



Enhancing Opportunity through Research

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Outline

- **UWM DIN to invest in research**
- **Why research?**
 - **Economic development**
 - **Student opportunity**
 - **Return on investment**
- **Why UWM?**
 - **Outstanding research outcomes and potential**
 - **Regional development impact has limited radius of influence**
- **Why more money?**
 - **Re-allocated 5% of GPR to seed investment in research**
 - **Internal possibilities exhausted**

Background

- **Academia**
 - Oxford, Göttingen, Brandenburg, UWM
- **Corporate R&D, industry**
 - Bell Labs, AT&T, Agere Microelectronics
- **National labs, government**
 - LBL, NREL, IHP (Germany), DoE, DoD
- **Startups**
 - Two from “soup to nuts”, six as sponsor

- **Enhance regional economic development & opportunity**
 - Strengthen existing regional companies
 - Turn research outcomes into economic competitiveness
 - Provide quality workforce with research training
- **Biennial total request of \$12.6M**
 - Assuming ½ of non-faculty FTE in 07/08
- **50 faculty FTE**
 - 20 for cluster hires
 - 15 for undergraduate research initiative
 - 15 for research growth initiative
- **Academic staff, graduate students, S&E**

Why Research?

Why Research?

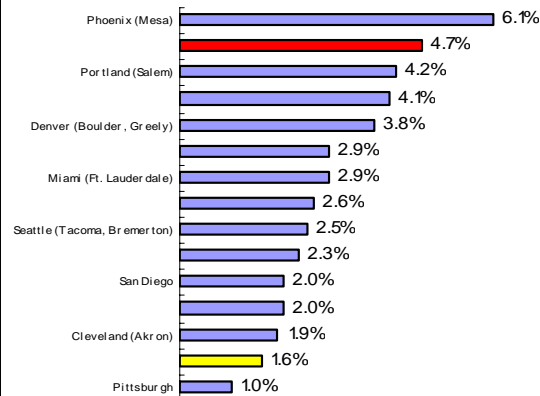
- **Research drives economic development & opportunity**
 - In the US, in Europe, in Asia
- **Example: Atlanta and Georgia Tech**
 - Impressive economic performance
- **Milwaukee and Atlanta in same benchmarking pool**
 - Periodic study of comparable metropolitan areas

Atlanta a Tiger?

