
Enhancing the Competitiveness of the Central Mississippi Region: The Communications and Information Technology Cluster (CIT)

Working Session

Jackson, Mississippi

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Agenda

- **The Microeconomics of Competitiveness**
 - **Findings on the CIT Cluster in Central Mississippi**
 - **Action Plan for the CIT Cluster in Central Mississippi**
 - **Appendix of Supporting Data**
-

Agenda

- **The Microeconomics of Competitiveness**
 - **Findings on the CIT Cluster in Central Mississippi**
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 - **Appendix of Supporting Data**
-

Overview

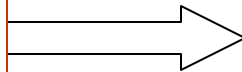
- **Mississippi has the basic building blocks—research, industry base, public/private institutions—to support a world-class cluster centered on communication and information technologies (CIT)**
-

Why focus on the CIT cluster in Mississippi?

- **Basic building blocks are present**
 - **Productivity enhancement of traditional Mississippi industries**
 - **Moves the region towards competitive advantage**
 - **Attractive productivity gains at the national level**
-

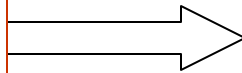
CIT is more than just a job creator

Job creator



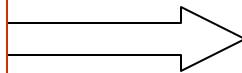
•Global wage creation from CIT jobs is expected to grow 50% by 2003.

Wealth builder



•NASDAQ recorded 86% gain in 1999
•Aggregate market cap for U.S.-based CIT firms was over \$3T in 3rd quarter 1999

Cluster enabler

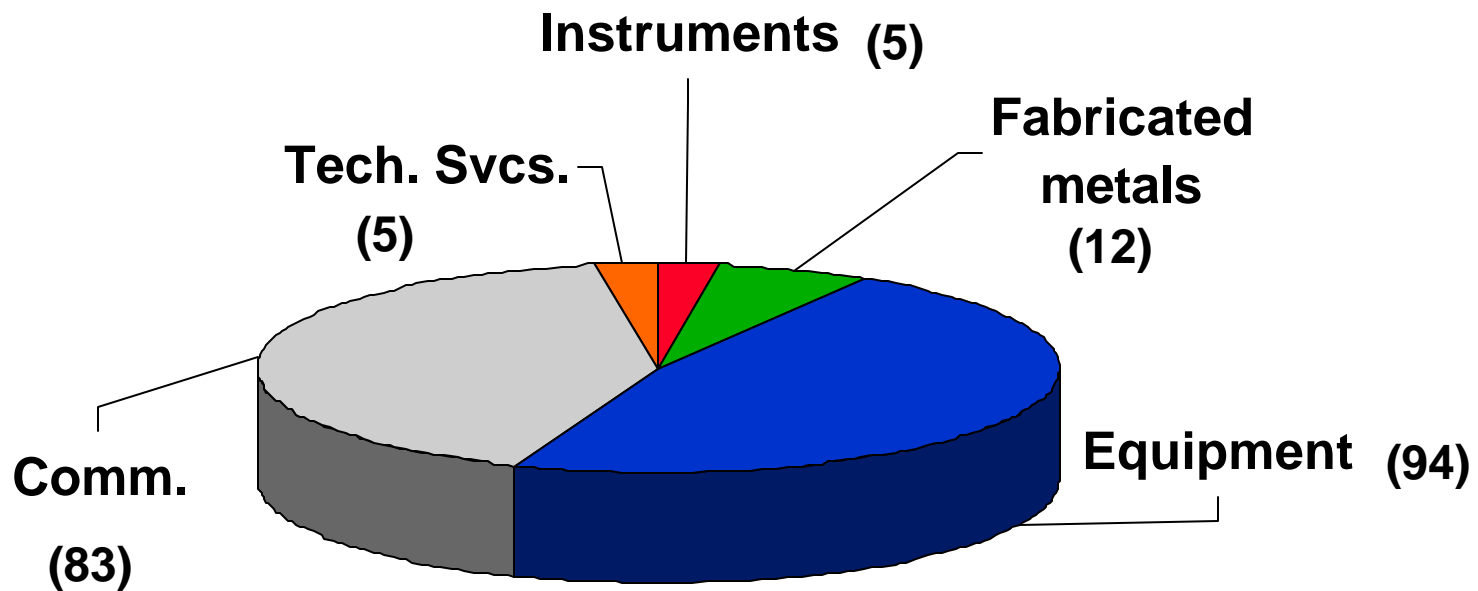


•Productivity gains recorded across numerous “Old Economy” industries that integrate “New Economy” technologies and management styles.

MISSISSIPPI NEEDS A COMPETITIVE ADVANTAGE, NOT A COMPARATIVE ONE.

Source: Forrester, Gartner, NASDAQ website

Distribution of Information Technology Companies by SIC

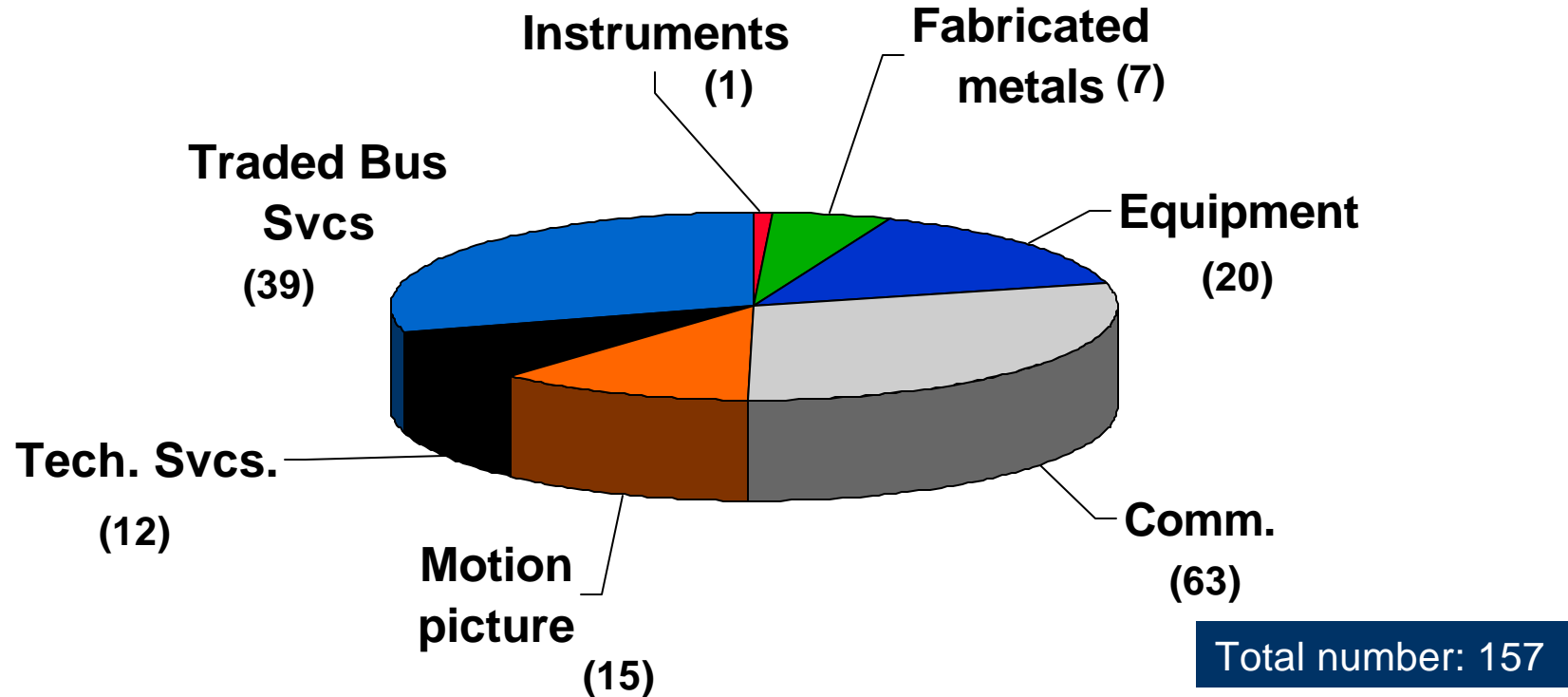


NOTE: Total does not include local business services firms (363)

Total number: 199

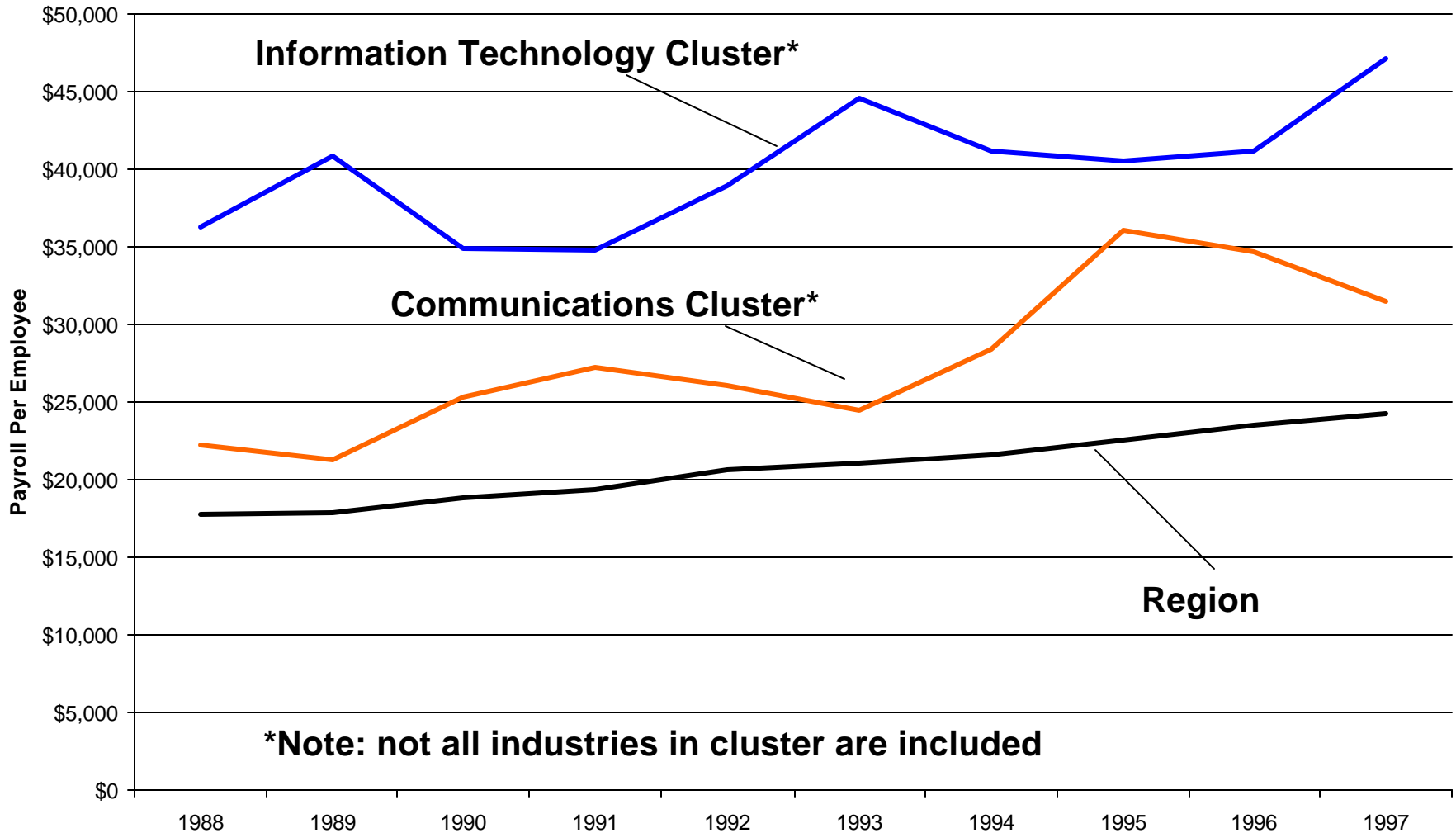
SOURCE: Cluster Mapping Project; MDECD.

