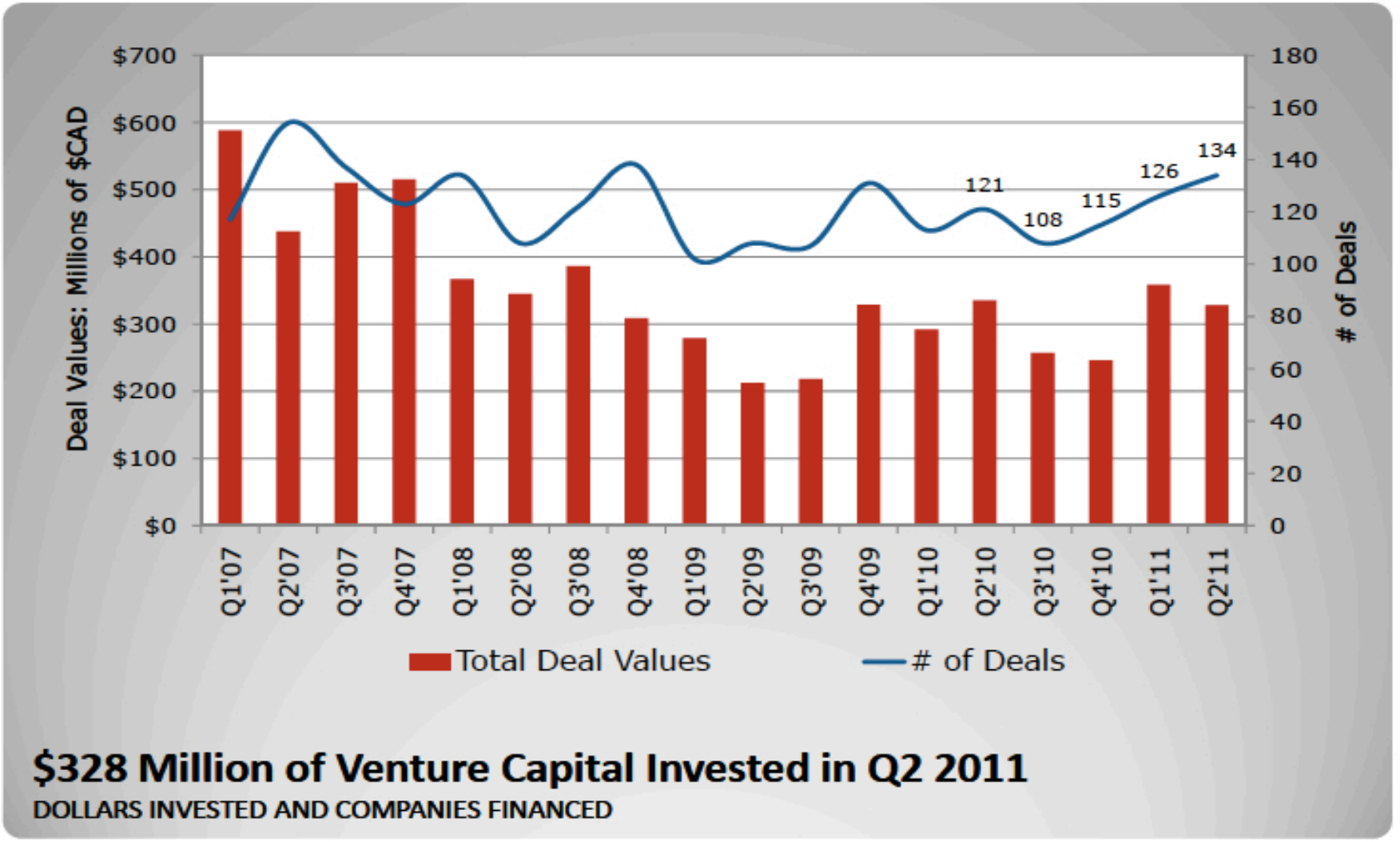
Source: PWC/NVCA 2011

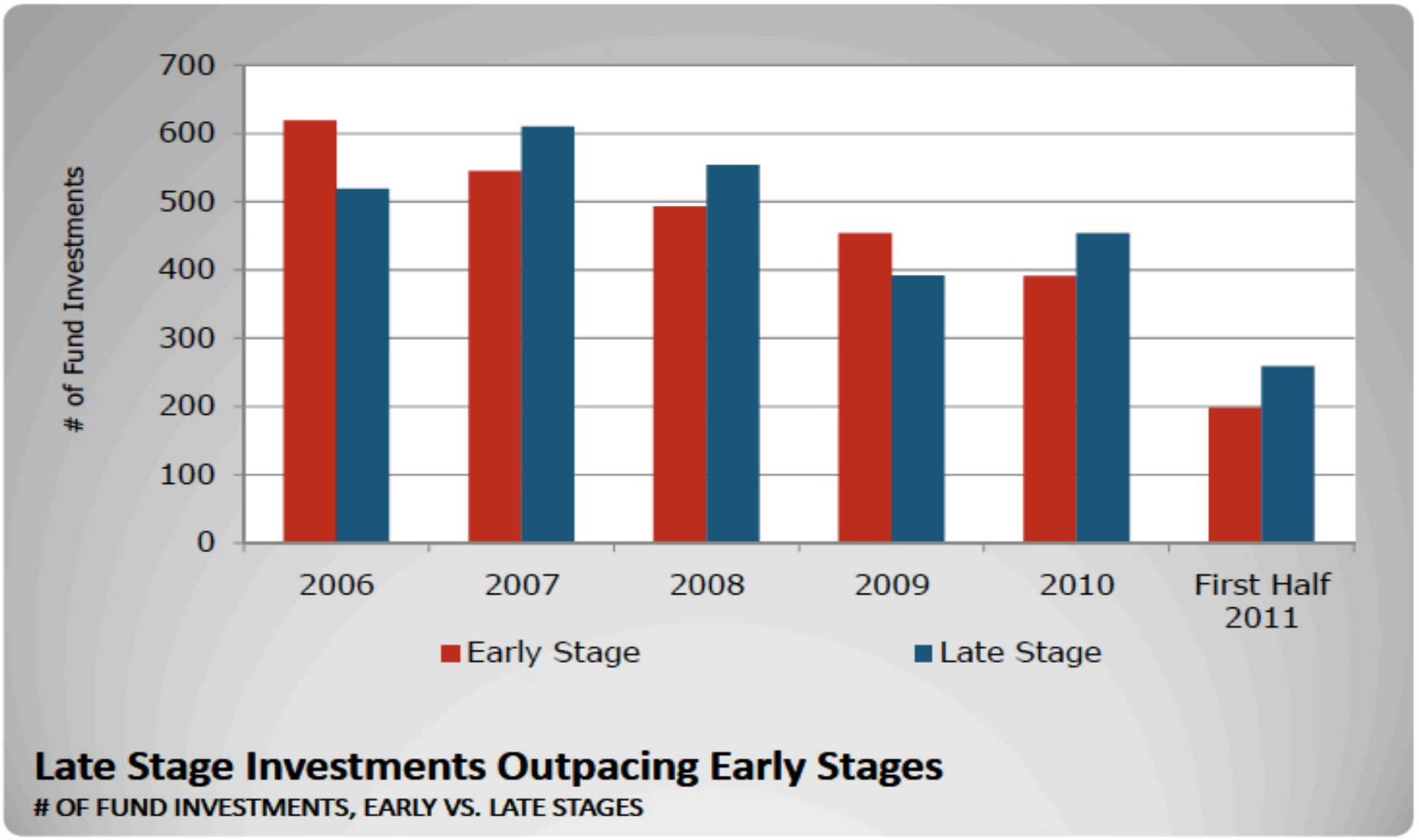