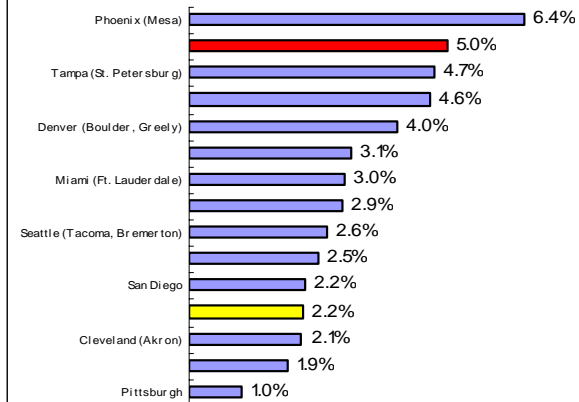
Atlanta

Milwaukee

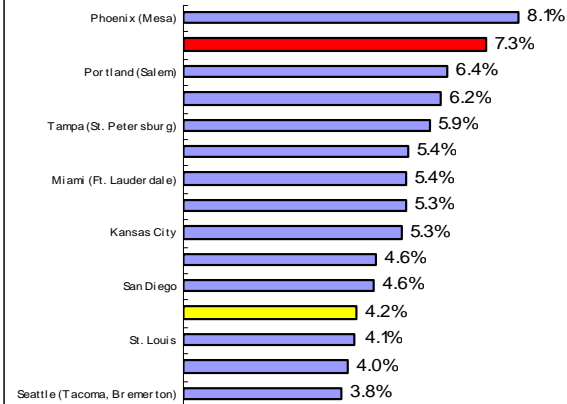
Job Growth



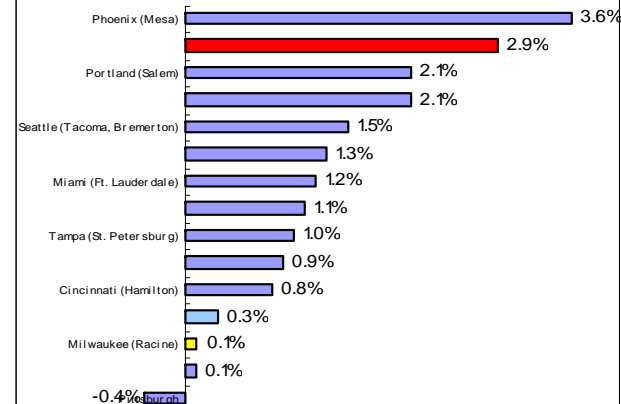
Quality Job Growth



GMP Growth



Population Growth

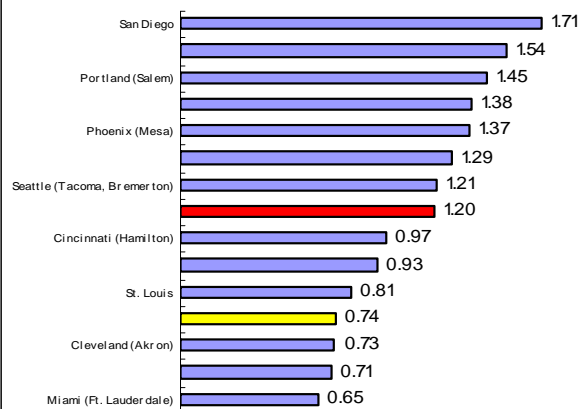


Atlanta a Tiger?