Distribution of Communications Companies by SIC



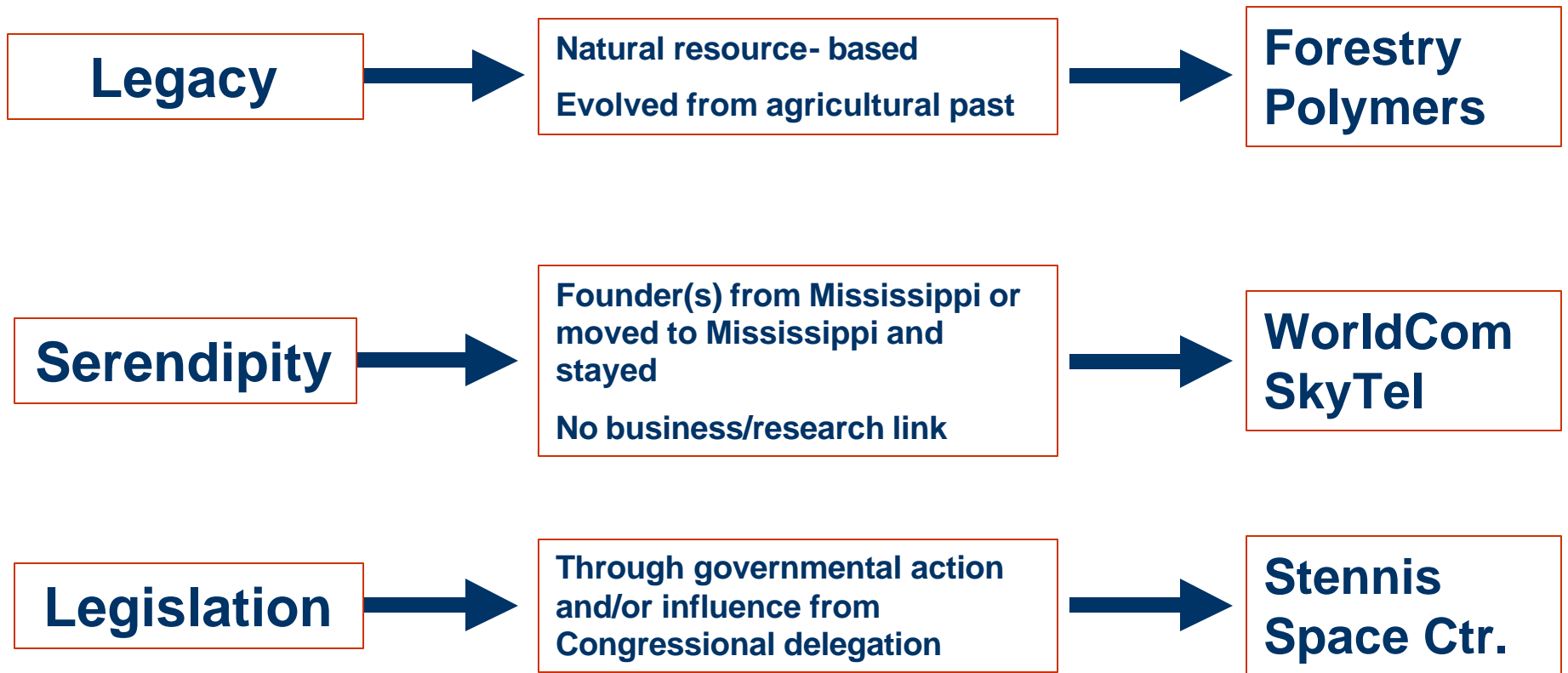
SOURCE: Cluster Mapping Project; MDECD.

Average Wages in the Central Mississippi Region



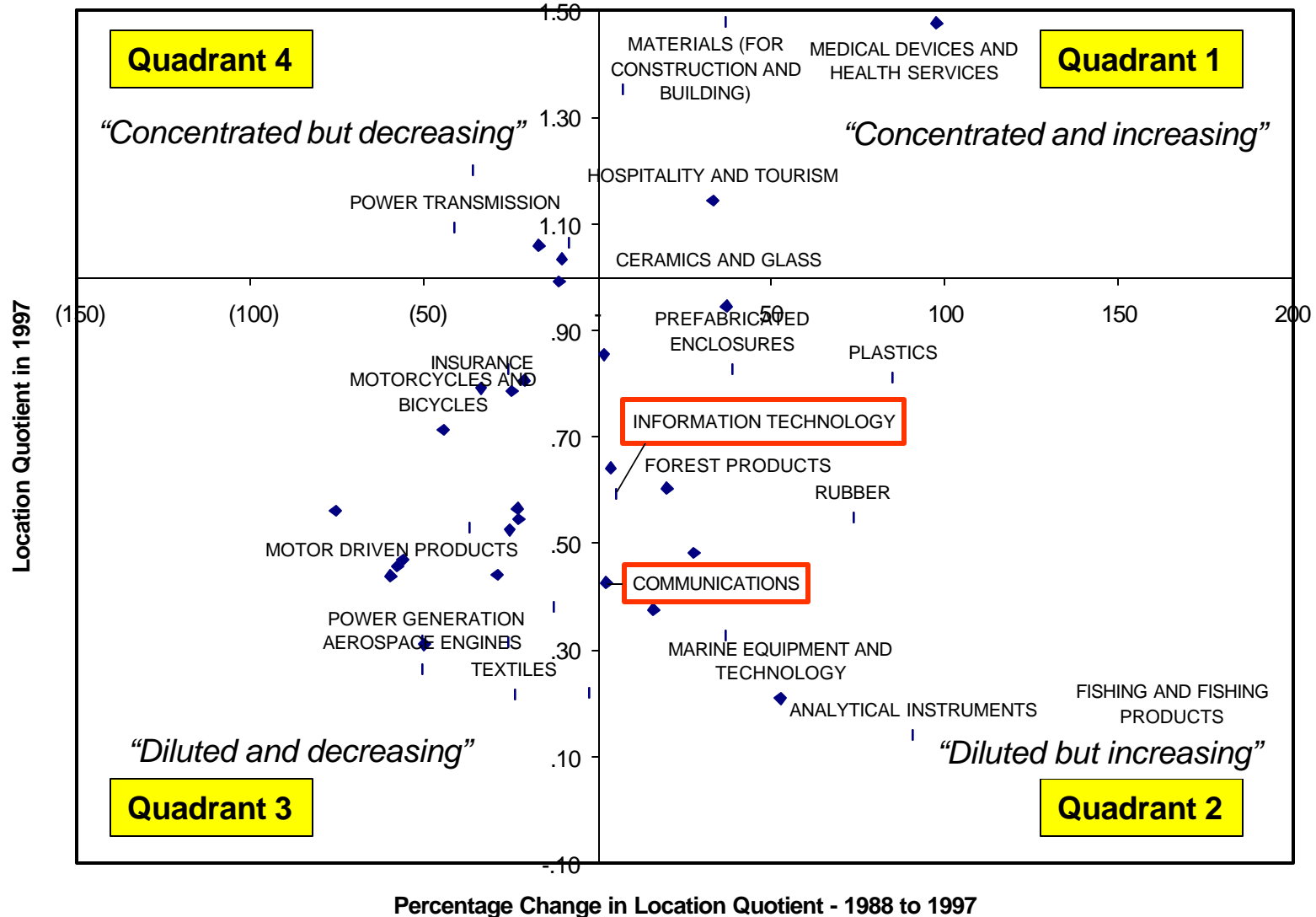
Source: Cluster Mapping Project; Professor Michael E. Porter, Harvard Business School.

Business formation in Mississippi



Clusters in the Central Mississippi Region

Cluster Concentration in 1997



Note: For display purposes, not all clusters are labeled
 Source: Cluster Mapping Project, Harvard Business School

Clusters and regional economic development

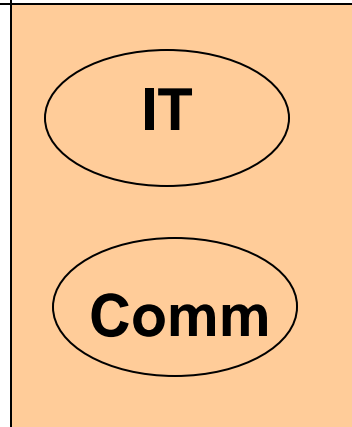
Concentrated but decreasing

•Why are these clusters weakening?

Concentrated and increasing

•What can we do to ensure the continued growth and strength of these clusters?

•Why are these clusters weak and getting weaker?



•What can we do to enhance the growth of these clusters?

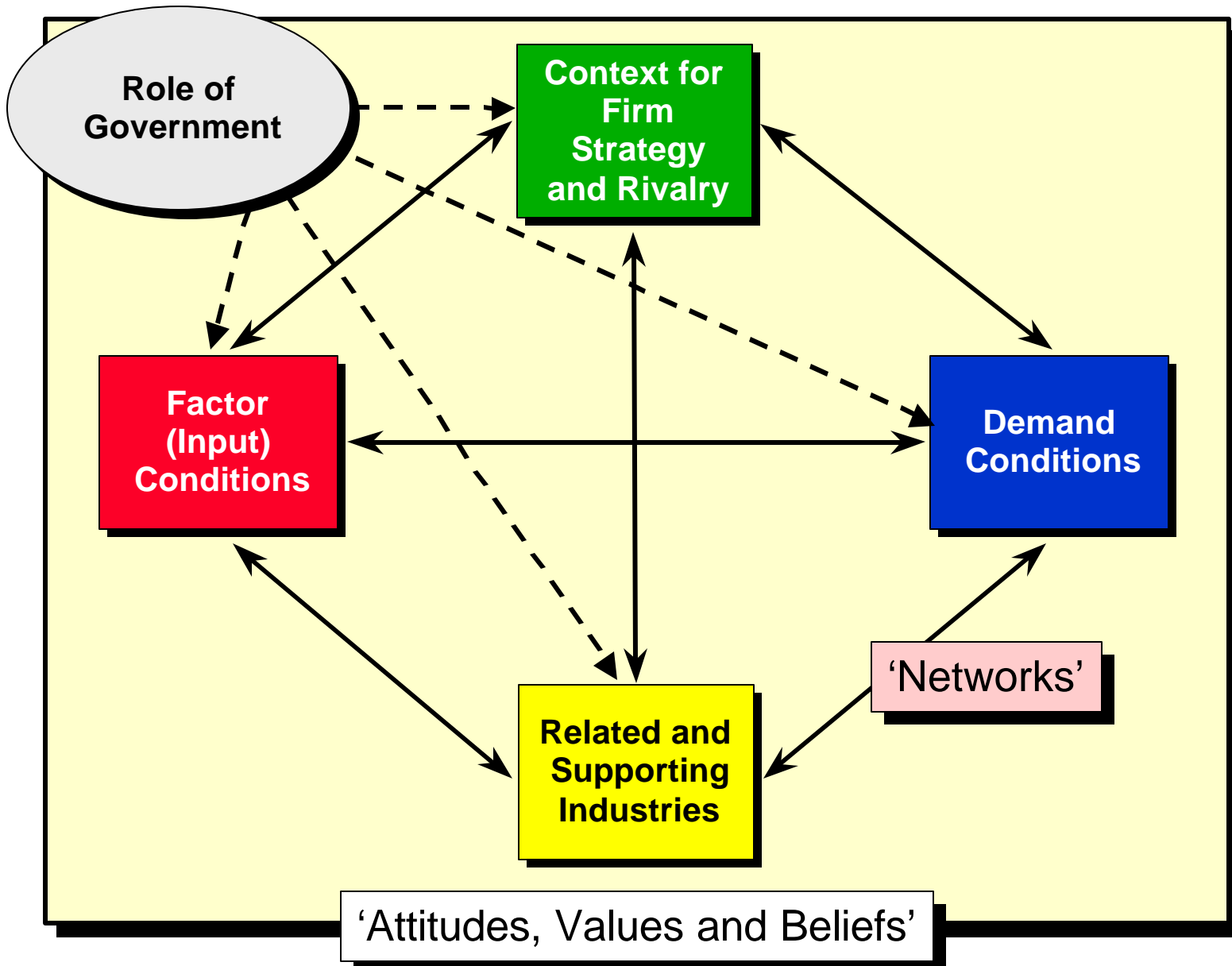
Diluted and decreasing

Diluted but increasing

What are the steps for enhancing the Mississippi CIT cluster?

