# US-EU WORKSHOP:

# Cluster Mapping and Cluster-Based Economic Development

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Harvard Business School

*US-EU Cluster Workshop*
*Harvard Business School*
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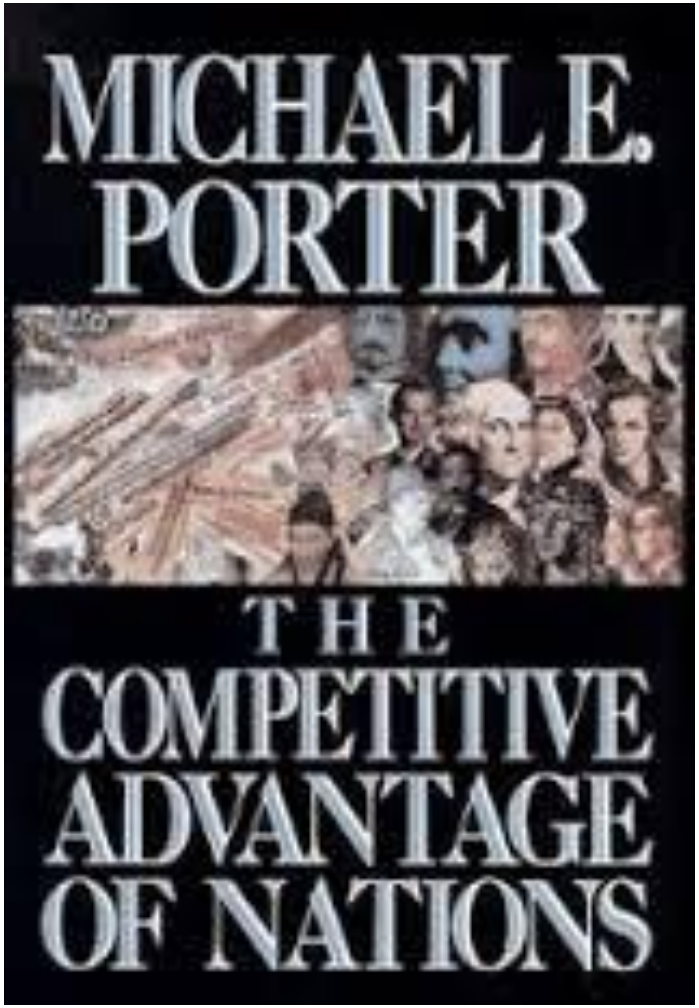
# A Research Effort that Started Three Decades Ago…




## Enduring Questions

- What drives **differences in economic performance across locations**?
  - Role of **location** in competition
- Why do leading companies in specific industries **concentrate in a small number of places**?
  - How do clusters **matter**?
- How can nations, states, and regions achieve **sustainable improvements in economic performance**?

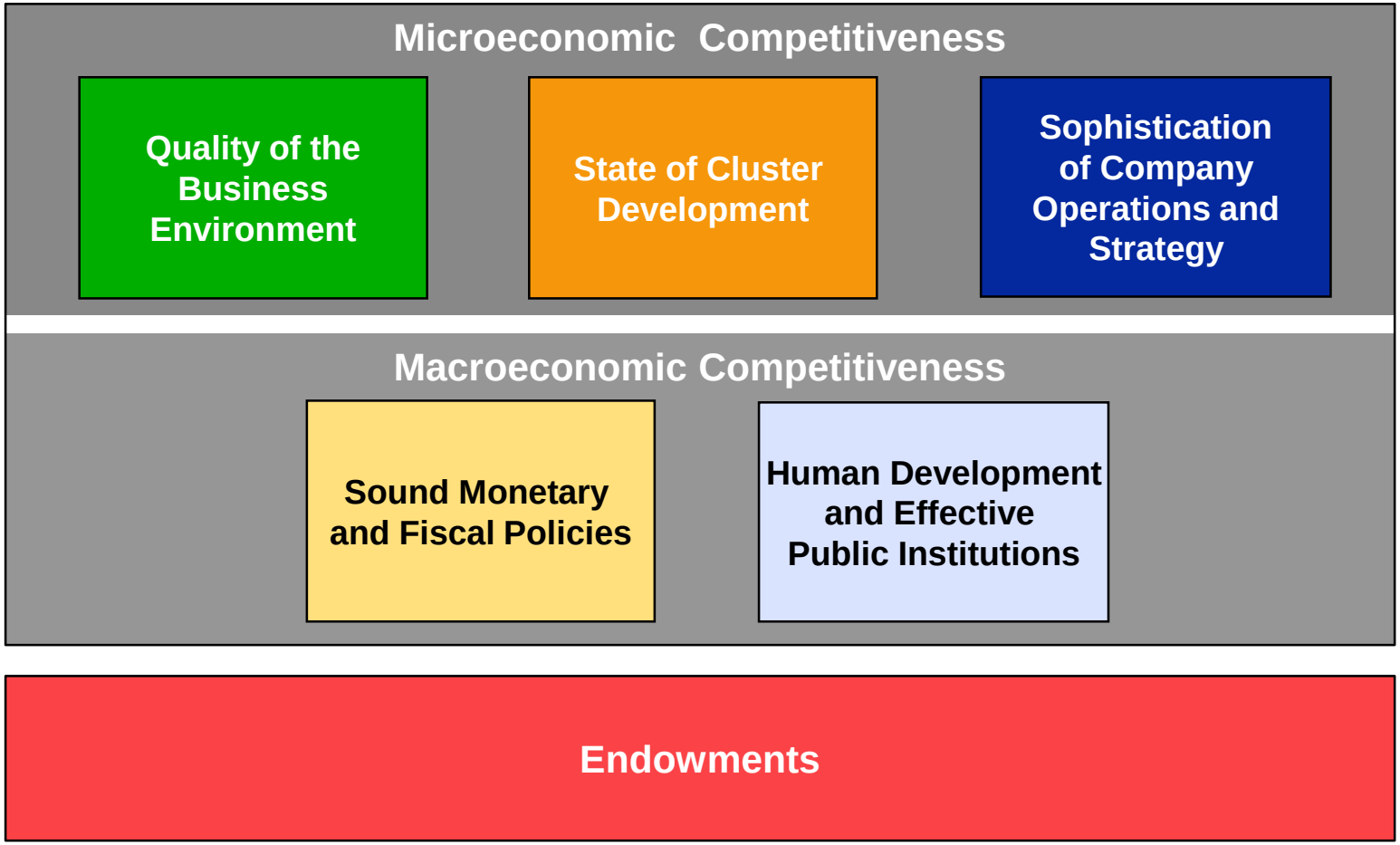
# What is Competitiveness?