Canadian VC Invested Q2 2011



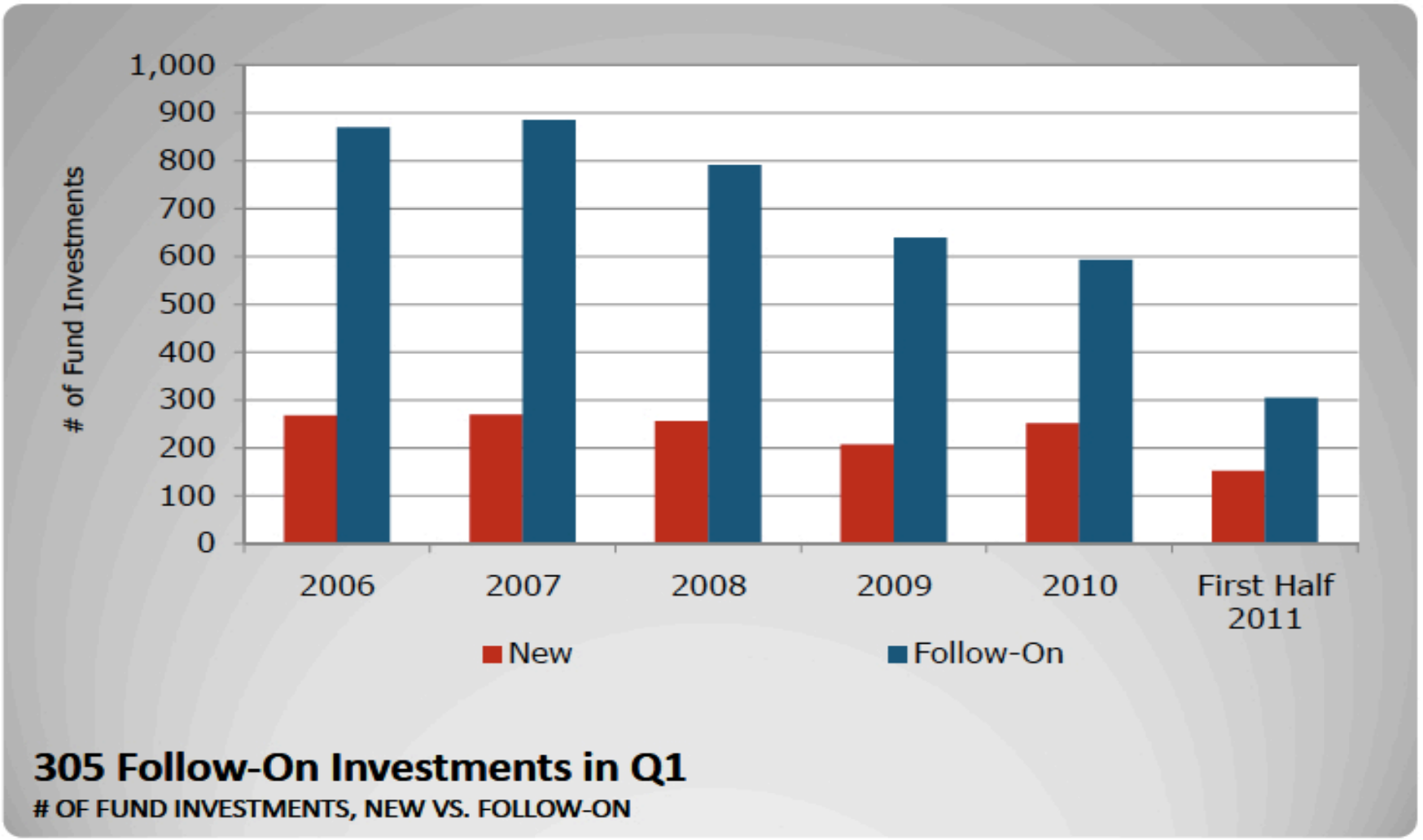
$328 Million of Venture Capital Invested in Q2 2011