- **Use Diamond to define key elements of cluster success**
 - **Perform initial assessment to understand strengths and weaknesses as related to Diamond model**
 - **Understand roadblocks and opportunities**
-

Quality of the Microeconomic Business Environment: The Diamond Framework



The Diamond Analysis for the Mississippi CIT Cluster

Pre-existing findings are confirmed

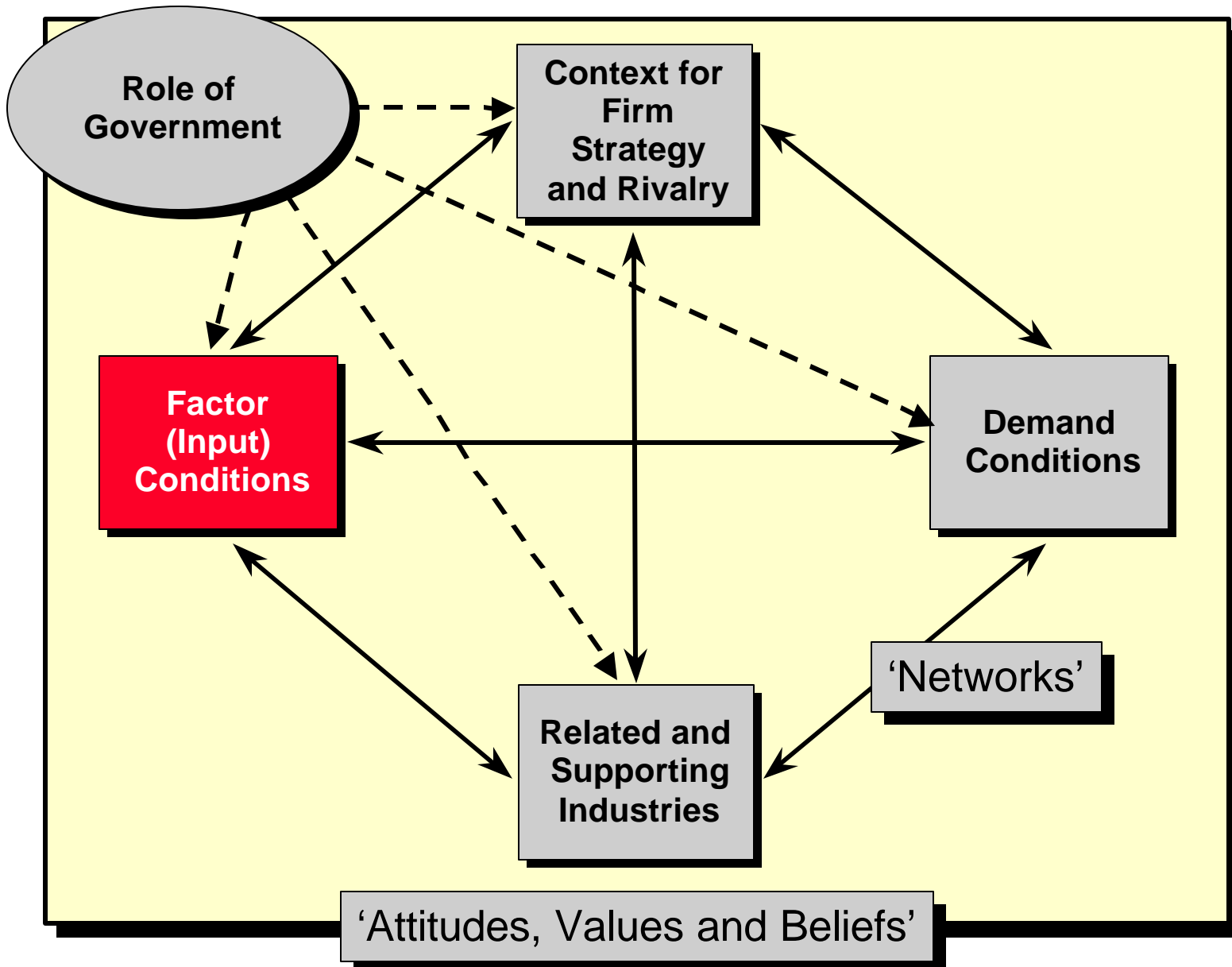
- Lack of urgency/rallying cry
 - Need to address issues head-on (most are aware, but no concrete actions are being taken)
-

The Diamond Analysis for the Mississippi CIT Cluster

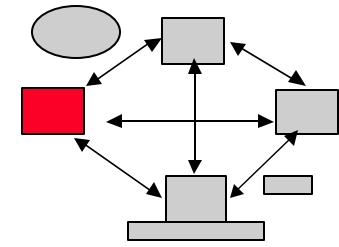
Good foundation

- CIT firms present; not starting from scratch
 - World-class research efforts
 - Attractive quality of life (e.g. low cost of living, beautiful natural environment)
 - Current residents keen on staying
 - MS Technology, Inc. and MS Research Consortium
-

Quality of the Microeconomic Business Environment: **Factor/Input Conditions**



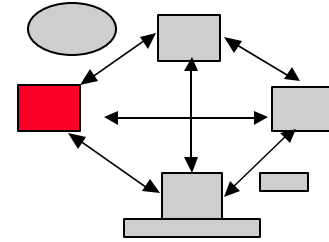
Diamond Analysis: Factor (Input) Conditions



OVERALL FINDING:

**No discernible advantage in
CIT cluster factor (input)
conditions and a competitive
disadvantage in some cases**

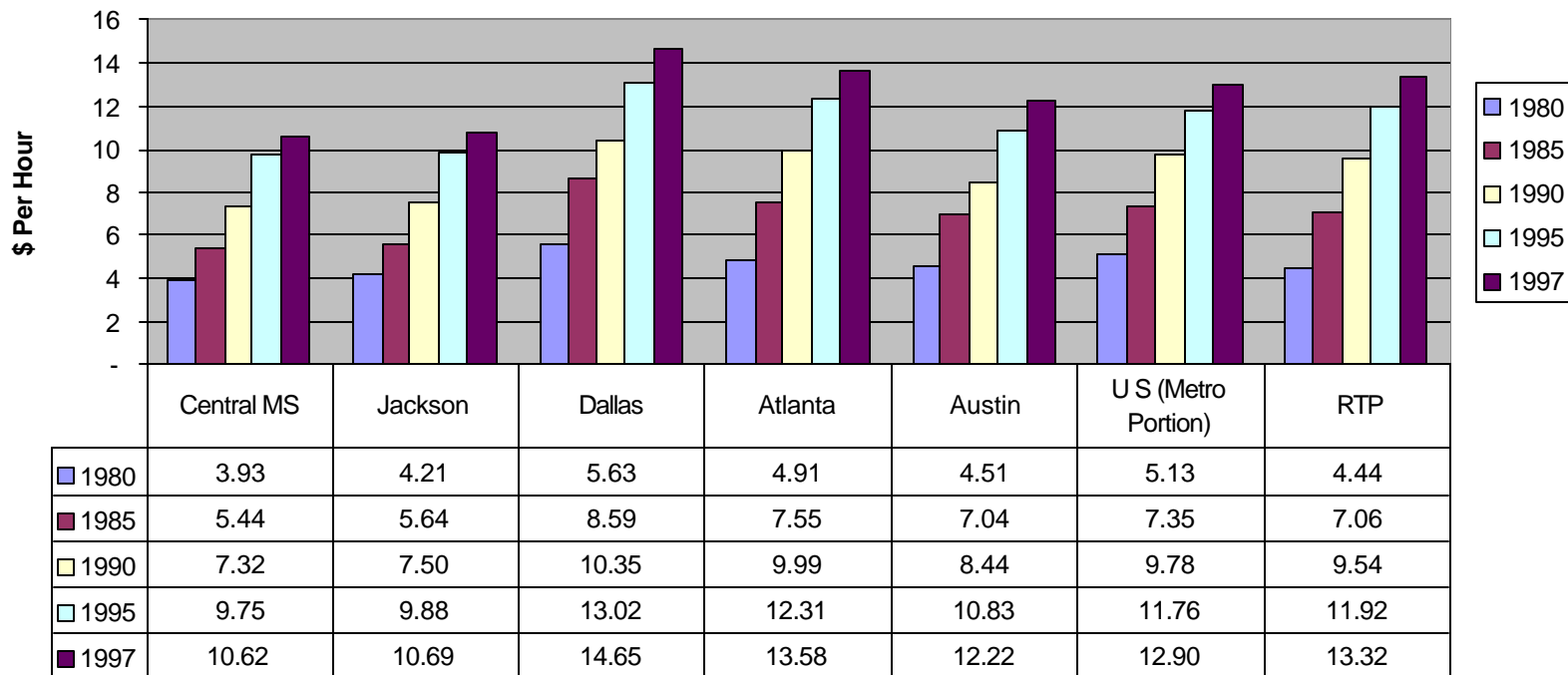
Observations Leading to Overall Finding



- **General and CIT-specific physical infrastructure not keeping pace with regional rivals and/or basic needs to support CIT cluster development (e.g. airports, roads, communications infrastructure)**
-

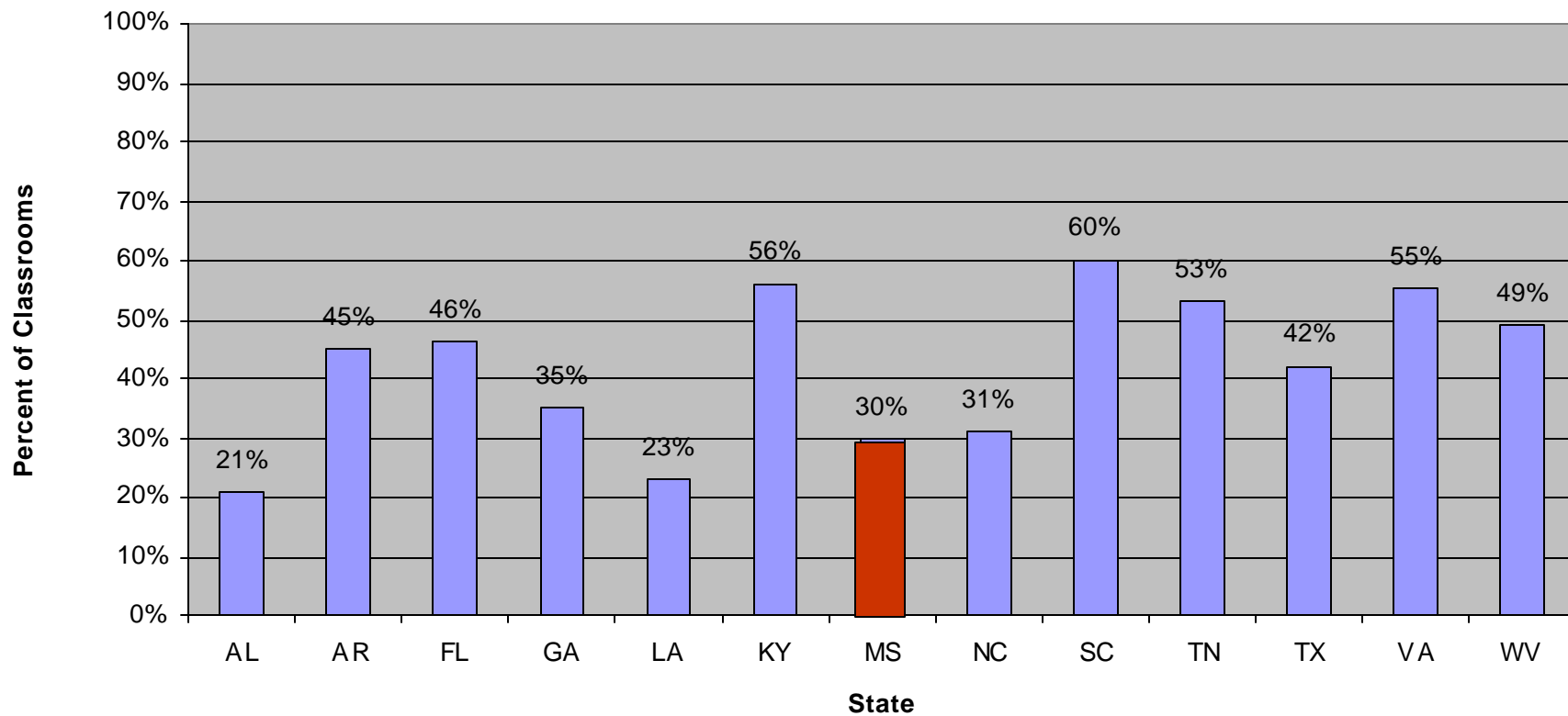
Wage Rates

Wage Per Hour (1980-1997)



Source: Bureau of Economic Analysis, Regional Accounts Data

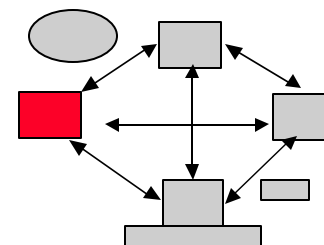
Classroom Internet Access



Source: Milken Exchange on Education Technology (1998), Cheryl Lemke, Executive Director.