A nation or region is competitive to the extent that firms operating there are able to **compete successfully** in the regional and global economy while maintaining or improving **wages and living standards** for the average citizen

- Competitiveness depends on the **long-run productivity** of a location as a place to do business
  - For existing firms and workers
  - Enabling high participation of citizens in the workforce

- Competitiveness is **not:**
  - Low wages
  - A weak currency
  - Jobs per se

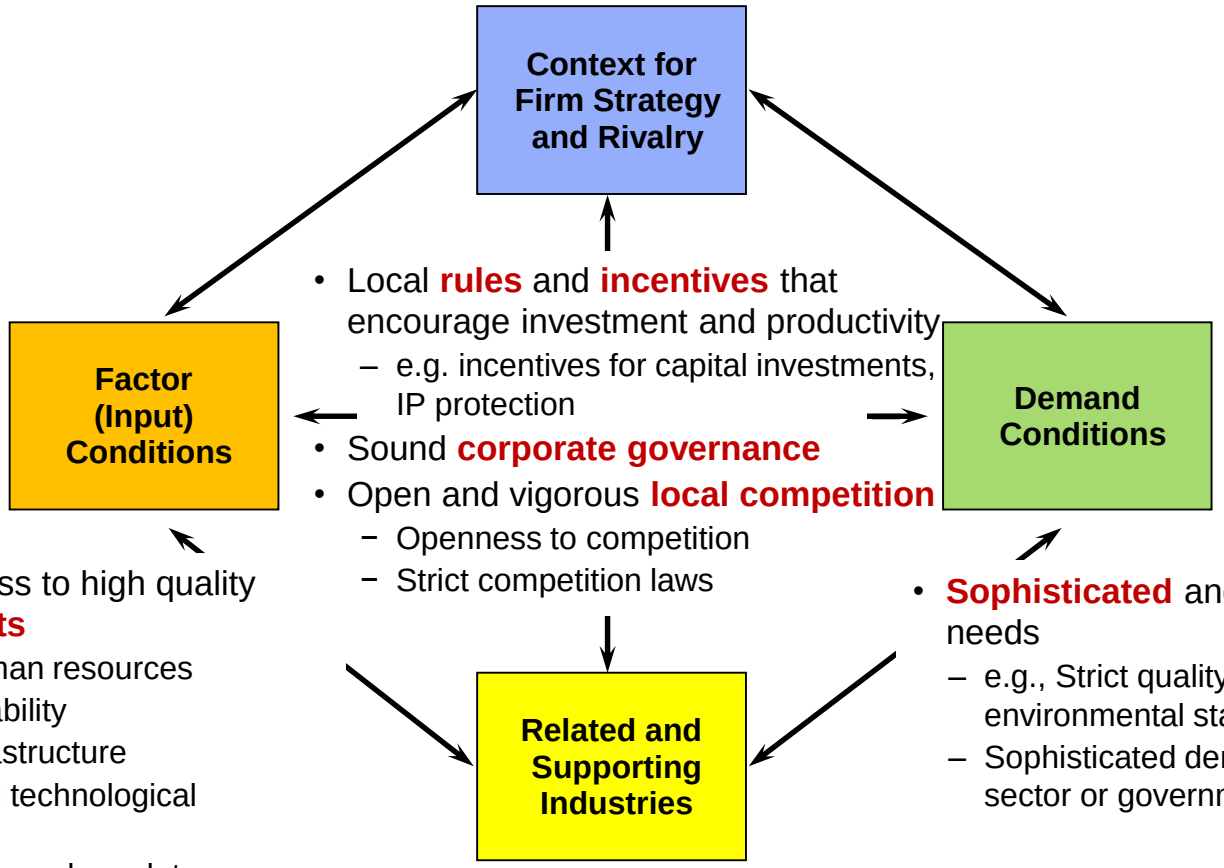
# What Determines Competitiveness?