DOLLARS INVESTED AND COMPANIES FINANCED

Investments By Stage Jan – Jun 2011



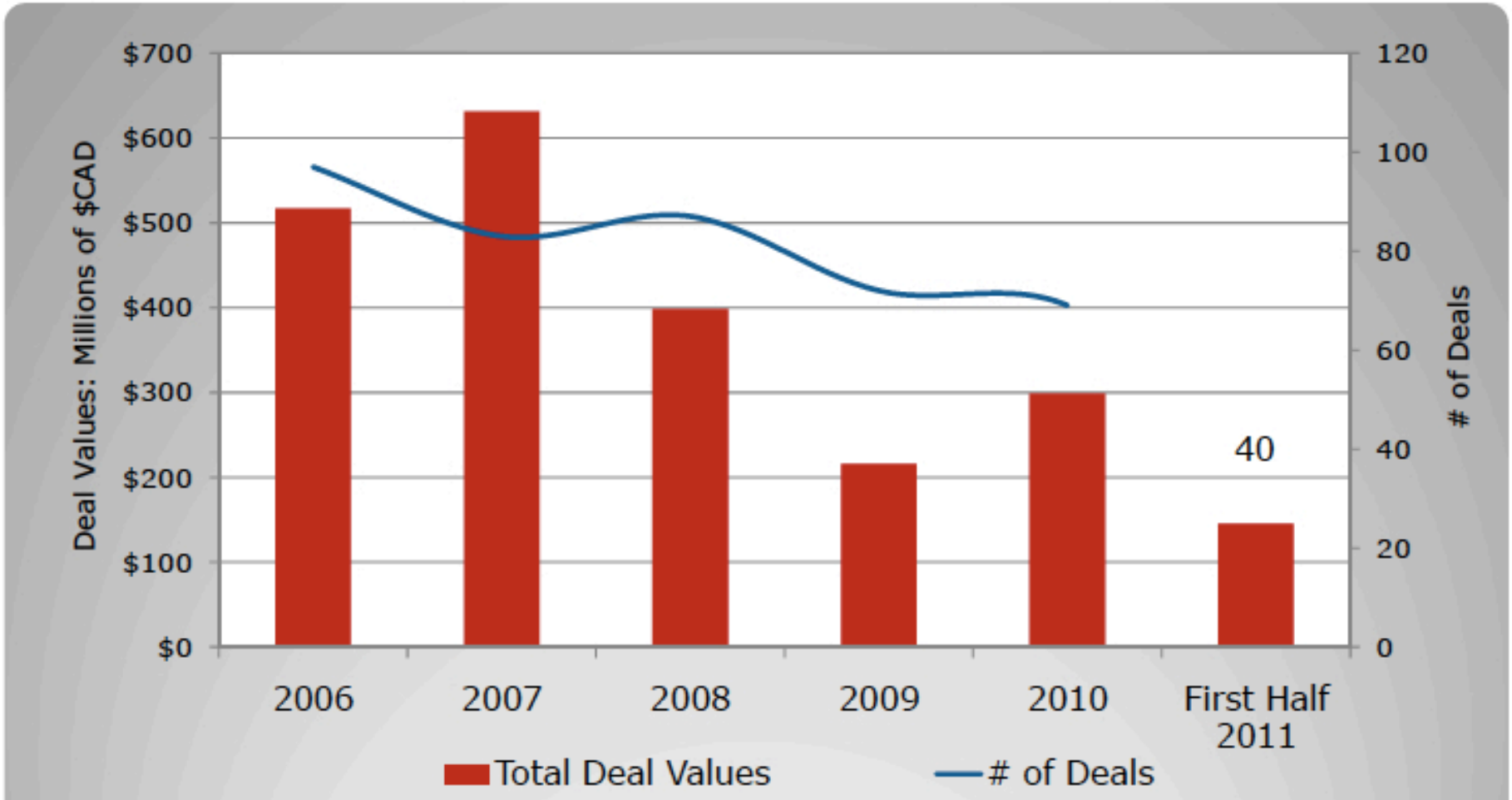
Follow-On Investments in Q1



305 Follow-On Investments in Q1

OF FUND INVESTMENTS, NEW VS. FOLLOW-ON

Canadian Life Science Investments Jan-Jun 2011

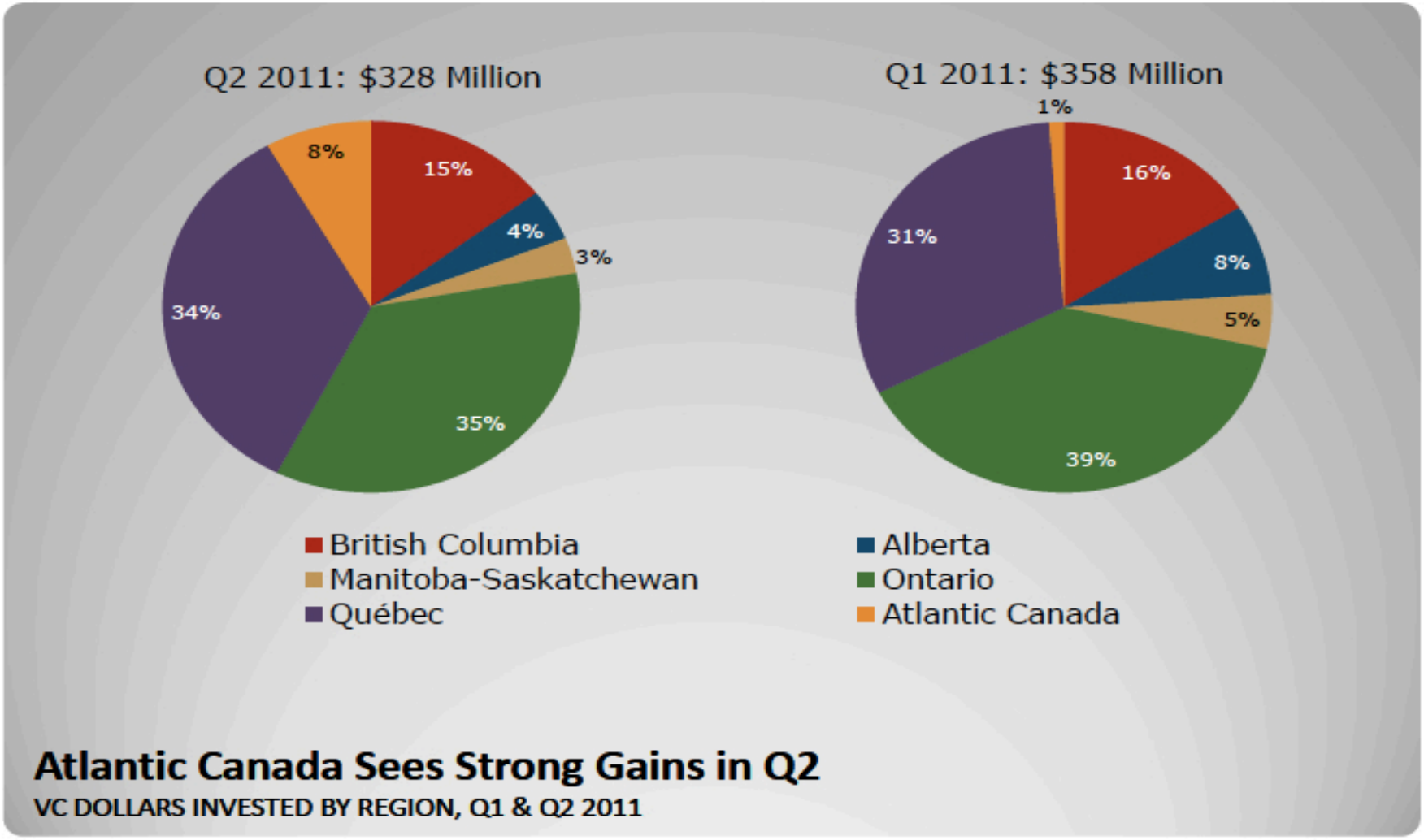


40 Life Sciences Companies Attract $145 MM In First Half

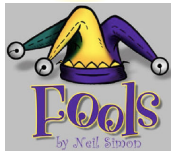
LIFE SCIENCES SECTOR

DOLLARS INVESTED AND NUMBER OF FINANCINGS

Atlantic Canada Sees Strong Gains in VC for Q2



Innovation Funding Continuum

DREAM	CONCEPT	APPLIED	COMMERCIAL RELEVANCE	STARTUP	ROLL OUT	GROWTH
FoundersFFF Bootstrapping Crowdfunding	Seed	Incubators/ Accelerators	IBED	Federal	ANGEL	VC
	MaRS	Extreme Venture Partners	Tekes	NRC Industrial Research Assistance Program	National Angel Capital Organization	CVCA
	FLOW	yearonelabs	VINNOVA	PCP	York Angel Investors	PEI Funds
Friends & Family Series	500 Startups	startup bootcamp	cotec Portugal	SBIR & STTR	Maple Leaf Angels	BDC
	BioEnterprise	techstars	Ohio Third Frontier		MAG	TRICOLOUR
crowdfund		seedcamp	Ben Franklin Technology PArtners	TIP	JumpStart New Jersey Angel Network	
KICKSTARTER	jumpstart	DREAMIT Ventures	i2E		LORE Associates	
RocketHub	First Round Capital	Y Combinator	MICHIGAN	SBA	New York Angels	32° Capital
			Maryland TEDCO			

Successful Funding Models

Ohio Third Frontier
Innovation Creating Opportunity

$700M 5-yearBond Issue
62% Taxpayer vote approving

KANSAS BIOSCIENCE AUTHORITY

$581M 15 year Wage-tax TIF

TNInvestco

TTDC
TENNESSEE TECHNOLOGY DEVELOPMENT CORPORATION

$160M VC Premium insurance
Tax Incentives

POSITIVELY MINNESOTA