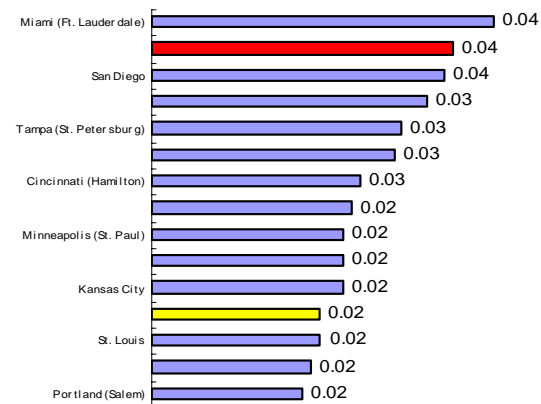
Atlanta

Milwaukee

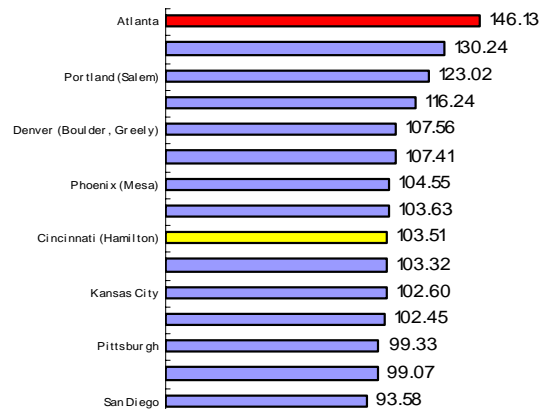
High Tech Gorillas



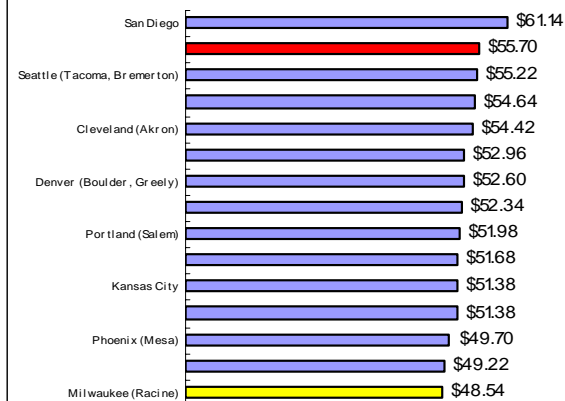
Startups



High Tech Gazelles

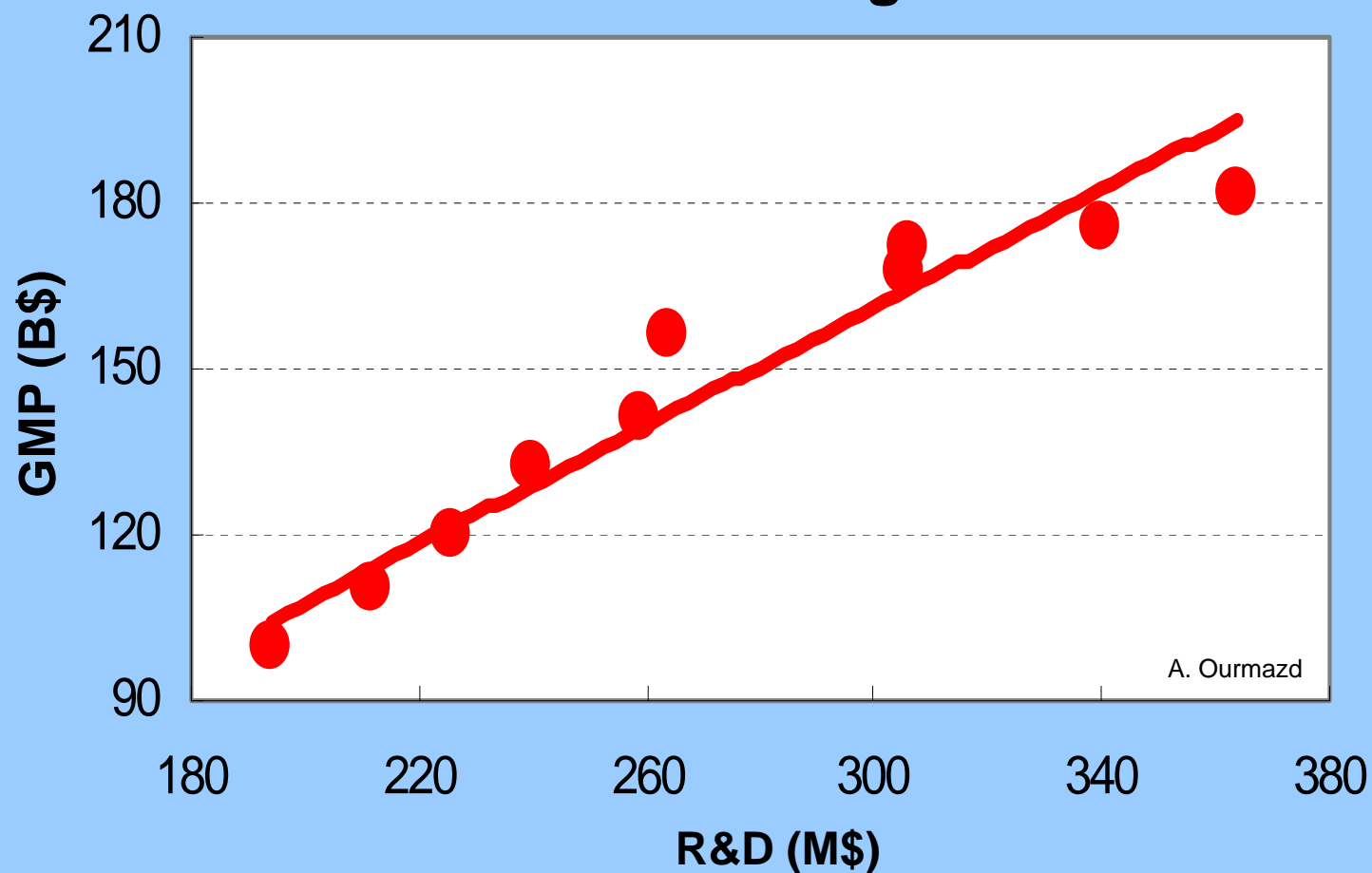


Productivity



Atlanta & Georgia Tech

Atlanta GMP vs Georgia Tech R&D



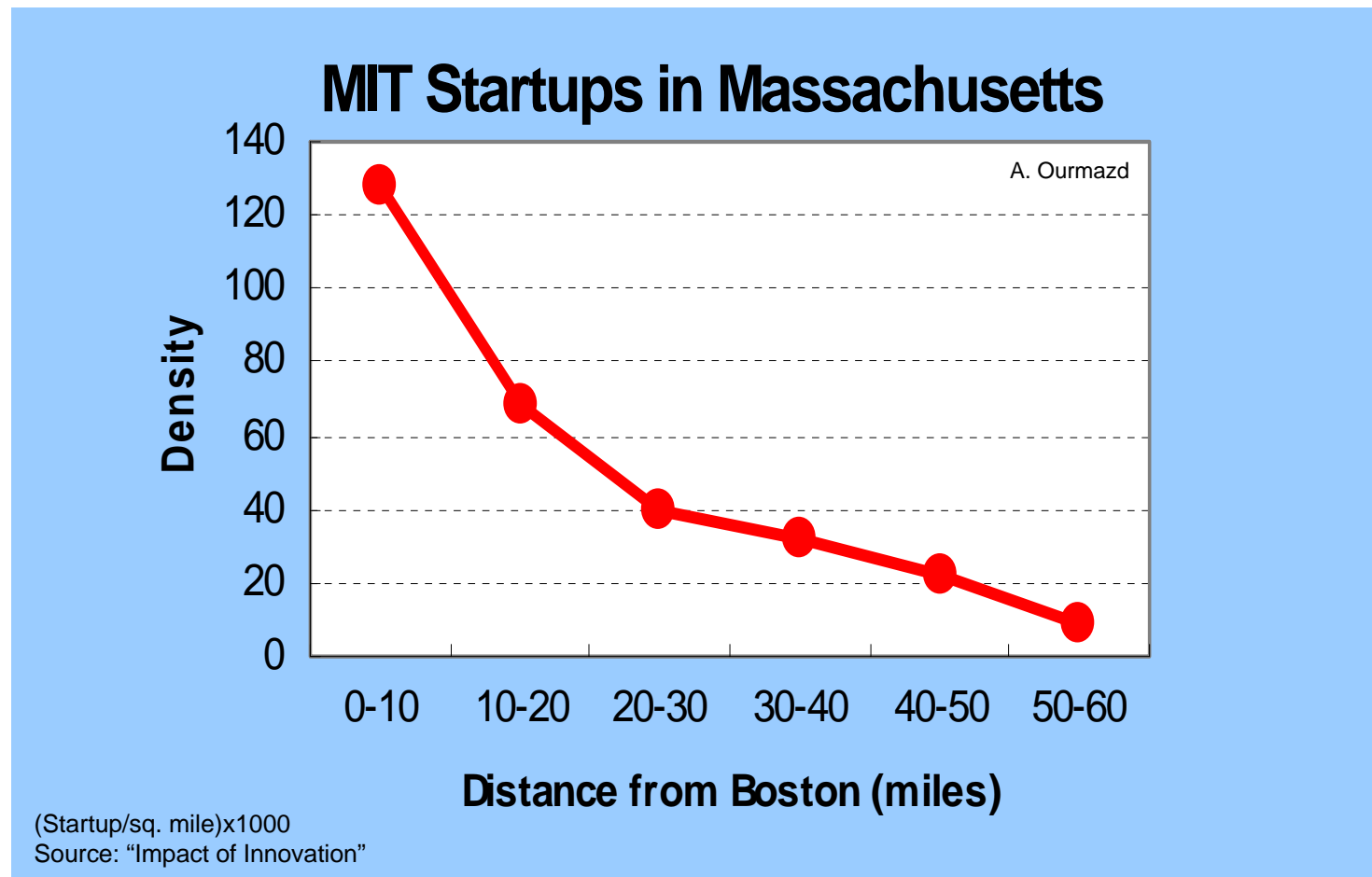
From Research to Enterprise



- **Georgia Tech Research Institute**
 - **Nonprofit applied research arm serving 200 companies**
- **Advanced Technology Development Center**
 - **Business incubator**
 - **Over 100 enterprises, incl. publicly traded companies**
- **Technology Development & Technology Ventures**
 - **Serves business, industry, economic development**
- **Universities a key to regional transformation**
 - **Know of no metropolitan area succeeding without it**

Why UWM?