- Productivity ultimately depends on improving the **microeconomic capability** of the economy and the **sophistication of local competition** revealed at the level of firms, clusters, and regions
- Macroeconomic competitiveness sets the **economy-wide** context for productivity to emerge, but is **not sufficient** to ensure productivity
- Endowments, including **natural resources**, **geographical location**, **population**, and **land area**, create a foundation for prosperity, but true prosperity arises from **productivity in the use of endowments**

# Assessing the Quality of the Business Environment

## The Diamond Model




- Local **rules** and **incentives** that encourage investment and productivity
  - e.g. incentives for capital investments, IP protection
- Sound **corporate governance**
- Open and vigorous **local competition**
  - Openness to competition
  - Strict competition laws

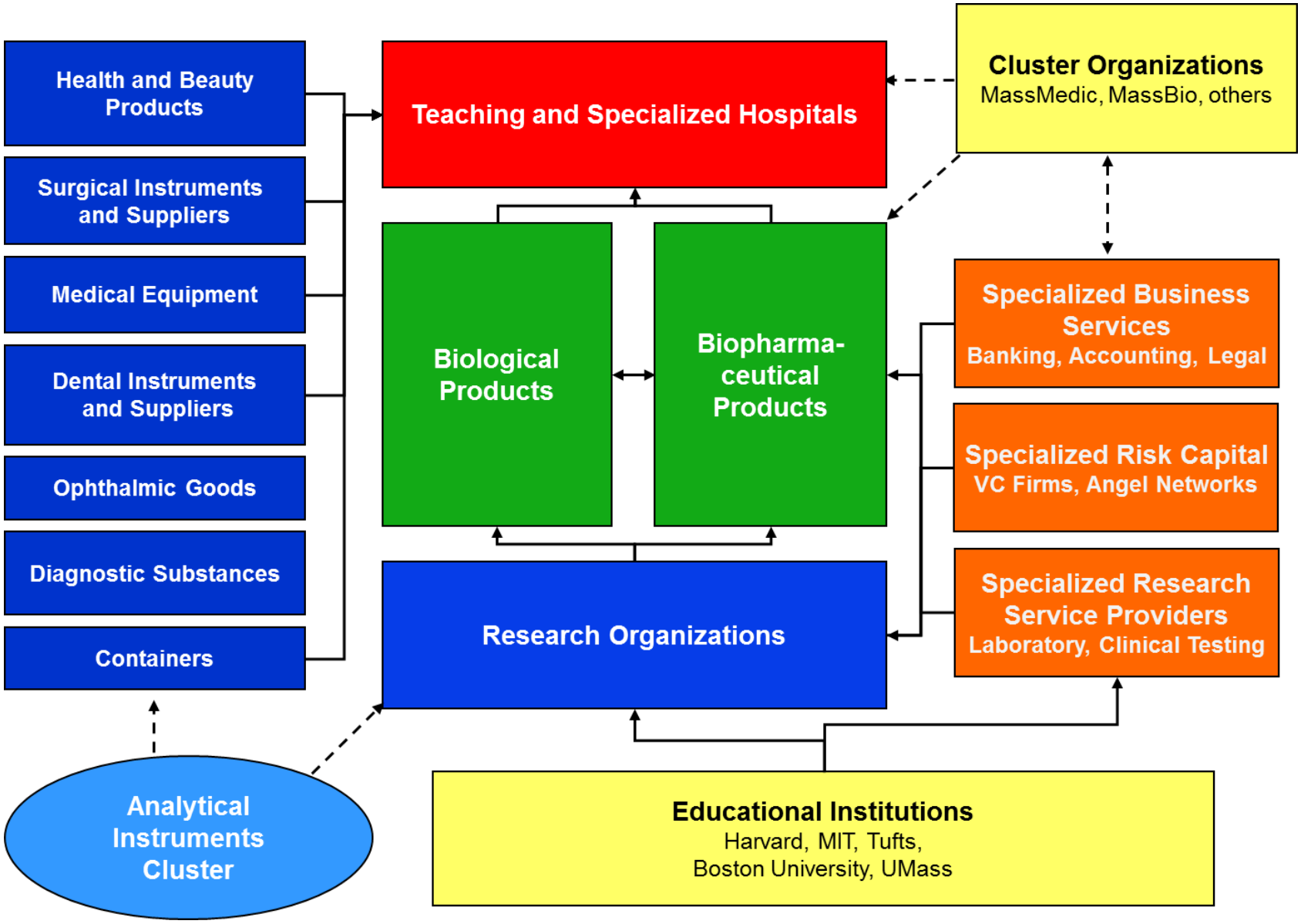
- Improving access to high quality **business inputs**
  - Qualified human resources
  - Capital availability
  - Physical infrastructure
  - Scientific and technological infrastructure
  - Administrative and regulatory infrastructure