Department of Employment and Economic Development

$60 Million
Angel Tax Credits

GPIC Greater Philadelphia Innovation Cluster for Energy Efficient Buildings
A U.S. DOE Energy Innovation HUB

$129M E-RIC Grant

PRINCE EDWARD ISLAND BioAlliance

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

Population: 3,000,000

Iowa Innovation Index - Indicators

Iowa Innovation Index

Special thanks to our sponsors:

IOWA INNOVATION INDEX
KEY INNOVATION INDICATOR SCORECARD

National Ranking	Regional Ranking	Indicator Number	Indicator Subject Rankings Key: +: National/Regional Indicator Ranking – Strength O: 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
O	—	4	Productivity
—	—	5	Corporate Sales and Manufacturing Value-added
—	+	6	Manufacturing Exports
—	—	7	Wages & Wage Growth (in Key Industry Clusters & Overall)
			Innovation Research & Commercialization
O	O	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
O	—	12	Industry & Other Support in University Science & Engineering Research
—	O	13	Size of College and University Endowments
—	O	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
+	O	23	Education Level of the Workforce
—	—	24	Public Investment in K-16 Education
—	—	25	Science and Engineering Degrees
N/A	O	26	Talent Flow and Migration (Int'l and domestic)
			Innovation Location and Environment
N/A	++	27	State-based Innovation Intermediary (Public/Private Partnership)
—	O	28	Broadband Internet Availability
N/A	—	29	E-Government Programs
—	—	30	Arts and Cultural Endowment

NOTE: Regional strengths are based on Iowa's performance as a comparison to Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota and Wisconsin.