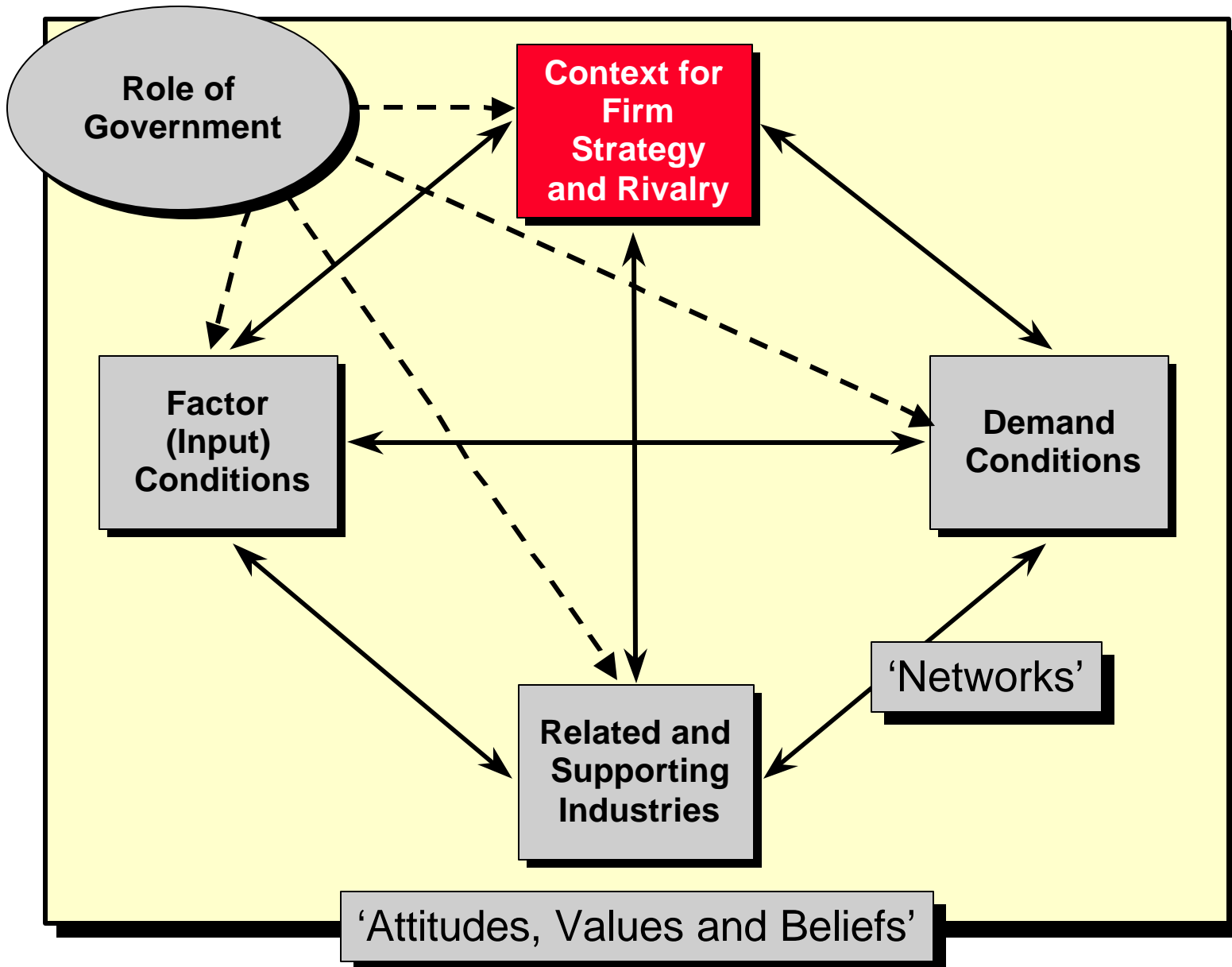
Factor (Input)

Conditions: Quotes

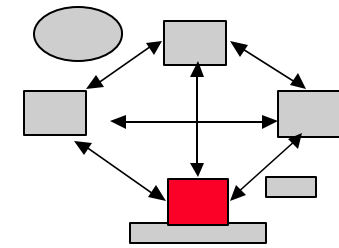


- **“People fail to realize that there are hundreds of high school students graduating each year. These students should be taught basic job skills as part of the education curriculum...”**
 - **“There are state-funded resources at the universities that businesses know about but do not seem to benefit from, and other resources that businesses do not even know exist...”**
 - **“There is lack of coordination between the universities, community colleges and other educational institutions...”**
-

Diamond Analysis: Firm Strategy and Rivalry



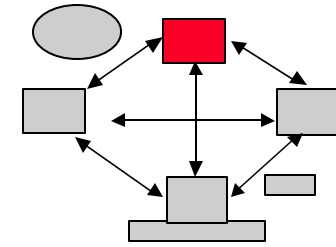
Diamond Analysis: Context for Firm Strategy and Rivalry



OVERALL FINDING:

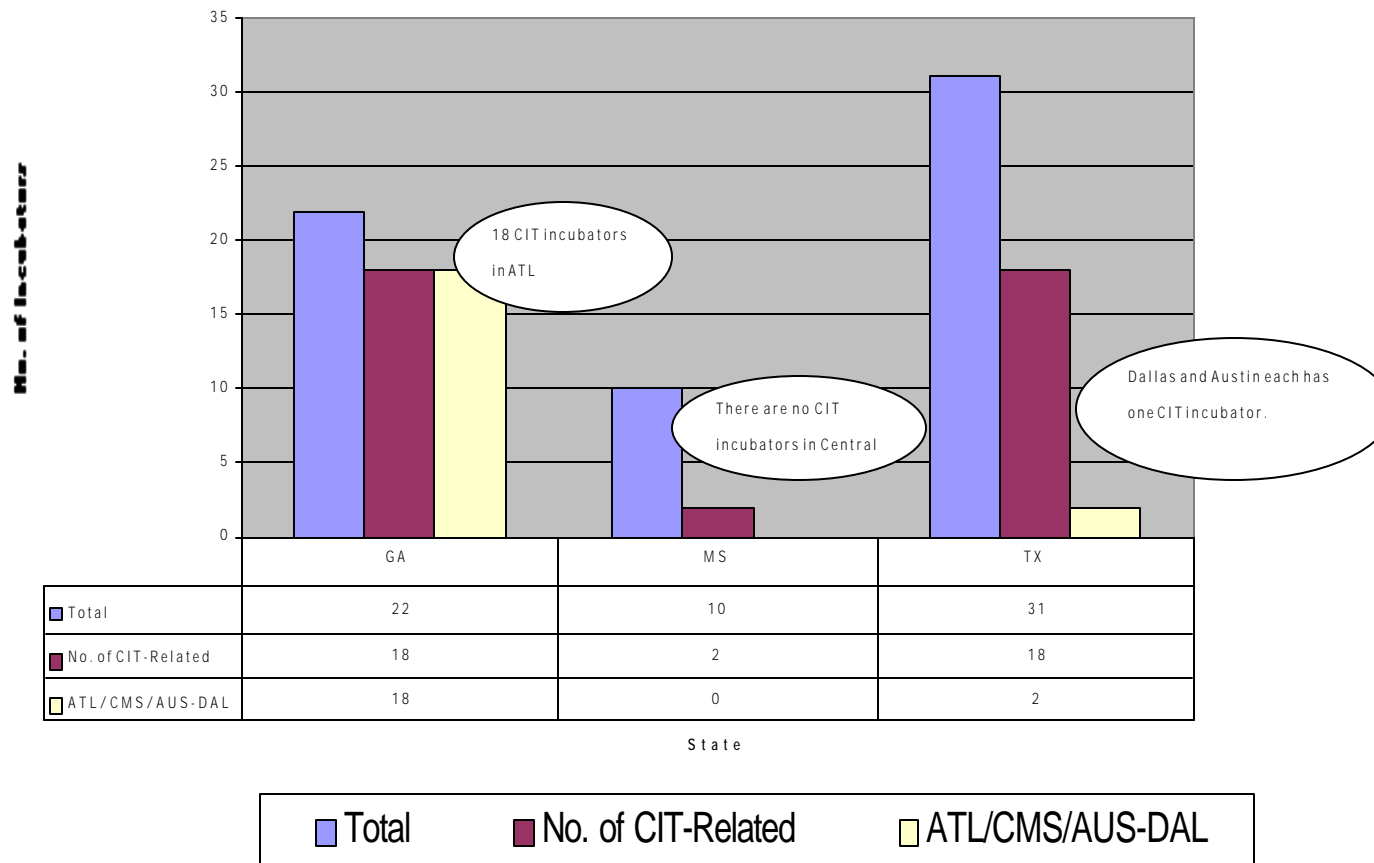
**Lack of knowledge of breadth of
CIT firms and thus limited
cooperation/competition**

Observations Leading to Overall Finding



- **Minimal recognition, cooperation and/or rivalry amongst CIT firms in MS – poor cooperation, dominated by 1 large firm perception, minimal rivalry leads to lack of competition for talent, compensation**
 - **Innovation new/business formation not aggressive enough – No Silicon Valley mentality on taking on big boys**
-

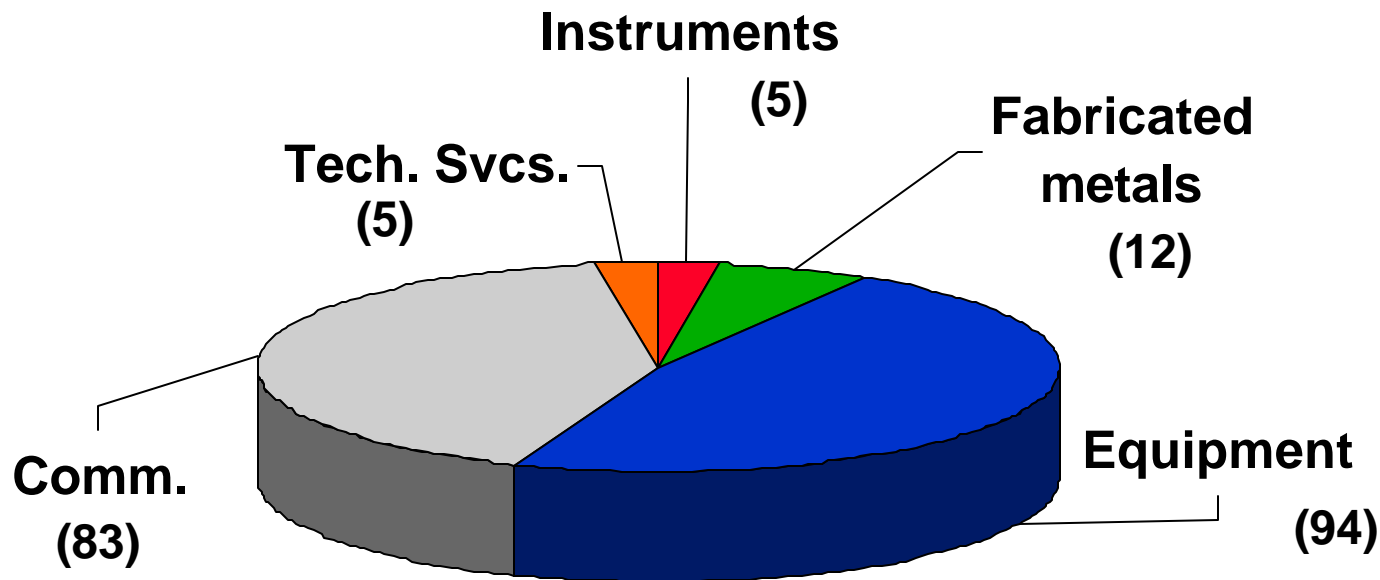
Incubators (GA, MS, TX)



CMS: Central MS

Sources: National Business Incubator Association @ www.nbia.org; Austin Technology Incubator; www.metroatlantachamber.com

WorldCom Myopia leads to many unknown CIT firms: Information Technology

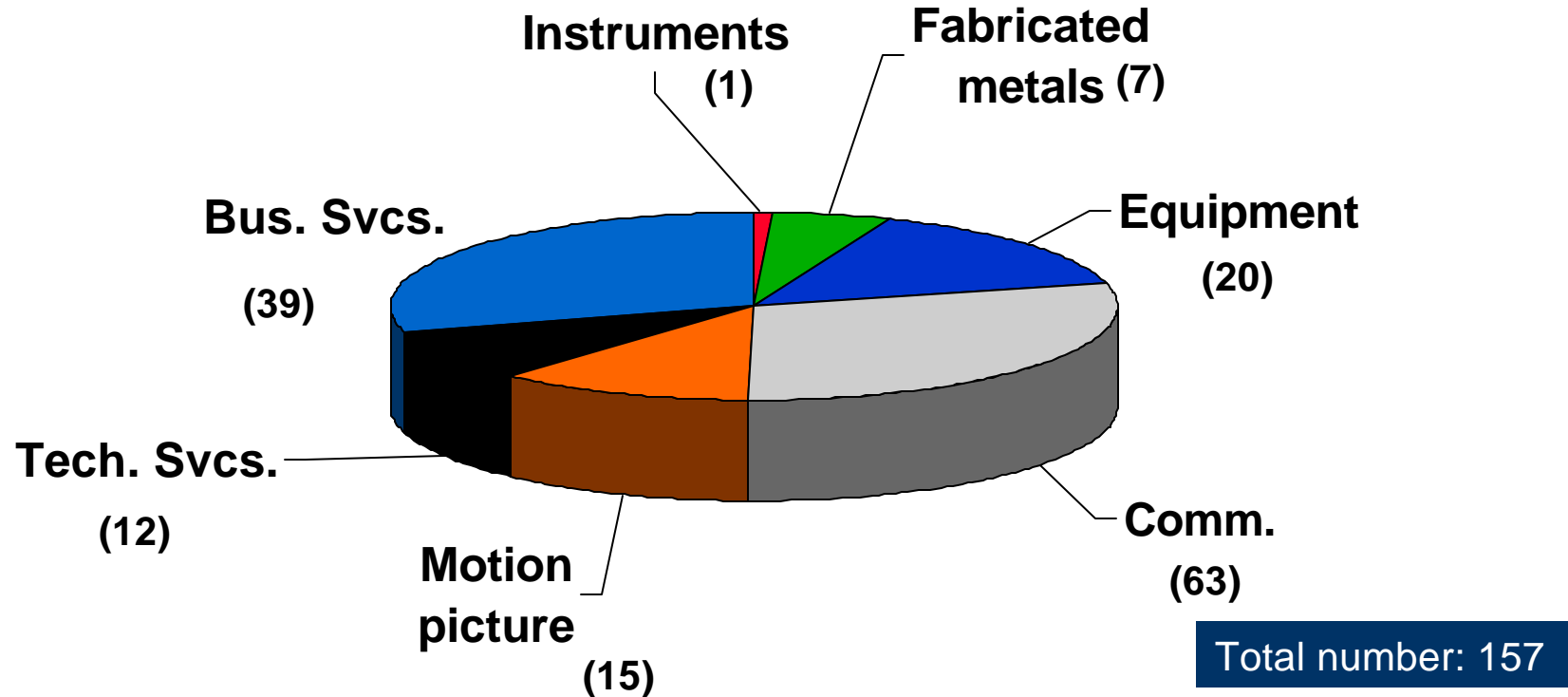


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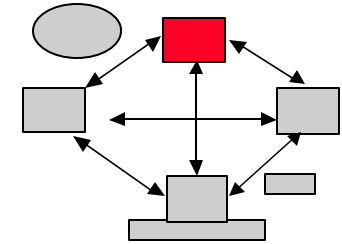
SOURCE: Cluster Mapping Project; MDECD.