- **Sophisticated** and **demanding** local needs
  - e.g., Strict quality, safety, and environmental standards
  - Sophisticated demand in the private sector or government

- Availability and quality of **suppliers** and **supporting industries**

- **Many things in the business environment matter** for competitiveness
- Successful economic development is a process of **successive upgrading**, in which the business environment improves to enable increasingly sophisticated ways of competing

# Clusters and Competitiveness
## Massachusetts Life Sciences



# Why Clusters Matter?

- Clusters **increase productivity** and **operational efficiency**
- Clusters stimulate and enable **innovations**
- Clusters facilitate **commercialization** and **new business formation**

- Clusters reflect the fundamental importance to productivity and innovation of **linkages and spill-overs** across firms and associated institutions that occur within geographic areas

# Institutions for Collaboration

## Selected Massachusetts Organizations, Life Sciences

### Life Sciences Industry Associations

- Massachusetts Biotechnology Council
- Massachusetts Medical Device Industry Council
- Massachusetts Hospital Association

### University Initiatives

- Harvard Biomedical Community
- MIT Enterprise Forum
- Biotech Club at Harvard Medical School
- Technology Transfer offices

### General Industry Associations

- Associated Industries of Massachusetts
- Greater Boston Chamber of Commerce
- Massachusetts High Tech Council