Summary of State Performance in Selected Bioscience-related Metrics

Metrics	Iowa	United States	Rank*
Bioscience Industry, 2008			
Total Bioscience Industry Employment, 2008	16,574	1,420,324	III
Bioscience Industry Location Quotient, 2008	1.06	n/a	II
Biosciences Industry Establishments, 2008	525	47,593	III
Academic R&D Expenditures, FY 2008			
Bioscience R&D ($ thousands)	$350,804	$31,818,810	28
Bioscience Share of Total R&D	66.5%	61.3%	16
Bioscience R&D Per Capita	$117.17	$104.54	16
Change in Bioscience R&D, FY 2004–08	-1.6%	22.3%	48
NIH Funding, FY 2009			
Total, Including ARRA Funds ($ thousands)	$230,236	$25,837,590	25
Per Capita Funding	$76.54	$84.16	18
Change in Baseline Funding, FY 2004–09**	-1.6%	-4.7%	26
Change in Total Funding, FY 2004–09	17.2%	14.6%	28
Clinical Trials, Initiated 2009	174	5,299	35
Higher Education Degrees in Bioscience Fields, AY 2008	2,085	161,811	25
Employment in Bioscience-related Occupations, 2008	8,960	717,510	26
Bioscience Venture Capital Investments, 2004–09 ($ millions)	$278.6	$60,099	25
Bioscience and Related Patents, 2004–09	1,365	75,593	21

*State ranking figures for bioscience industry employment metrics are calculated as quintiles (I=Top Quintile; V=Bottom Quintile). All other metrics are ranked 1-52.