“Radius of Influence”



Universities have limited radius of entrepreneurial influence

Why UWM?

- Universities have limited radius of influence
 - See, e.g., MIT
- The region in urgent need of transformation

The need for the Milwaukee region to compete [in the knowledge-based economy] is unprecedented. It is imperative that we capitalize on region's assets.

“Milwaukee 7”

- But why UWM?
 - Is UWM “research capable?”

The Research Growth Initiative



- **Re-allocated \$14M to seed-funding research**
 - **Project-based “investments” as opposed to “subsidies”**
 - **Unanimously supported by faculty senate**
- **Received 285 proposals from over 500 faculty in 7 weeks**
 - **Participation from over half faculty**
 - **Crossed all disciplinary boundaries**
- **Proposals reviewed by independent external experts**
 - **66 reviewers, 22 panelists**
 - **Many served on funding agency review boards**

Reviewer Institutions

Arts & Humanities

- **Princeton**
- Univ Kansas
- Univ Missouri

Life & Health Sciences

- **Albert Einstein College**
- **Cornell**
- Iowa State
- MCW
- PharMac LLC
- **Univ Michigan**
- Univ Pittsburg
- Univ Texas
- Univ Washington
- **Yale**

Natural, Mathematical, Engineering, & Physical Sciences

- Arizona State
- **Duke**
- **MIT**
- NREL
- Ohio State
- Rutgers
- **Univ Chicago**
- **Univ Minnesota**
- **UC – Berkeley**
- **UW – Madison**
- **Vanderbilt**

Social & Behavioral Sciences

- Case Western Reserve
- Cleveland State
- Indiana University
- **Stanford**
- **UC – Berkeley**
- UC – Riverside
- Univ North Carolina
- Univ Pittsburg
- **Vanderbilt**
- **Yale**

The Research Growth Initiative



- **Proposals ranked according to Quality, Risk, Reward**
 - **Each defined different dimension**
- **Top quality: “Alpha” in top 10% of its field nationally**
 - **Based on typical proposals to national funding agencies**
- **1/4 of proposals ranked “alpha”, 14% on “Must Fund List”**
 - **“alpha” = top 10% of their field nationally**
 - **“Must Fund: If you don’t, then we will”**

Why UWM?



“My impression before I did the review was that they were a 2nd rate School, not really doing research. I was totally amazed at the quality of the work I was asked to review.”

*Max Lagally
Professor of Nanotechnology, UW-Madison
Milwaukee Journal Sentinel, May 7, 2006*