### Informal networks

- Company alumni groups
- Venture capital community
- University alumni groups

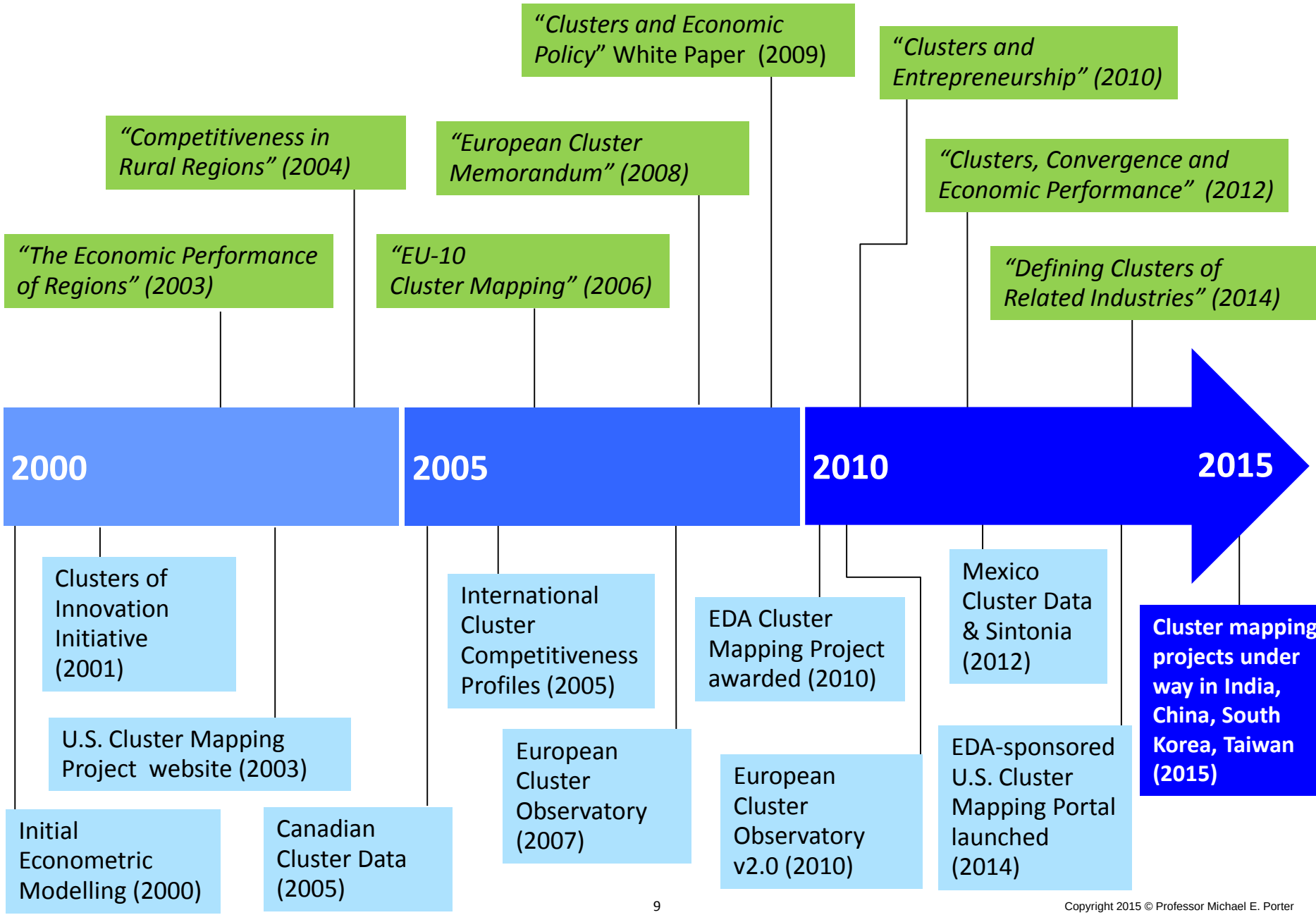
### Economic Development Initiatives

- Massachusetts Technology Collaborative
- Mass Biomedical Initiatives
- Mass Development
- Massachusetts Alliance for Economic Development
- Massachusetts Life Sciences Center

### Joint Research Initiatives

- Network for Excellence in Health Innovation
- The Massachusetts Technology Transfer Center
- Whitehead Institute For Biomedical Research
- Center for Integration of Medicine and Innovative Technology (CIMIT)

# Evolution of Cluster Research and Cluster Mapping

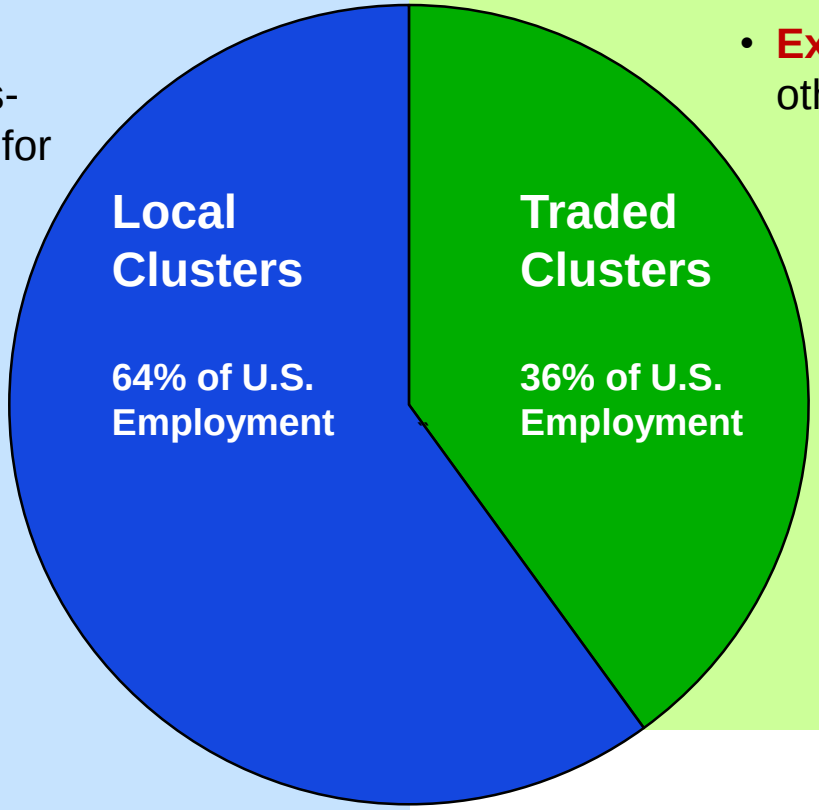


# U.S. Cluster Mapping


- **National economic initiative** commencing in 2010, based at HBS, and sponsored by the U.S. Department of Commerce's Economic Development Administration. To help drive better regional economic strategy, the interactive website provides data to:
  - Help **regions** understand their current competitiveness and sources of potential differentiation
  - Help **clusters** assess their competitive position and highlight areas for potential growth
  - Help **Institutions for Collaboration** engage with peers within and beyond their home region and cluster

# The Composition of Regional Economies

- Serve almost exclusively the **local** market
- **Little exposure** to international or cross-regional competition for employment




- Serve **national** and **global** markets
- **Exposed to competition** from other regions and nations

  - Much higher average wages with 51% of payroll
  - Much higher rate of innovation with 91% of patents issued

Note: Cluster data includes all private, non-agricultural employment. Source: Michael E. Porter, Economic Performance of Regions, Regional Studies (2003); Updated via Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School (2008)

# How Important are Traded Clusters in the U.S. Economy?

- Traded clusters account for **36% of all US employment, 45% of payroll,** and more than **90% of all US patenting**
  - About **25% of U.S. payroll is earned in strong clusters**; i.e. regional clusters with significant critical mass

- These industries exhibit **productivity levels and growth significantly above the average of the US economy**

- There is **significant variation** in cluster presence and portfolio composition across US regions

- Regions at all stages of development **have economies concentrated in clusters**; cluster strength and cluster mix improve with overall economic development