**Baseline Funding does not include American Recovery and Reinvestment Act (ARRA) funds for 2009.

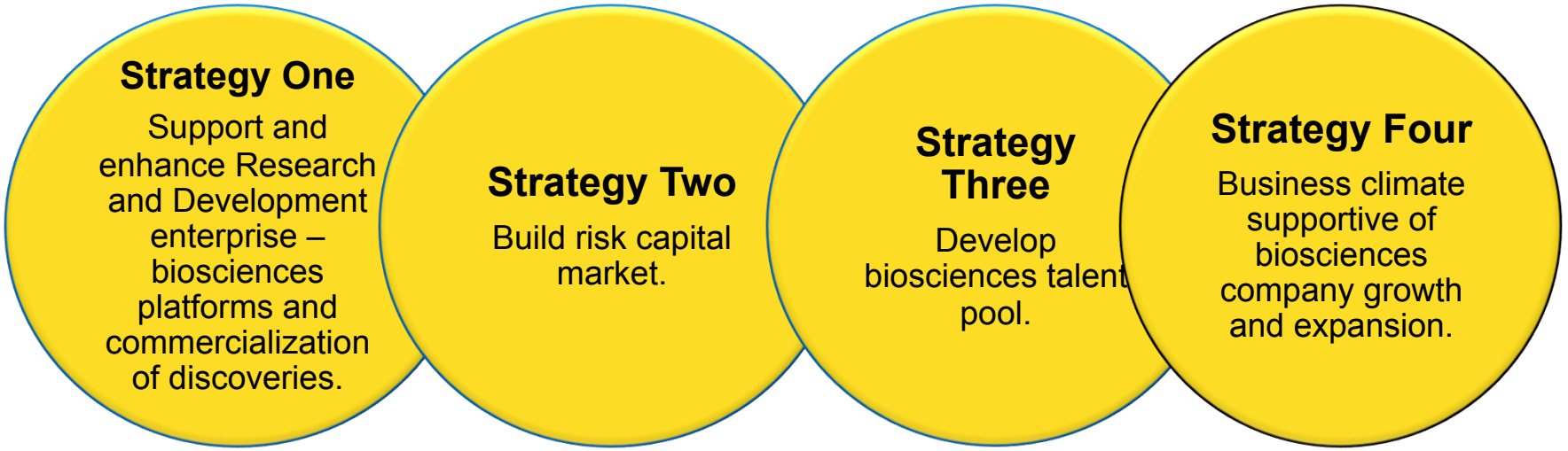
State of Iowa Bioscience Strategy

Battelle Technology Partnership Practice

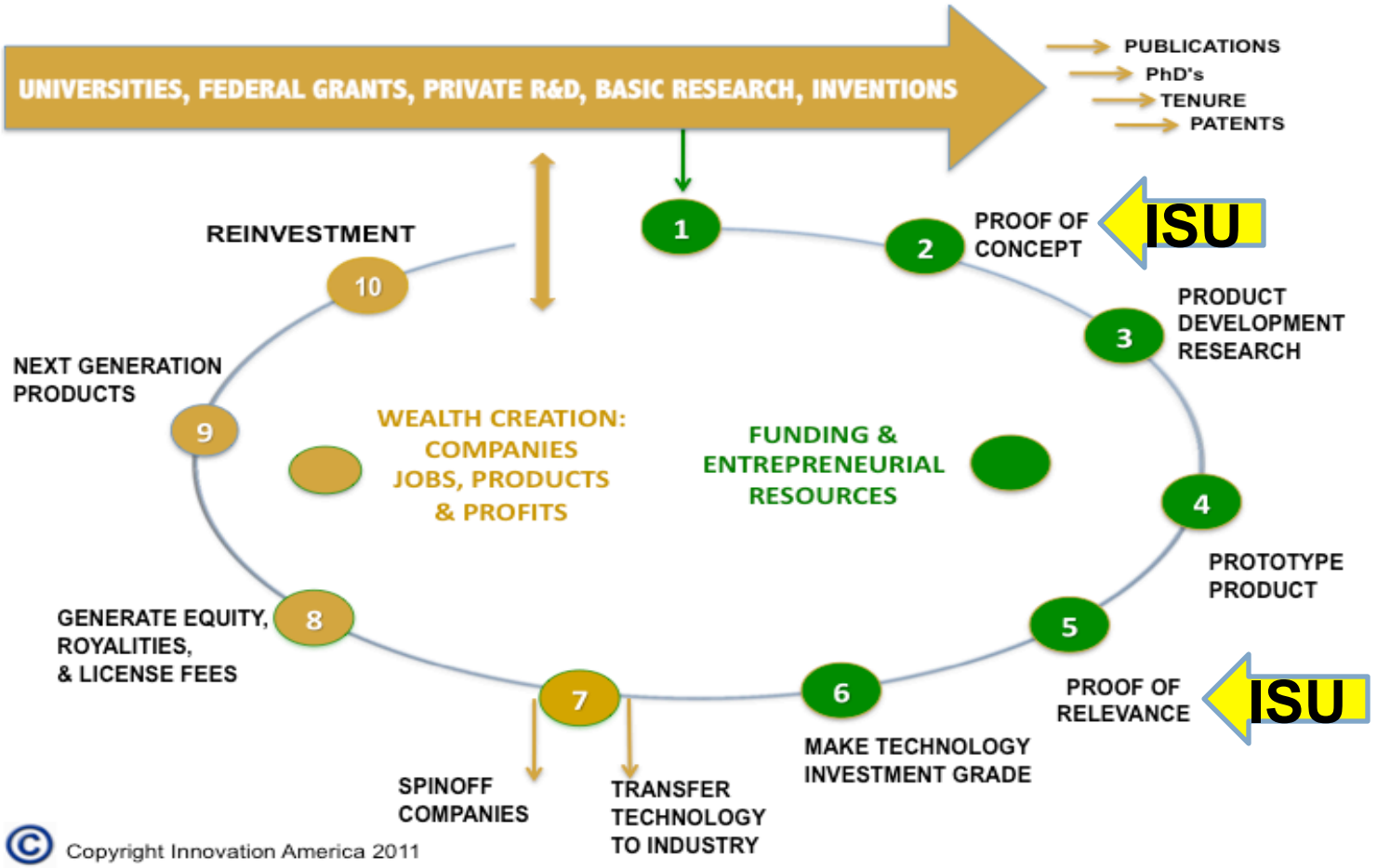
Iowa's Bioscience Technology Platforms

- *"One Health" Infectious Disease*
- Bioeconomy
- Advanced Foods
- Personalized Medicine

"By 2020, the biosciences industry is the key driver of the state's economy."

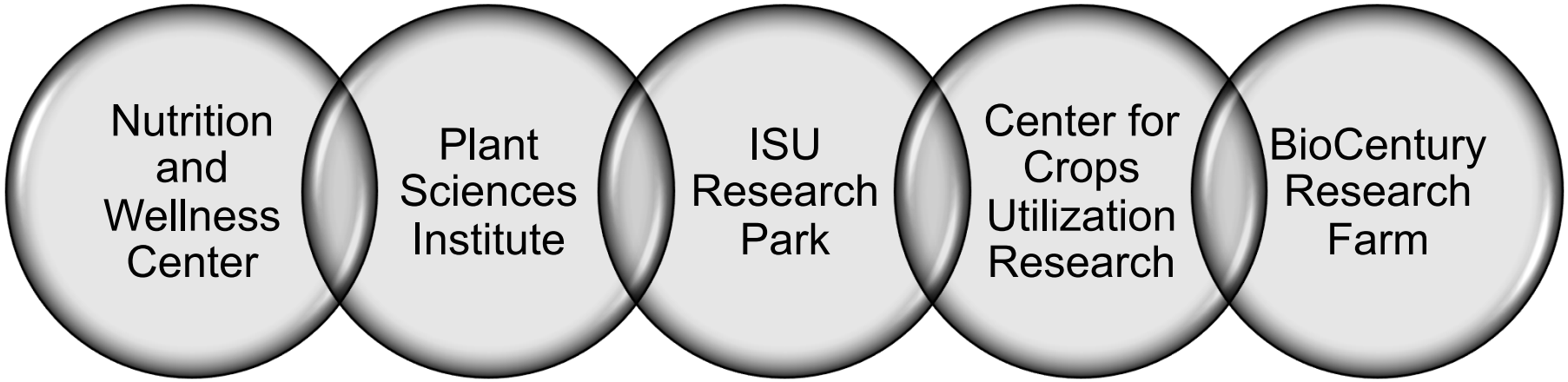


Iowa Innovation and Commercialization Model



Iowa Incubation Network

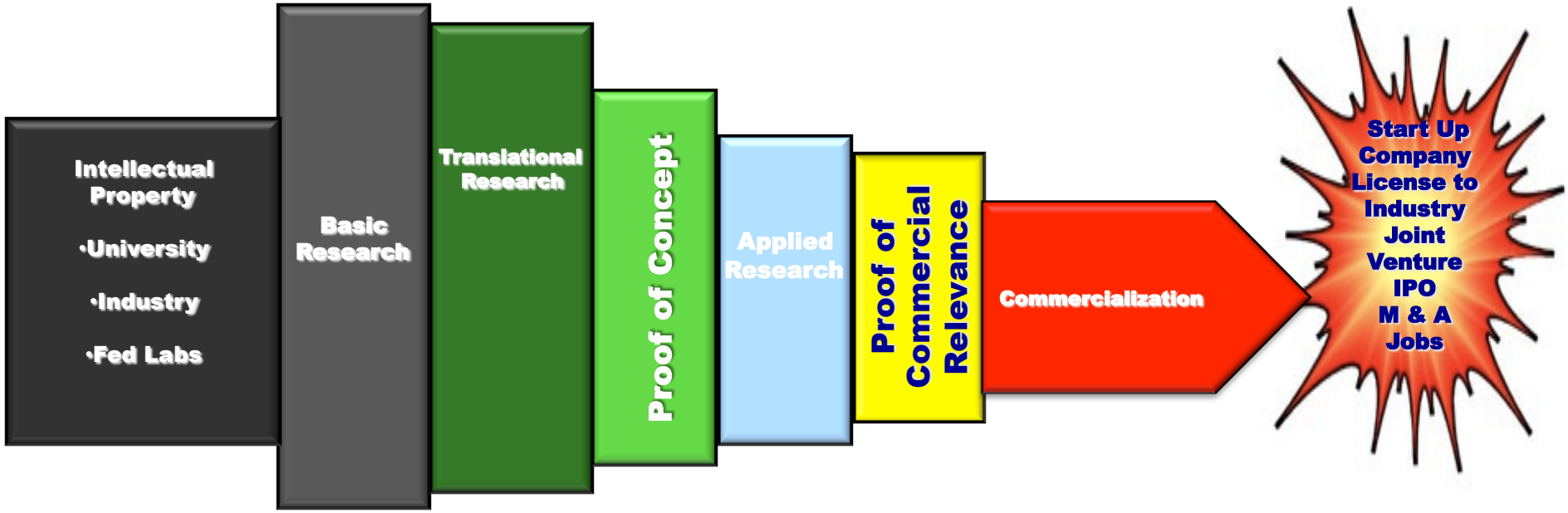
A coordinated network of incubation and pilot scale facilities at
Iowa State University . . .