WorldCom Myopia leads to many unknown CIT firms: Communications



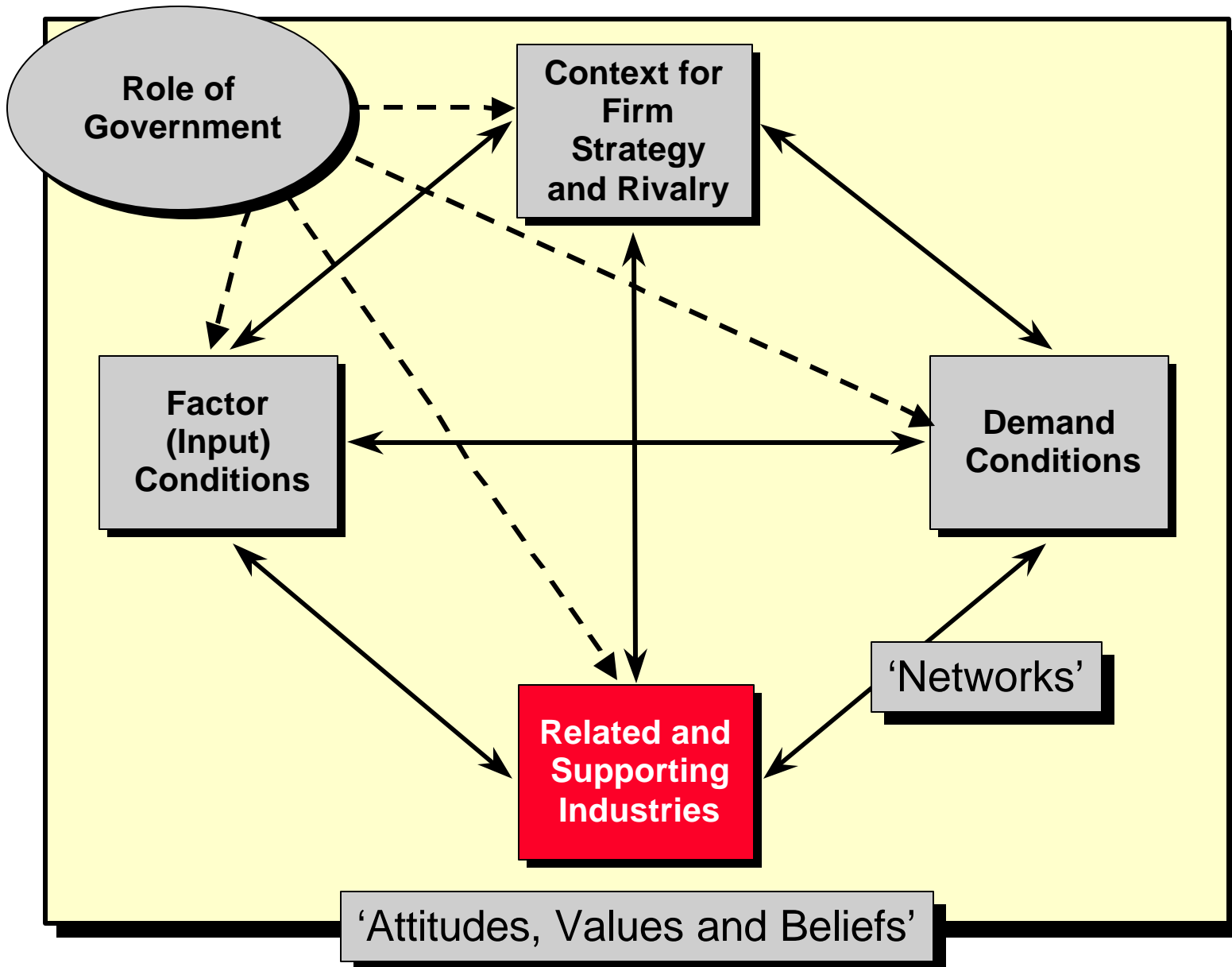
SOURCE: Cluster Mapping Project; MDECD.

Context for Firm Strategy and Rivalry: Quotes

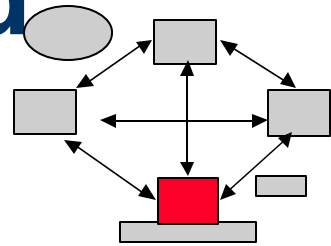


- **“Most companies seem to have been acting as competitors with no real indication of cooperation or “cluster-like” behavior...”**
 - **“Companies are not talking a lot to each other. Companies act as if they are on their own, except for natural supplier relationships...”**
-

Quality of the Microeconomic Business Environment: **Related and Supporting Industries**



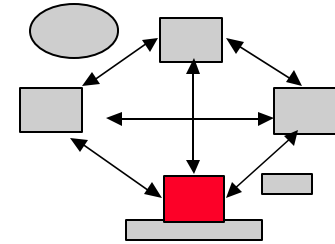
Diamond Analysis: Related and Supporting Industries



OVERALL FINDING:

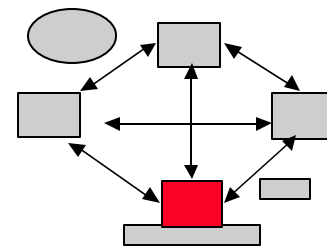
Lack of cluster mentality coupled with unfocused CIT efforts has led to a number of different CIT firms but no real sense of cluster and some missing pieces

Observations Leading to Overall Finding



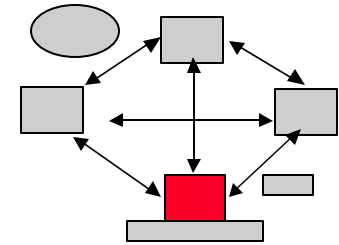
- Unproductive formal networks; no cluster-based association for CIT
 - Fragmented, overlapping economic development efforts
 - No clear vision, lack of cluster mentality
 - Missing pieces
 - Entrepreneurs' myopia
 - WorldCom presence blinding others to cluster needs and opportunities
-

Observations Leading to Overall Finding



- **Innovation/new business formation not aggressive enough**
 - **No means to harness talents/funding from recent refugees of large Mississippi CIT firms**
-

Missing Pieces



Information Technology

- Commercial physical research
- Computer storage devices
- Computer terminals
- Semiconductors
- Electronic components
- Electronic resistors
- Analytical instruments

Communications

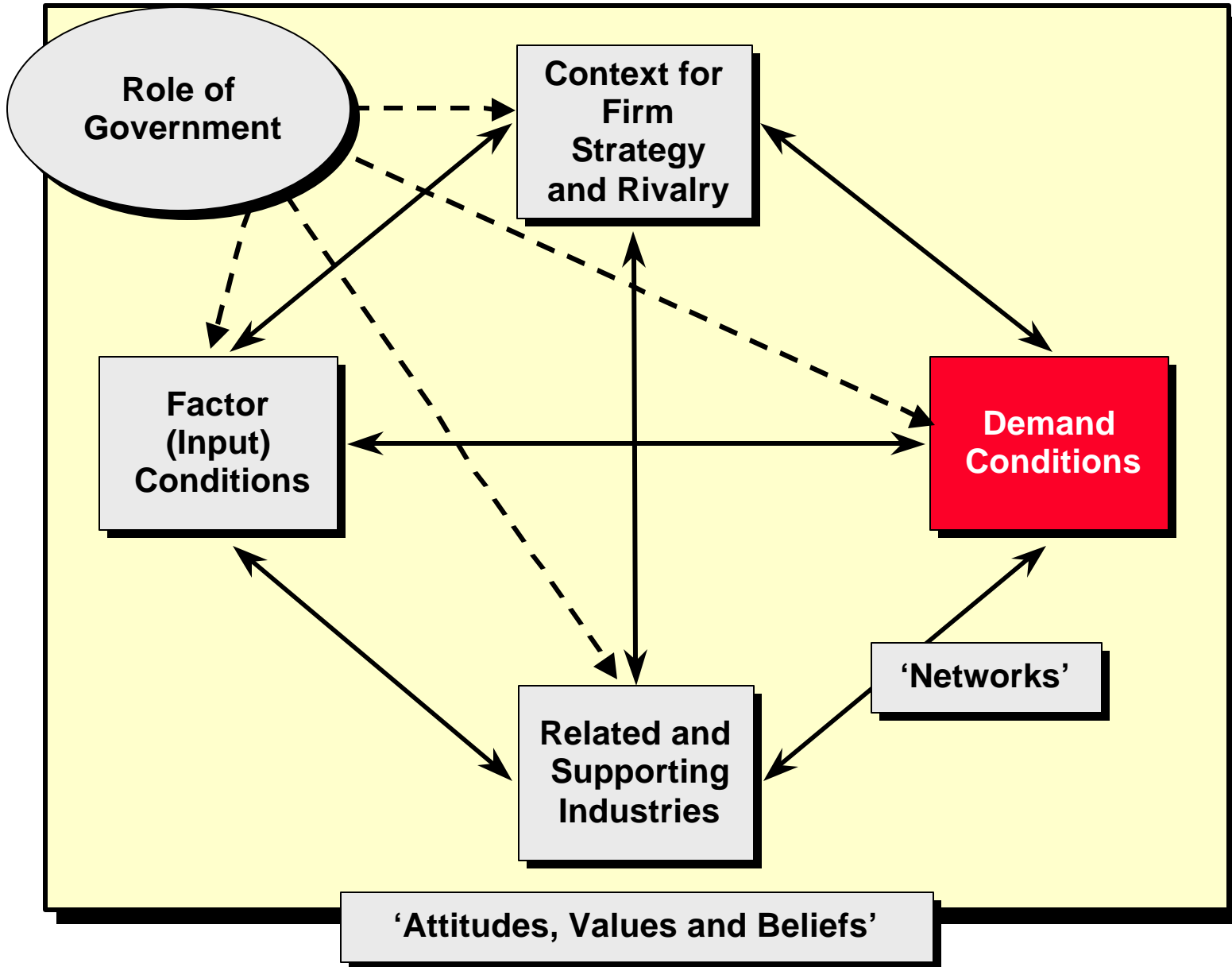
- Prepackaged Software
- Household audio/video equip.
- Nonferrous forgings
- Semiconductors & related devices
- Magnetic & optical recording media
- Electronic connectors
- Electrical industrial apparatus
- Electronic coils and transformers

Support Services

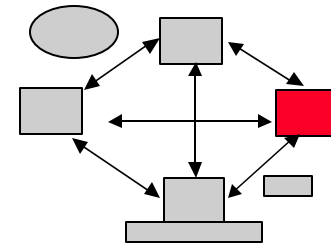
- Venture Capital
- Specialized Services
 - Legal
 - Accounting
 - Consulting
- CIT-specific associations

Missing pieces must be added to foster MS CIT Cluster

Quality of the Microeconomic Business Environment: **Demand Conditions**



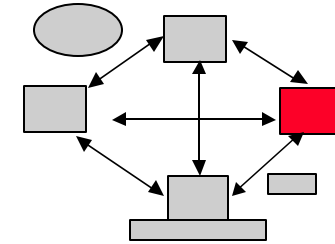
Diamond Analysis: Demand Conditions



OVERALL FINDING:

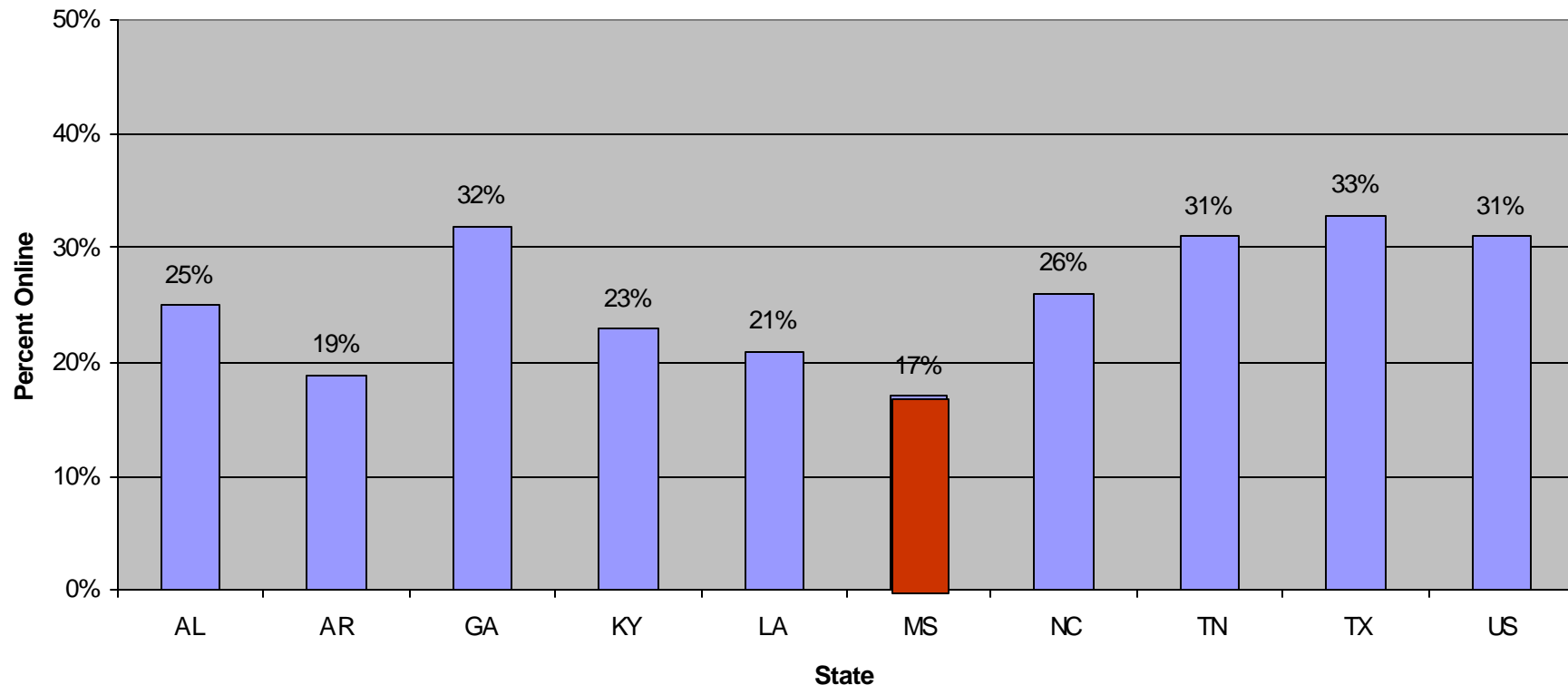
Mississippi lacks a sophisticated consumer market that pushes innovation of CIT products and services

Observations Leading to Overall Finding



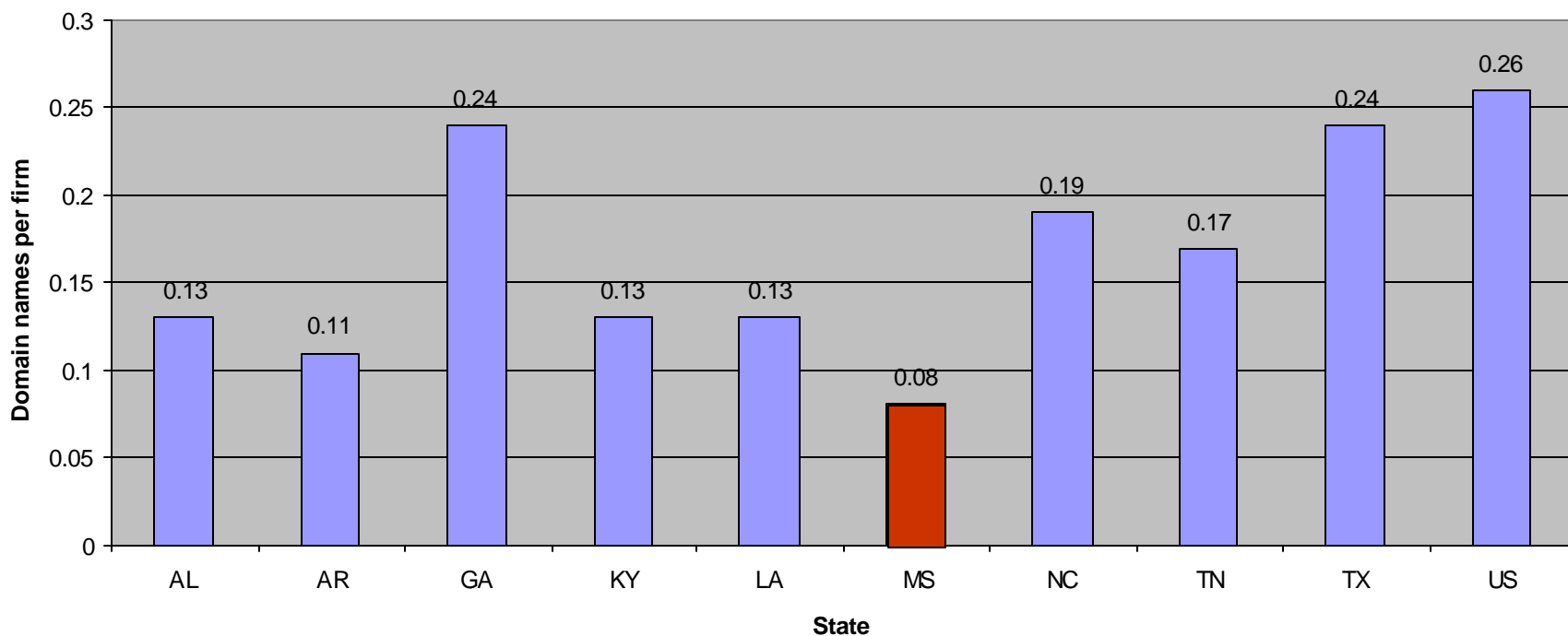
-
- **CIT adoption lower than in other regions**
 - **Limited use of Mississippi as beta site for CIT launches**
-

Internet Users



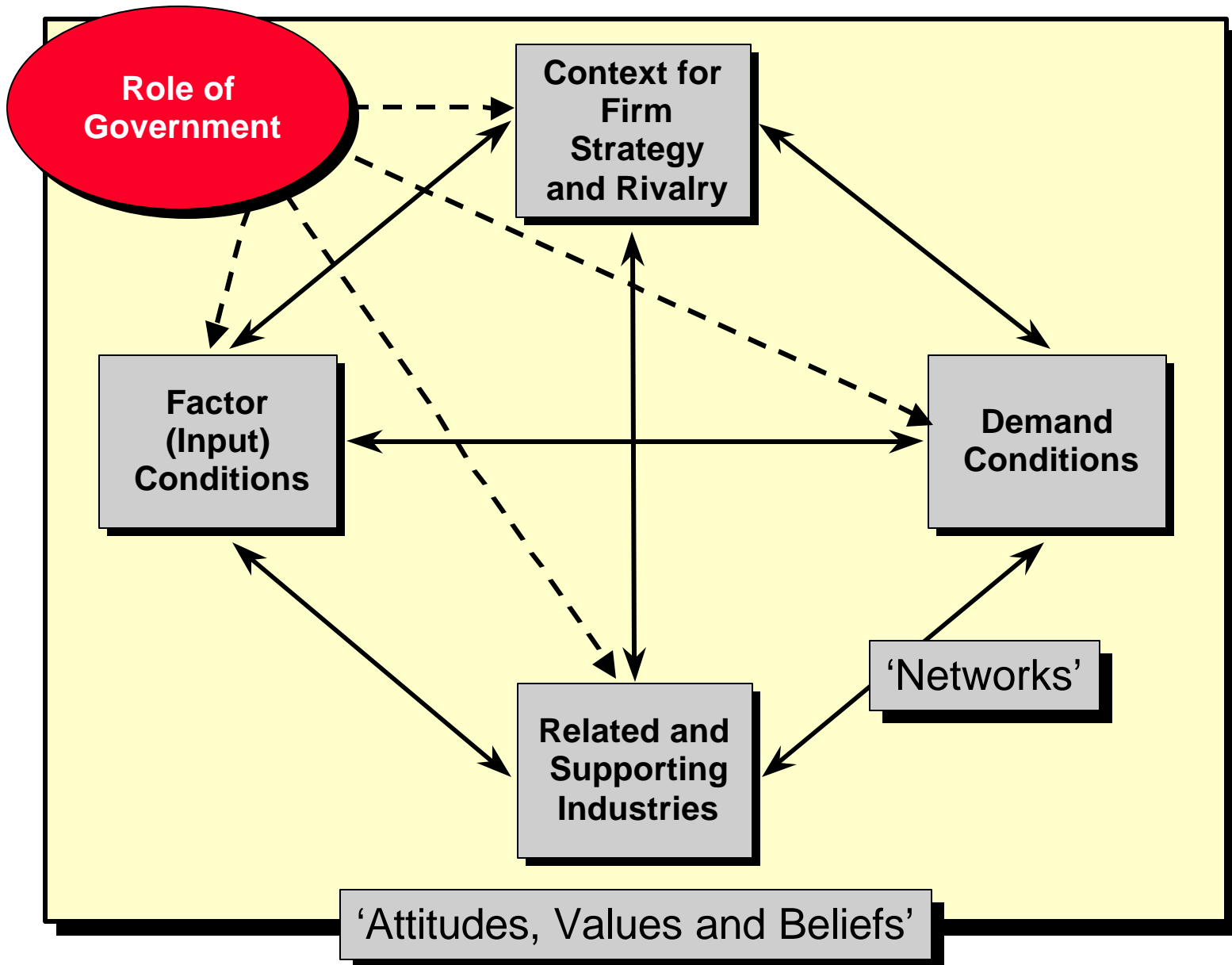
SOURCE: The State New Economy Index: Benchmarking Economic Transformation in the States. Progressive Policy Institute, Technology & New Economy Project. July, 1999 (www.neweconomyindex.org/states).

Internet Domain Names

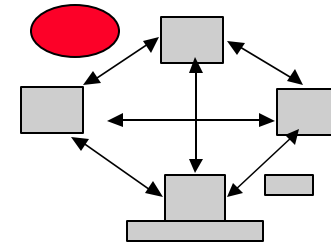


SOURCE: The State New Economy Index: Benchmarking Economic Transformation in the States. Progressive Policy Institute, Technology & New Economy Project. July, 1999 (www.neweconomyindex.org/states).

Diamond Analysis: **Role of Government**



Diamond Analysis: Role of Government

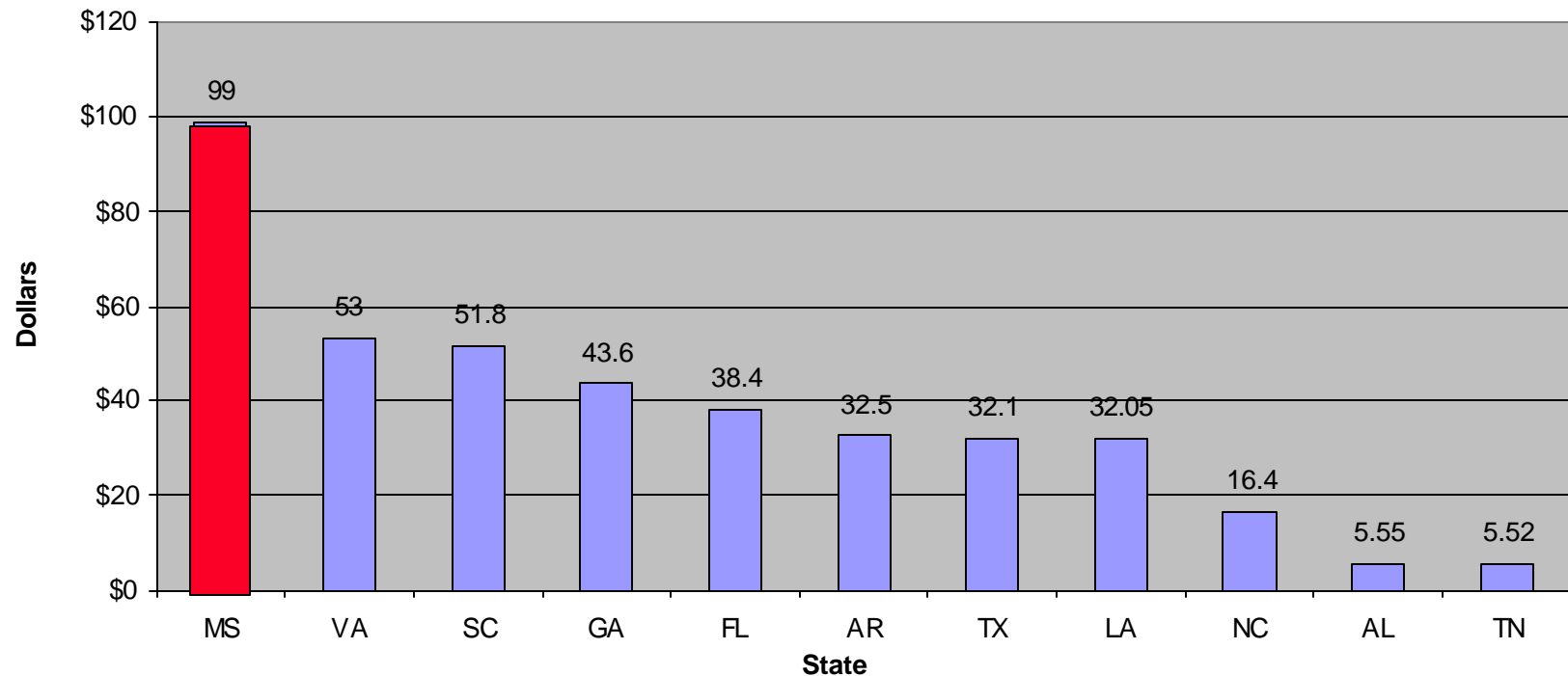


OVERALL FINDING:

**Minimal investment and focus on
CIT and/or entrepreneurial
development**

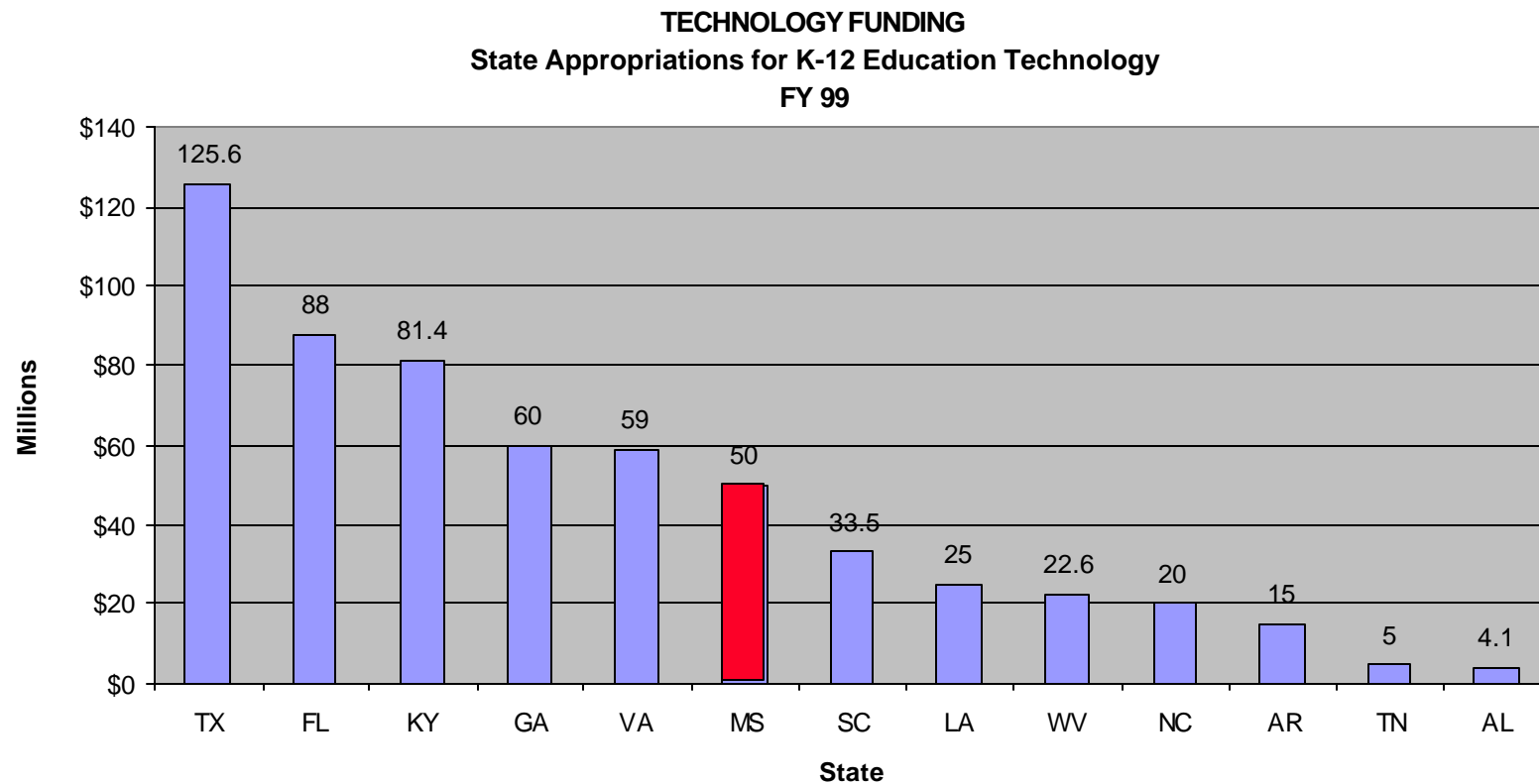
State Funding K-12

Per Capita FY 99
State Appropriations for
Students K-12



Source: Milken Exchange on Education Technology (1998), Cheryl Lemke, Executive Director.

Technology Funding

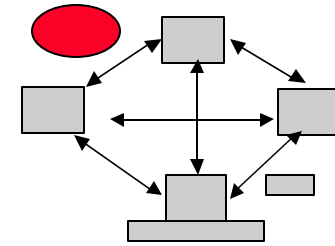


Source: Milken Exchange on Education Technology (1998), Cheryl Lemke, Executive Director.

Georgia Business Expansion Act of 1998 focused on holistic tax plan

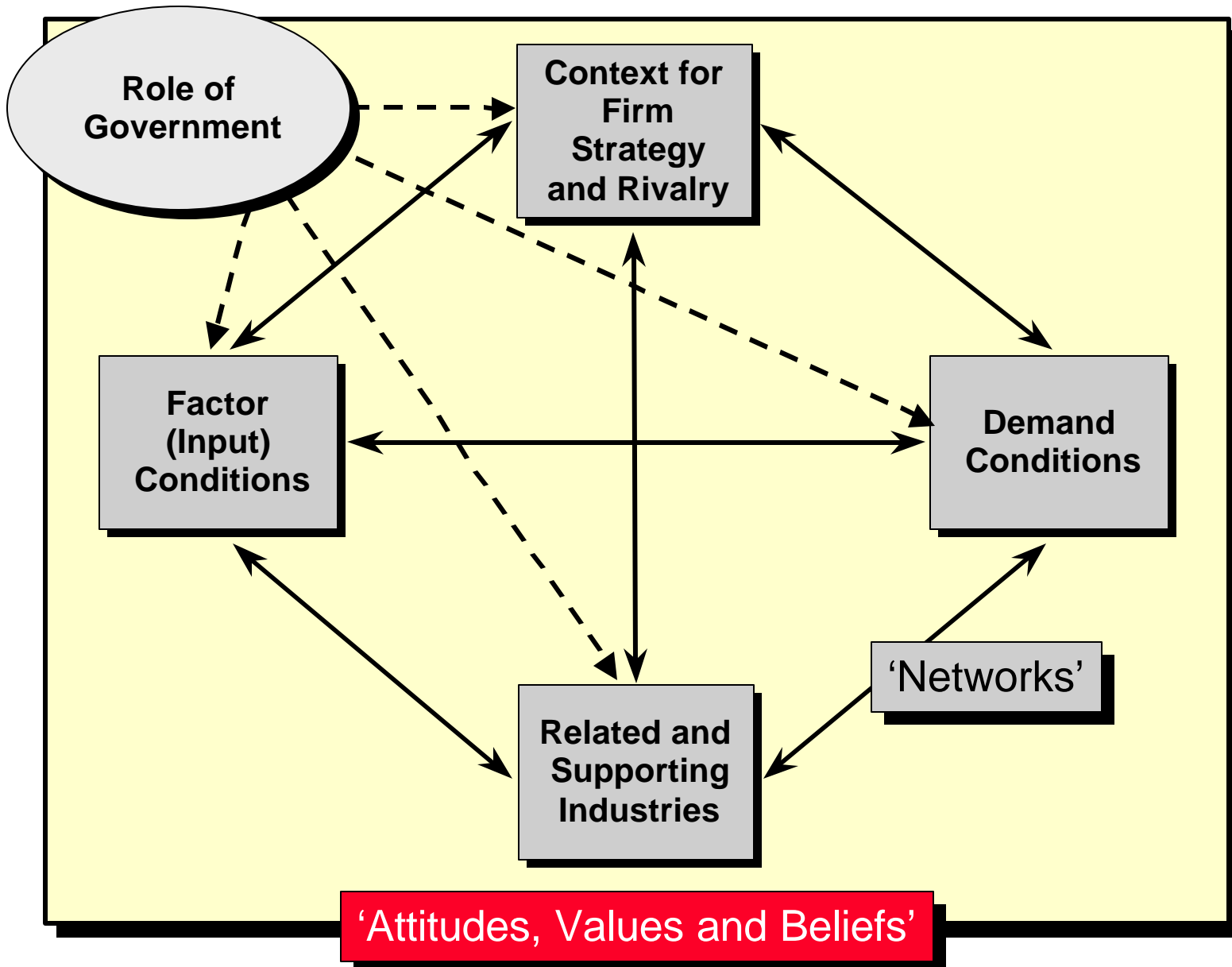
<i>Item</i>	<i>Description</i>
Job tax credit	\$500-\$2,500
Investment tax credit	1-8% with \$50K investment (over 10 years) 6-10% with \$5-20MM investment
Retraining tax credit	50% of costs up to \$500
Child care credit	50% of employee's direct cost
R&D tax credit	10% of research expense (telecom was one of several focus areas)
Small business growth companies	Provide tax credit for small firms (\$1.5MM tax liability) to rapidly grow

Role of Government: Quotes

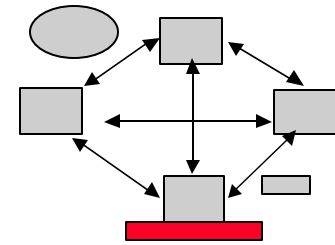


- **“Government can play an important role in compiling and disseminating information that would allow all cluster participants to better understand the business environment...”**
 - **“Back in 1995, there was a total of 13 connections to the Internet. Now there are over 2,000. Last year connections grew by 179% due to tremendous collaboration between state government and academic institutions working in partnership with the private sector...”**
-

Quality of the Microeconomic Business Environment: **Attitudes, Values and Beliefs**



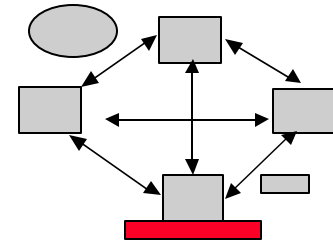
Diamond Analysis: Attitudes, Values, and Beliefs



OVERALL FINDING:

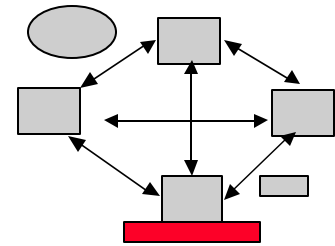
Internal and external image of
state needs upgrading—not
currently conducive to CIT
cluster development

Observations Leading to Overall Finding



- “Can’t do”/2nd class mindset
 - Media and history not painting an accurate picture
 - Resistance to change
 - Turf mentality
-

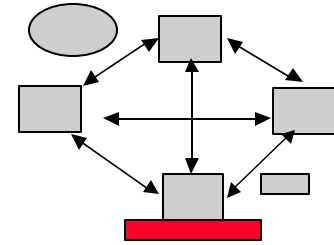
External View Not Complimentary



“Mississippi is a state that has suffered greatly, and still suffers, from its past. It is near the bottom of most national lists on topics ranging from economic growth to education. Years after the end of legal segregation, this state—with the highest proportion of blacks in the country—is still haunted by it, as it is by the disappearance of King Cotton from the fields.”