# Strong Traded Clusters Drive Regional Economic Performance

## Research Findings

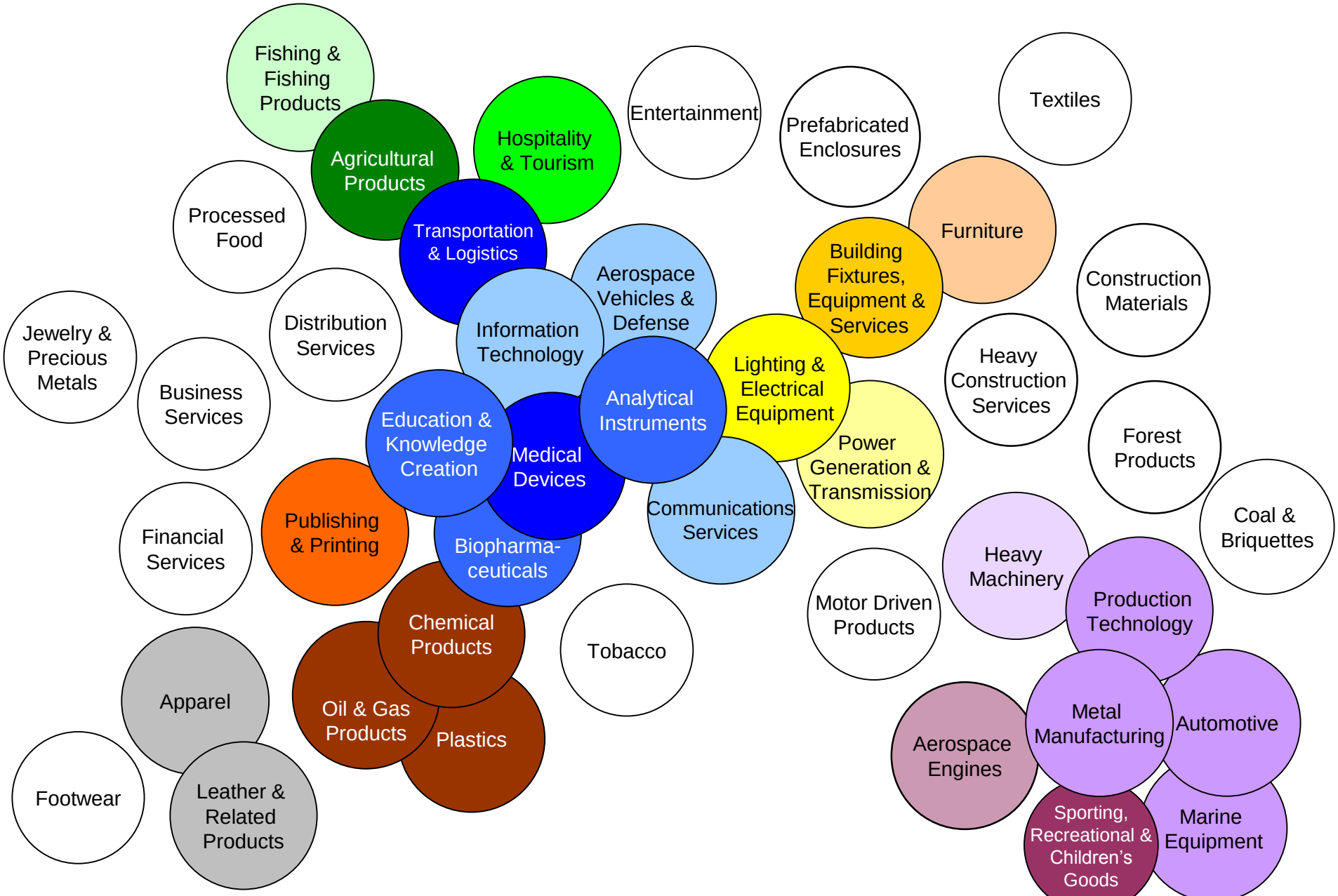
- Presence of **strong clusters**
- **Breadth** of industries within each cluster

- **Job** growth
- Higher **wages**
- Higher **patenting** rates
- Greater **new business** formation, growth and survival
- **Resilience** in downturns

- Build on the region's **existing** and **emerging** clusters rather than chase hot fields
- Economic diversification usually occurs **within clusters** and **across related clusters**

Source: "Clusters and the Great Recession" by Mercedes Delgado, Michael E. Porter, and Scott Stern (2014), "Clusters, Convergence, and Economic Performance" by Mercedes Delgado, Michael E. Porter, and Scott Stern (2012), "Cluster and Entrepreneurship" by Mercedes Delgado, Michael E. Porter, and Scott Stern (2010); "The Economic Performance of Regions" by Michael E. Porter (2003)

# Related Clusters and Economic Diversification




Note: Clusters with overlapping borders or identical shading have at least 20% overlap (by number of industries) in both directions.