Iowa Integrated Innovation Commercialization Network ™

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

Management



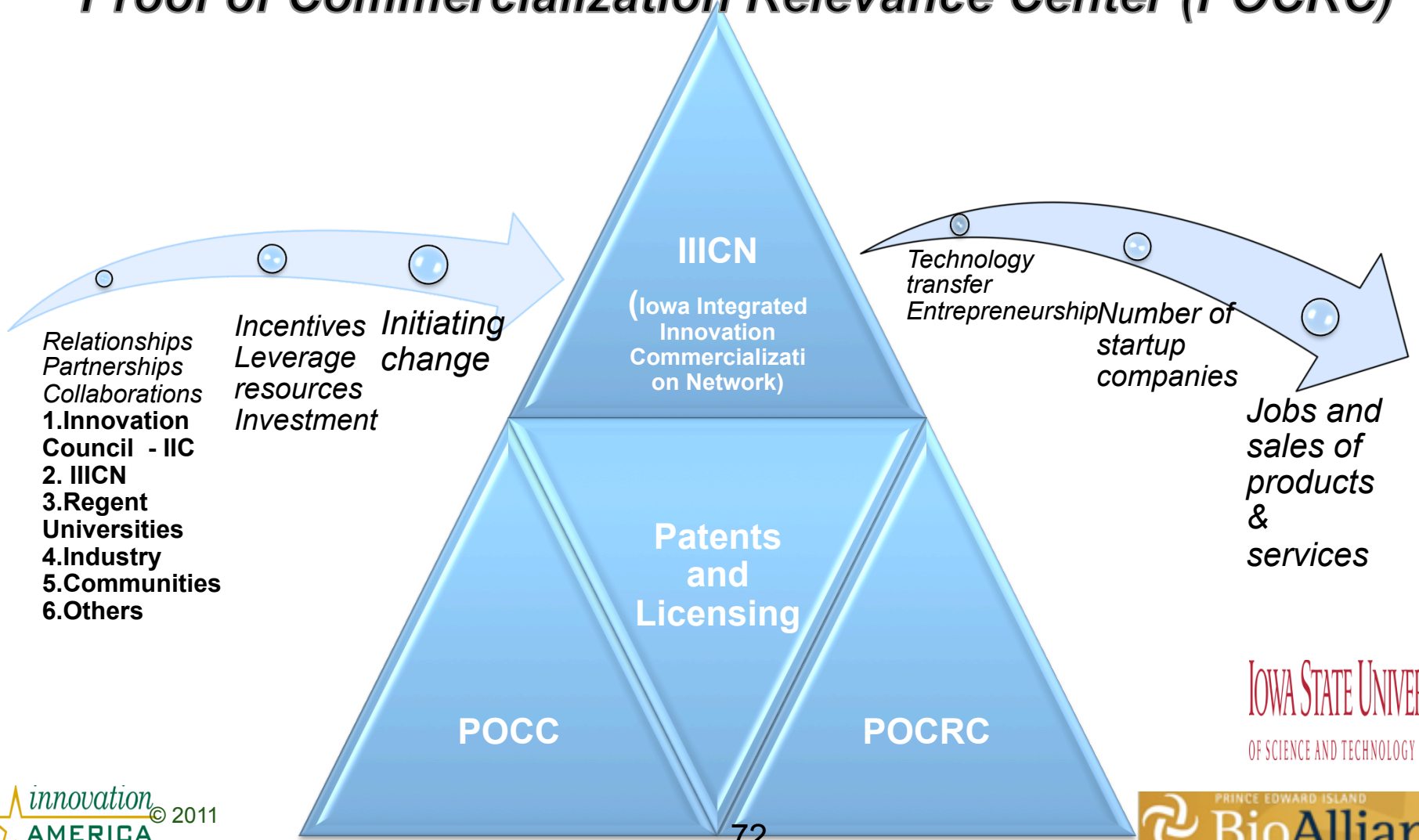
State & University Funding: POCC → Demonstration Fund → POCR → State Funds → Iowa Seed Fund

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

Technology Transfer From the ISU Research Enterprise

"Proof of Concept Center (POCC) and Proof of Commercialization Relevance Center (POCRC)"



Road Map Projects – Resource Guide

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 Faris, Executive Director; aedcdirector@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. Crandell, 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 Investment: Seed/Early Stage
Preferred Investment Industry: Micro/Nanotechnologies, specialty materials and semiconductors, biotechnology, interdisciplinary technologies.

Canadian Innovation Intermediaries

Population: 143,000

Prince Edward Island

- An economy in transition: From traditional industries to knowledge economy: Bioscience, Aerospace, ITC, Renewable Energy.
- Access to major markets in Eastern Canada and North Eastern USA and Europe.
- A strategic intent by business, research organizations and governments to invest in Bioscience as a key economic engine.