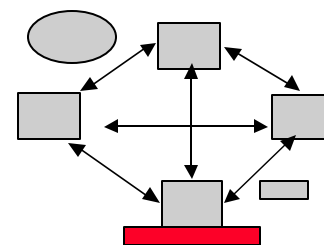
– The Economist, 1999

Attitudes, Values, Beliefs: Quotes



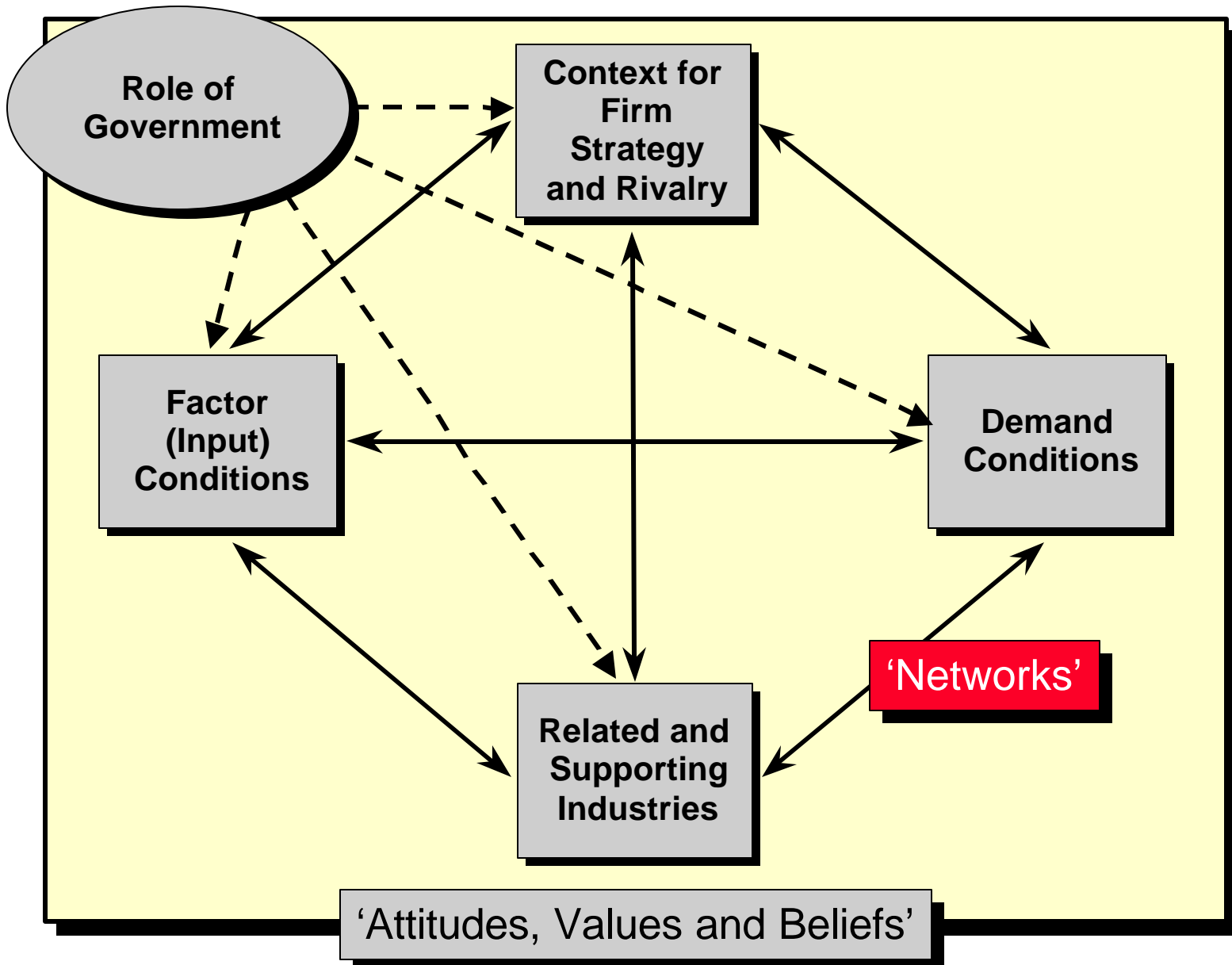
- “It has become much easier to get people to locate to Mississippi recently, the perception of racial bias has receded and the attractiveness of the lifestyle has increased...”
 - “The largest opportunity lies in connecting the ‘non-like’; getting academia to talk with business, and getting businesses from different areas to talk as well...”
 - “There is a history of pioneering work in the telecommunications field in Jackson. This sense of entrepreneurship, risk and adventure is present throughout the region...”
 - “The rural feel does not attract everyone, but for those who value it, it is a great advantage...”
-

Attitudes, Values, Beliefs: Quotes

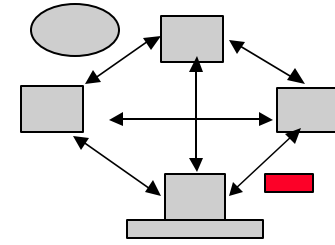


- **“The truth is that when people try living in Mississippi, they don’t want to leave. It has all the ingredients:
Tranquility;
The way people are;
Ethics, very important in the technological society we live in; and
Tremendous opportunities for growth in which you can participate...”**
 - **“This is the right time, they are ‘leaning the right way,’ the spirit is right, and all the pieces are in place...”**
-

Diamond Analysis: **Networks**



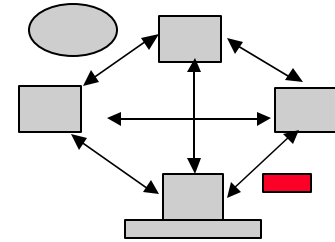
Diamond Analysis: Networks



OVERALL FINDING:

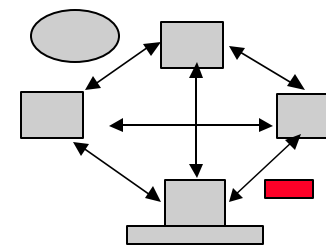
CIT cluster networks are either nonexistent or, if present, not currently fulfilling their productivity-enhancing potential

Observations Leading to Overall Finding



- **Weak linkages among universities and between universities and CIT firms in Mississippi**
 - **Lack of scale given number of universities and state population**
 - **Lack of incentives for cooperation**
 - **Little understanding of the role of networks in enhancing cluster competitiveness**
-

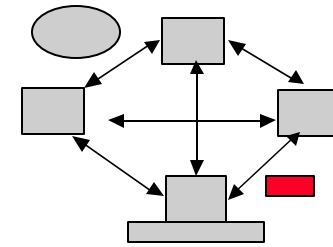
Mississippi Economic Development Partnerships



- Mississippi Partnership for Economic Development
- Mississippi Department of Economic and Community Development
- Special Task Force for Economic Development Planning
- Mississippi Technology, Inc.
- Mississippi Institute for Technology Development, Inc.
- Mississippi Manufacturing Extension Partnership
- Mississippi Enterprise for Technology, Inc.
- Mississippi.Future.Net
- Mississippi Research Consortium
- Mississippi Economic Council
- Public Education Forum of Mississippi
- Mississippi Education Partnership
- Mississippi State Workforce Development Council
- Mississippi Planning and Development Districts (10)
- Mississippi Workforce Investment Board (45)
- Mississippi Local Workforce Investment Boards (6)

SOURCE: Mississippi Institutions of Higher Learning, Bureau for Long Range Economic Planning, 1999.

Networks: Quotes



- “An issue thus far has been the coordination of all the interested parties and various government and non-government agencies and boards...”
- “The disunity of these groups is a serious limitation; they cannot hear the noise outside. In MS they have ‘less coordination and more organization.’ When they experience frustration within these organizations, the answer should not be to set up another institution...”
- “The CIT initiative should be a thread that binds different groups and organizations together...”

Summary of Findings

CIT cluster areas that require improvement:

- **Cluster-specific factor (input) conditions**
 - **Cooperation/linkages**
 - **Cluster awareness**
 - **Development of a common vision**
 - **Incentives to invest/expand/ start up**
-

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 - **Appendix of Supporting Data**
-

What is it going to take to enhance the Mississippi CIT cluster?

- An aggressive, **focused effort** that addresses the issues and builds a private sector-led consortium of government, academia, and private enterprise
 - **Leadership** that is focused on a common set of objectives (agenda) accountable for its results
 - A **systematic plan** that addresses the findings and builds capabilities and confidence with a step-like approach
 - Assigning **initial responsibilities** is a vital first step in the process
-

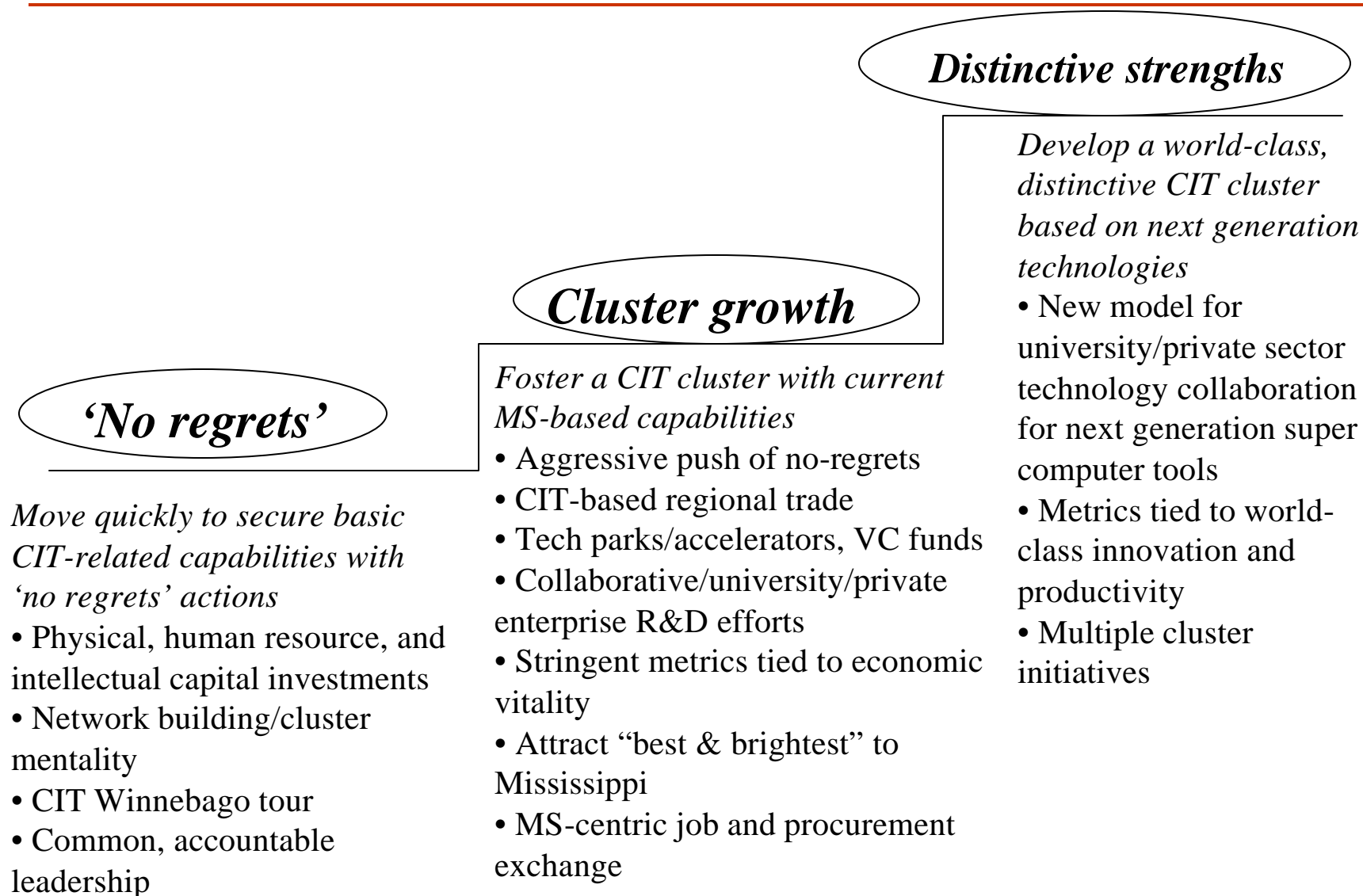
MS CIT Cluster requires a new leadership model

- **Visionary and action-oriented**
 - **With measurable objectives and accountability**
 - **Private sector-led with strong links to academia and government**
 - **Focused on a common set of objectives and results**
-

Agenda sets direction for journey

- **Not meant to be “the answer”**
 - **A roadmap for the journey**
 - **Some paths are more well developed than others**
 - **Will require additional research to identify options for some paths**
-

Step-like approach to enhancing capabilities and building confidence



Recommendation Summary

ACTIONS TO...	WILL REQUIRE MS TO...	WITH INITIATIVES IN THE FOLLOWING AREAS...	LEAD RESPONSIBILITY
<p>“Move quickly to build basic capabilities with ‘no regrets’ actions”</p>	<p>Invest aggressively in areas that will be necessary regardless of whether CIT is focus for economic development efforts</p>	<p>Align all CIT-related efforts; appoint cluster officer. Adopt state tax packages for R&D, workforce retraining, venture capital. Initiate state association, “Made in MS fair,” to highlight CIT firms Realign university incentives to promote cooperative CIT R&D.</p>	<p>State gov. State gov. MEC IHL</p>

Recommendation Summary

ACTIONS TO...	WILL REQUIRE MS TO...	WITH INITIATIVES IN THE FOLLOWING AREAS...	LEAD RESPONSIBILITY
<p>“Foster a CIT cluster with current Mississippi-based capabilities.”</p>	<p>Identify and promote current capabilities that link with value chains of other CIT clusters.</p>	<p>Push ‘no regrets’ actions even more aggressively.</p> <p>Launch CIT venture fund and business accelerator</p> <p>Create exchange programs with leading non-Mississippi universities, hold onto state’s “best and brightest”</p> <p>Establish metrics for economic vitality</p> <p>Develop regional trade relationships.</p>	<p>MTI</p> <p>Private sector</p> <p>Colleges and universities</p> <p>MTI</p> <p>CIT firms</p>

Recommendation Summary

ACTIONS TO...	WILL REQUIRE MS TO...	WITH INITIATIVES IN THE FOLLOWING AREAS...	LEAD RESPONSIBILITY
“Develop a world-class, distinctive CIT cluster based on next-generation technologies.”	Identify next-generation technologies that are natural extensions of current Mississippi CIT capabilities.	Build a place to integrate resources from all major universities. Import talent where necessary through funded sabbaticals.	State gov. Colleges and universities