Research Excellence: Recent Examples



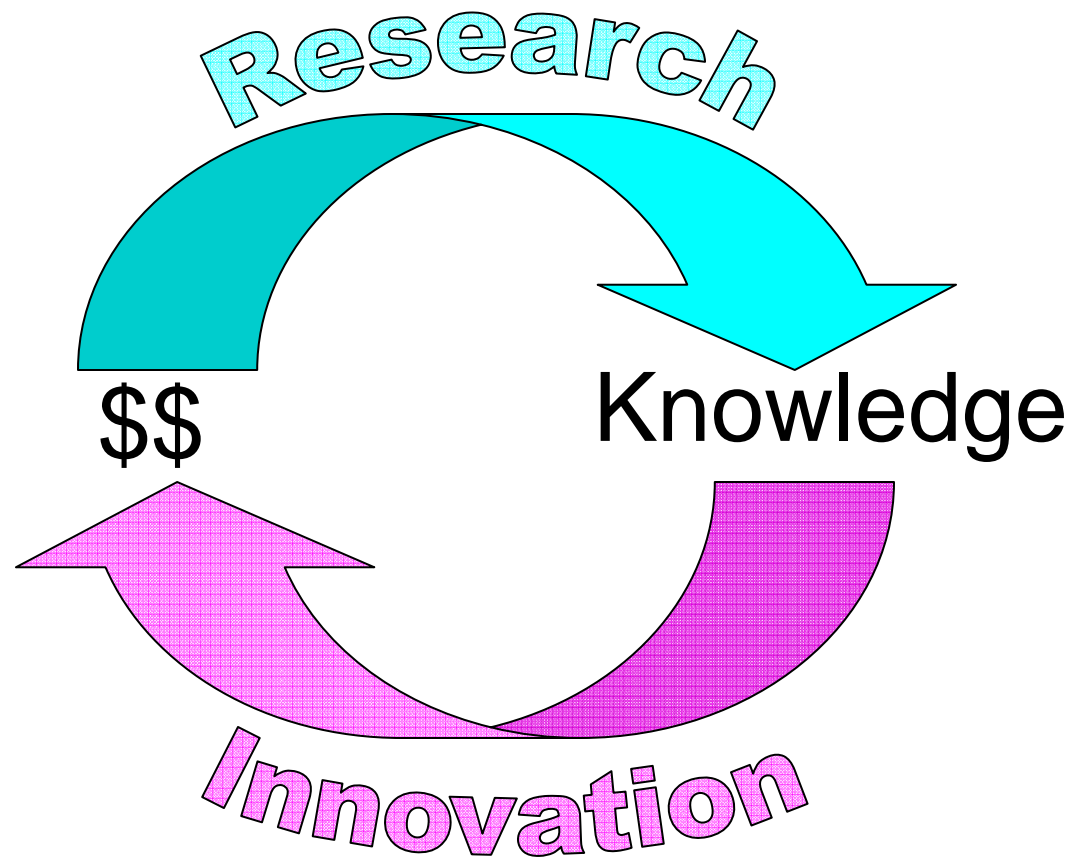
- **Drug licensed to BMS; Market potential \$1B-\$3B**
- **Drug discovered for chronic Chlamydia; No previous cure**
- **Mechanisms of memory loss; Alzheimer's**
- **Aquaculture technologies; 24% of US protein supply**
- **Heterogeneous catalysis; Fuel refinement efficiency**
- **Probabilistic weather models; Weather derivatives**

Why More Money?

Why More Money?

- **Substantial upside potential in extramural funding**
 - Internal assessment, external review, benchmarks
- **Cannot seed-fund all the RGI alpha projects**
 - Excellent proposals could not be supported
- **Every dollar of research investment brings back three**
 - US benchmark
- **Exhausted internal means**
 - Meager internal resources already re-allocated
- **DIN investments would bring substantial returns**