PEI Cluster Growth Targets (2005-2010)

- Increased R&D expenditures from $40 million to $80 million
- Increased private sector employment from 400 to 1,000
- Increased private sector revenue from $60 million to $200 million
- Expanded internationally competitive private sector
- New public and private direct investment in infrastructure and research and development
- Increased recognition as a leading international centre for bioactives-based health product development

PEI Bioscience: An Emerging and Dynamic Cluster

- $150 million investment in infrastructure
- 600% increase in UPEI research expenditures
- $42 million expansion of the Atlantic Veterinary College
- $13 million NRC Institute for Nutriscience and Health
- 30 companies with sales of >$80 million/year
- 1000 employees in Sector
- 29 AIF bioscience projects
- >$130 Million, $65 Million private sector investment
- 7 Research Organizations: 150 PhD's
- Growth targets:

➢ ***Tripling private sector revenue***

➢ ***Doubling private sector employment***

➢ ***Doubling R and D expenditures***

PEI Overall Cluster Development

- Proximity to world class research science centres
- Access to talent
- Access to funding
- Quality-of-life factors
- Appropriate, adaptable and affordable lab and office space
- Entrepreneurial environment
- Availability of support services providers
- Access to patients and markets
- Favourable policies, incentives and tax treatment

PEI Strategies for Cluster Development

- Expand R & D Capacity
- Support Business- Research Collaboration
- Improve Access to Capital
- Address Human Resource Requirements
- Provide Critical Strategic Infrastructure
- Build the Business Portfolio
- Move Technology to Marketplace
- Build the Prince Edward Island Bioscience Cluster Brand

PEI BioAlliance Goals

It is critical that the PEI BioAlliance partners achieve acceptable results in the following areas:

1. Increased economic impact of the bioscience sector in PEI.

2. Increased bioscience R&D investment in PEI by both the public and private sectors.

3. Improved access to public and private financing for biotech commercialization and new business development.

4. Increased availability of qualified human resources within the bioscience sector of PEI, in the management, technical and scientific knowledge areas.

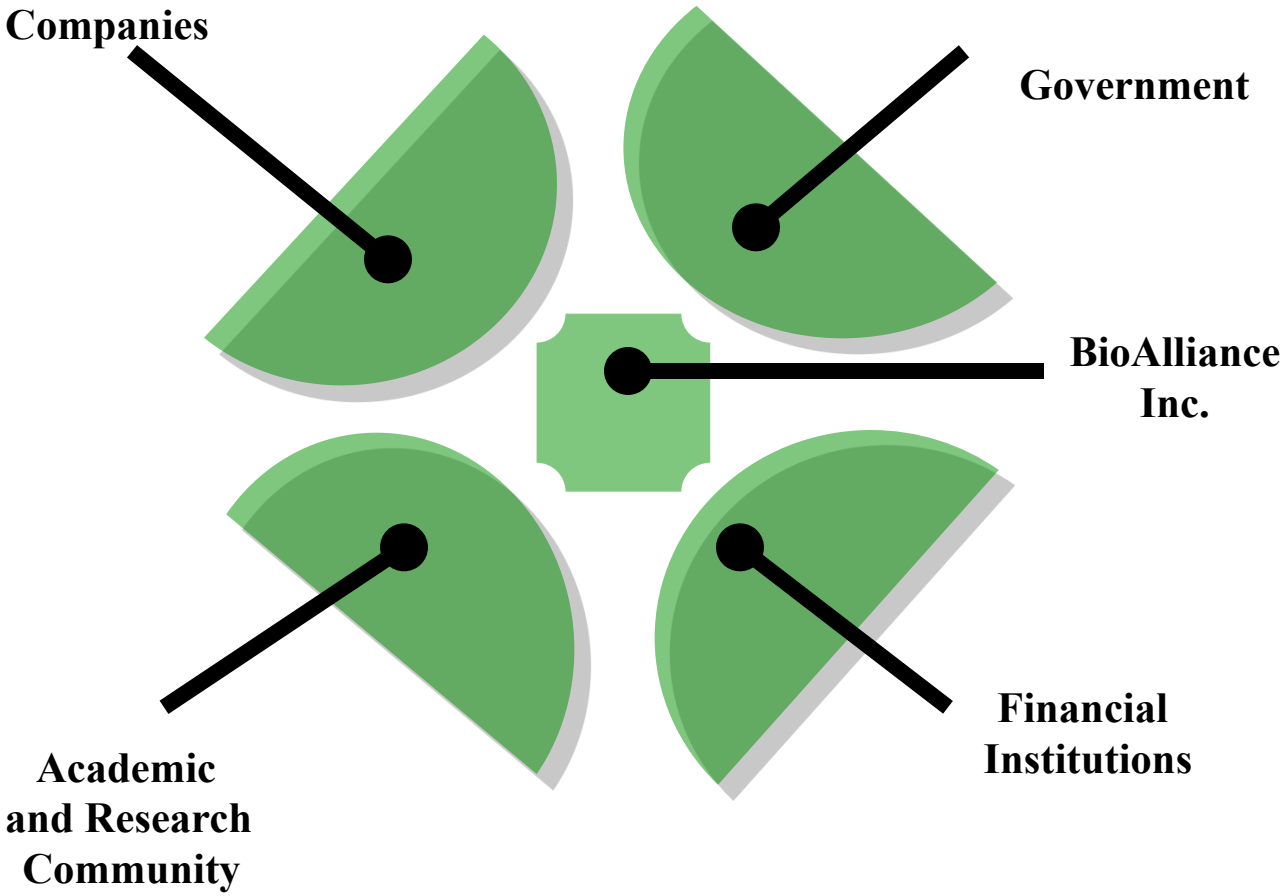
5. Increased recognition of PEI Bioscience Cluster.

6. Improved public policy environment to support the growth of the PEI Bioscience Cluster.

7. Increased collaboration and communications within PEI Bioscience Cluster, and with other bioscience clusters, both nationally and internationally.

8. Maintained role and operational capabilities of PEI BioAlliance Inc.

The BioAlliance Model



- Industry, gov't at all levels, academic/ research community, financial institutions and a "catalytic coordinator".

Prince Edward Island BioCluster Initiative

Key Success Factors

- *Shared economic vision.*
- *Strong active leadership.*
- *Broad-based collaboration.*
- *Over-arching organizing structure.*

Bill Gates - Microsoft

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

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