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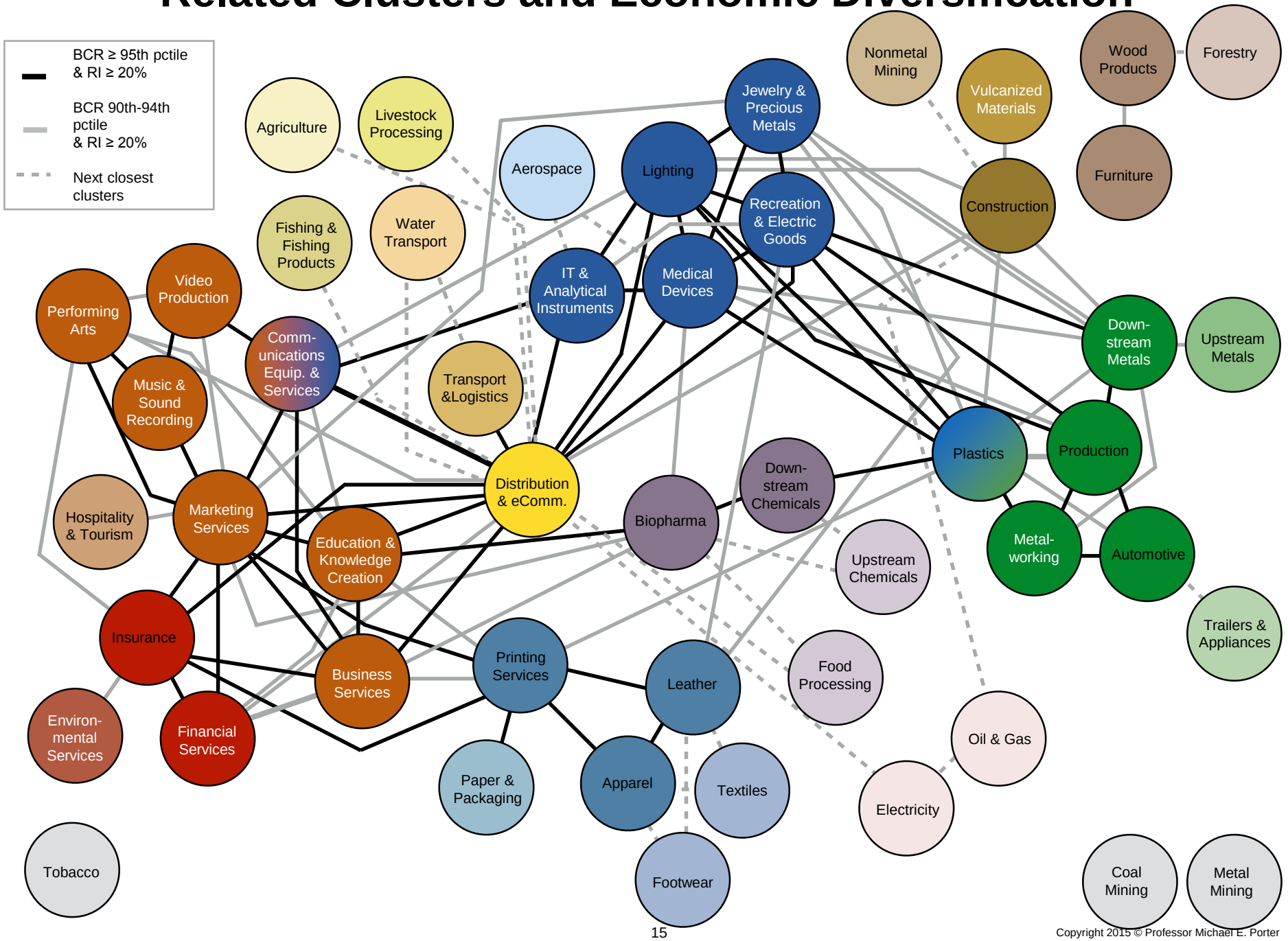
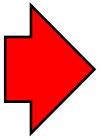


# Strong Traded Clusters Drive Regional Economic Performance

## Research Findings

- Presence of **strong clusters**
- **Breadth** of industries within each cluster
- Strength in **related clusters**
- Presence of a region‘s clusters in **neighboring regions**