The Innovation Loop



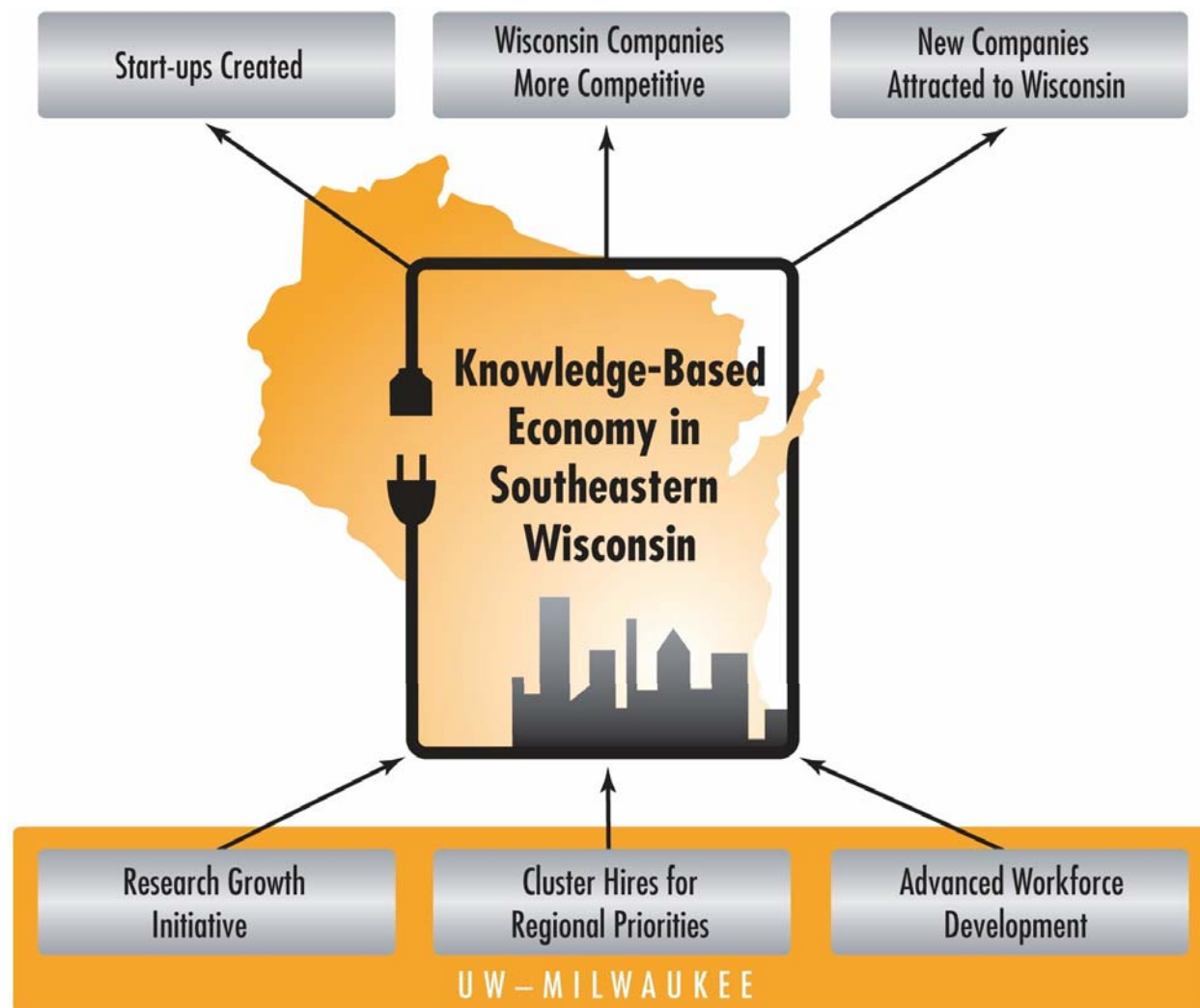
Driving Innovation

- **Leverage RGI to enhance research excellence**
 - Open competitive process for best use of limited resources
 - Seed-funding investments rather than permanent subsidies
 - DIN request
- **Cluster hires to enhance regional strengths**
 - Work closely with regional partners
 - Example: WIBHT (GE, Aurora, MCW, BTA)
 - DIN request
- **Provide quality workforce with research training**
 - Companies hire those that “can find out”
 - DIN request
- **Establish mechanisms for entrepreneurial innovation**

Conclusions

- **Research is root of economic competitiveness**
 - 462 new companies in FY04 based on academic discoveries
- **Enhanced research excellence *enhances* student access**
 - “Access” means access to quality education, quality jobs
- **UWM has essential role to play in region**
 - Research universities have limited reach
 - 75% of companies in state/province of academic institution
- **Excellent research capability, untapped potential**
 - Starved of resources
- **DIN impact substantially exceeds requested investment**
 - On UWM and region

We Need Your Support



**UW - MILWAUKEE
 2007-09 BIENNIAL BUDGET PROPOSAL
 FISCAL SUMMARY (TOTAL REQUEST)**

NO FTE IN 2007-08

EXPENDITURE ITEMS

	2007-08	FTE	2008-09	FTE
Unclassified salaries				
Faculty - Cluster Hires			2,000,000	20.00
Faculty - UG Research Growth			1,200,000	15.00
Faculty - Research Growth Initiative			1,200,000	15.00
Academic Staff			500,000	10.00
Graduate Students			1,250,000	50.00
Student Help			300,000	
Fringe Benefits			2,254,000	
Supplies & Services	1,296,000		1,296,000	
ANNUAL TOTALS	1,296,000		10,000,000	110.00
BIENNIAL TOTAL	11,296,000			