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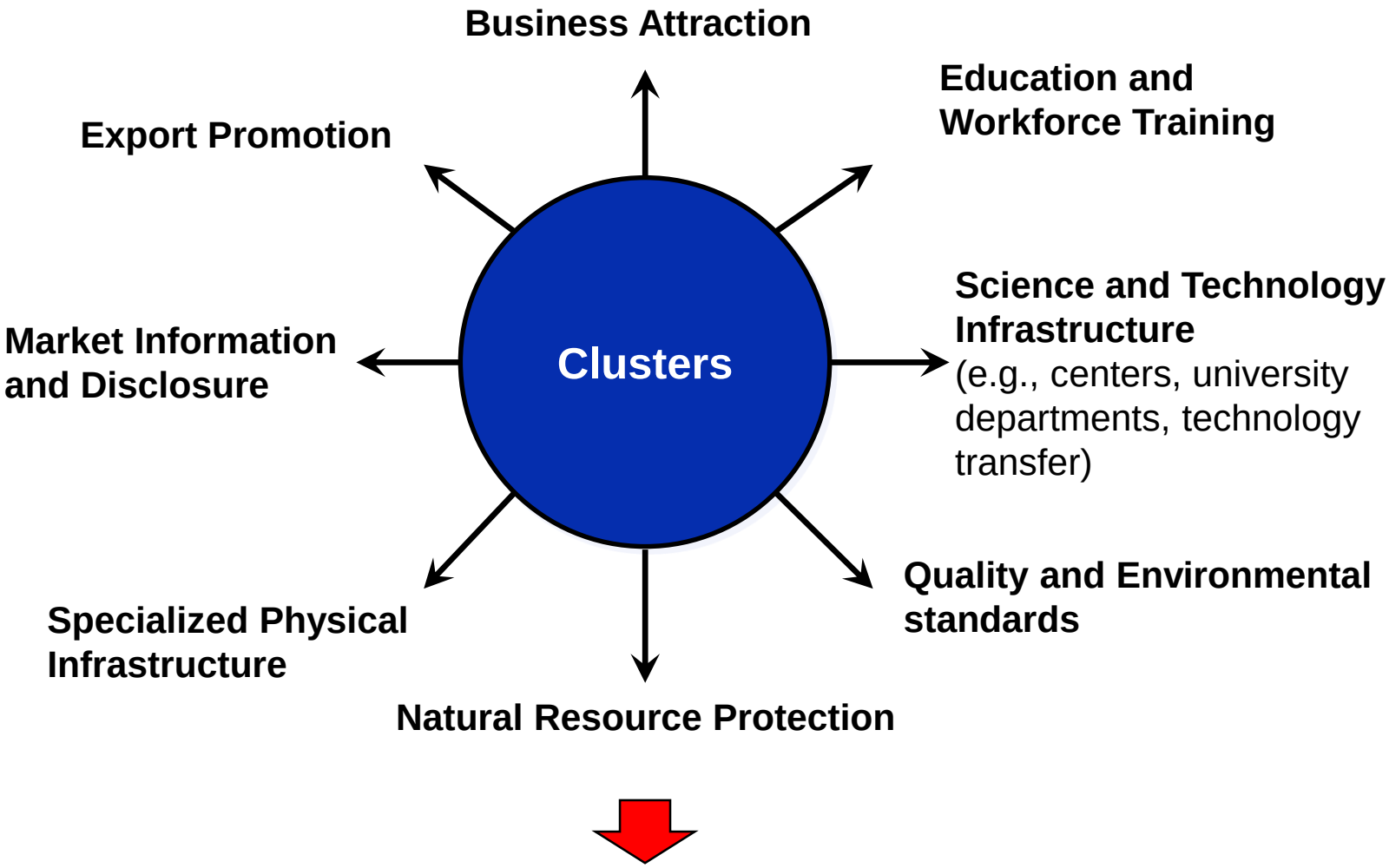
# Clusters as a Tool for Economic Policy

- **Leverages** the power of spillovers and linkages to drive rapid economic development
- A vehicle for policies and investments that strengthen **multiple related firms/institutions** simultaneously
- Enhances the efficiency and effectiveness of **traditional economic policy** areas, such as training, R&D, export promotion, FDI attraction, etc.

# Organize Public Policy around Clusters




- Clusters provide a framework for **organizing the implementation** of many public policies and public investments directed at economic development

# Clusters as a Tool for Economic Policy

- Leverage the power of **spillovers** and **linkages** to drive rapid economic development
- A vehicle for policies and investments that strengthen **multiple related firms/institutions** simultaneously
- Enhances the efficiency and effectiveness of **traditional economic policy** areas, such as training, R&D, export promotion, FDI attraction, etc.
- A forum for **collaboration** between the private sector, trade associations, government, educational, and research institutions
  - A **mechanism** for **constructive** business-government dialog
- Brings together **firms of all sizes**, including SME's
- Clusters initiatives are a powerful private/public vehicle to identify and get alignment on **problems** and **action recommendations**
- Cluster upgrading fosters **greater** and **more sophisticated** competition rather than distorting the market

- Sound cluster policy addresses **all existing and emerging clusters**, and does not pick winners

# Towards a New Economic Development Model

- Traditional approaches to economic development are **not working**
- We must **reshape** the approach to economic development in the U.S. based on a deeper understanding of the drivers of competitiveness in the modern global economy

The New Direction

- Focus on **competitiveness,** not job creation per se
- **Cluster-based**, reflecting the core drivers of jobs and wages
- **Build on existing and potential strengths**, versus rely on reducing weakness
- Develop an overall **strategy** rather than a list of actions
- **Prioritized** and **sequenced**, not treating all weaknesses equally
- **Data driven**, not political or based on wishful thinking