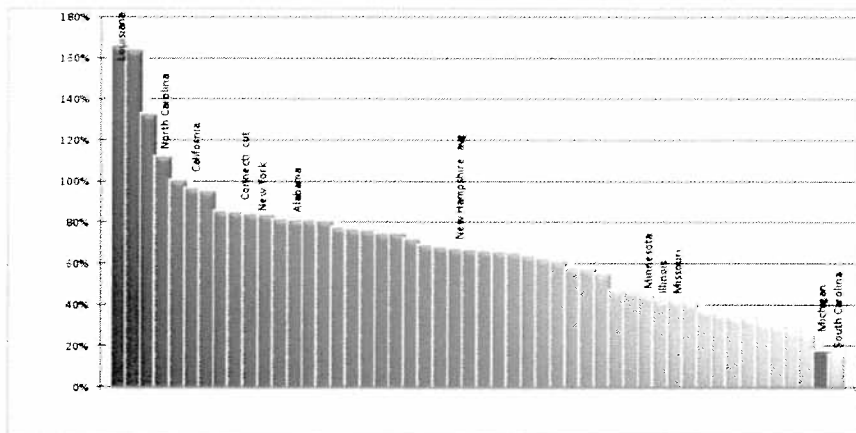


## 12-Year Increases in Higher Education Budgets by State (FY 1997 to FY 2009)



•National Average: 67% or 5.6% per year; Michigan: 17% or 1.4% per year  
 •In FY 1997 NC & MI had basically same appropriation. Since then, NC has invested an additional \$2.0 B into Higher Ed. MI invested an additional \$300 M.

## Research Spending

- Total reaches \$876M ↑ 6.4%
- Federal spending at \$611M ↑ 2.7%  
*Med. School Funding Rank Rises to 7th*
- Industry Spending at \$43M ↑ 11%  
*All Time High*

- ✓ FY'09: Significant increases likely
- ✓ Research portfolio = stability in turbulent times
- ✓ Major opportunities: energy and sustainability

## Strengthening Industry Partnerships

- 13 U-M spin-offs in FY08  
*(among highest in US)*
- Licensing income: \$25M (all time high)
- Industry research reaches \$45M (all time high)
- U-M leads statewide university effort to jump start economy

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

– Funding from C. S. Mott Foundation and the New Economy Initiative

 UNIVERSITY OF MICHIGAN  
Office of the Vice President for Research

## Business Engagement Center Opens




- Gateway for industry
- Collaboration between OVPR and Development
- Presence sends strong message


 UNIVERSITY OF MICHIGAN  
Office of the Vice President for Research

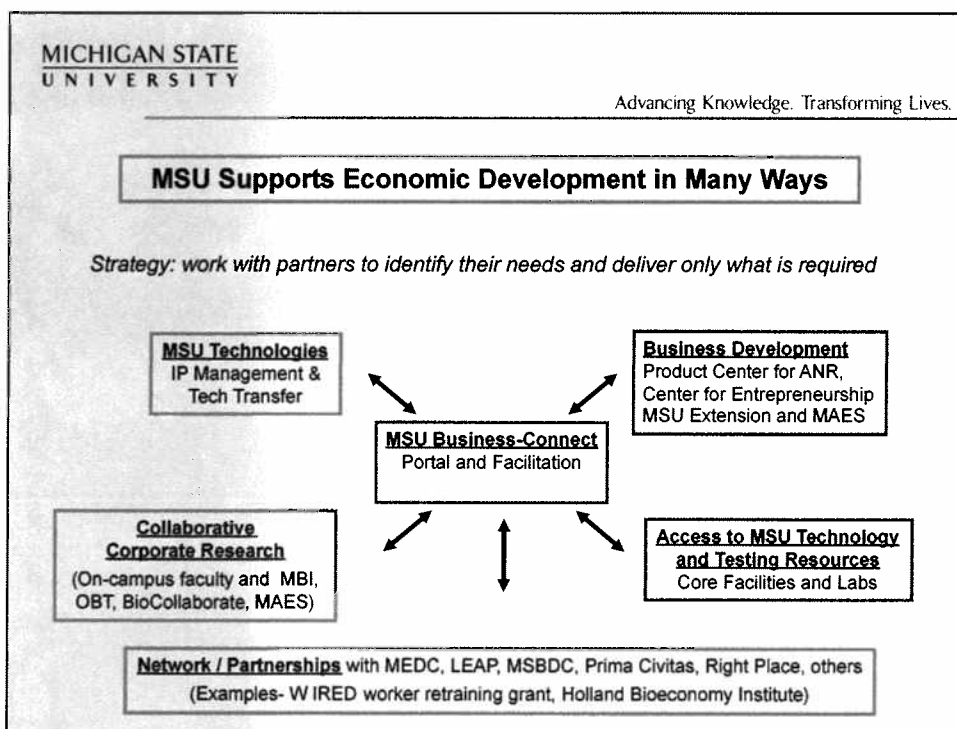
# ENERGY

## Building on Strengths, Positioning for New Opportunities

- Opportunities abound
  - Battery Energy Center of Excellence
  - Plug-in hybrid electric vehicles (PHEV)
  - Clean Energy Prize
- Clear priority of state and federal government
- Ideal for partnering with all sectors
- Recruiting faculty to fill gaps
- U-M helping to set national agenda




 UNIVERSITY OF MICHIGAN  
 Office of the Vice President for Research



**Recent Research Developments at MSU**

**Significant Federal Grant Activity**

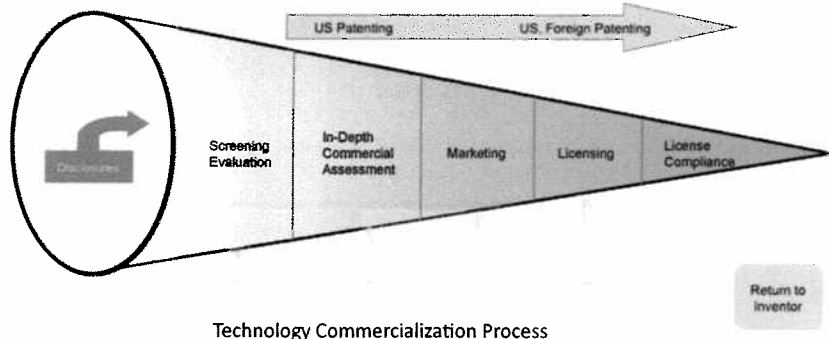
- > Facility for Rare Isotope Beams (F-RIB) \$550M from DOE  
(\$1B in economic activity, 400 jobs)
- > Great Lakes Bioenergy Research Center (GLBRC) \$135 M from DOE
- > National Children's Health Center \$75M from NIH
- > *Campus-wide mobilization to compete for ARRA fund grants* ?

**Corporate Partnerships**

- > Mascoma (MSU and MTU) and new MSU Forestry Biofuel Collaboration Center \$26M from DOE  
\$1.4 M from DOE via MEDC
- > Niowave manufacturing (DOD and DHS interests) F-RIB equipment ( w/ broader
- > IBM Global Delivery Center (100 immediate and up to 1500 MI jobs)

**Goal: Create Value from Research through Market**

- Identify, protect, market and license University inventions and copyrighted works
- Use Data / information driven decision making → early pre-protection market assessment
- Establish an efficient and effective process for corporate partners



Technology Commercialization Process

142 technologies with commercial potential currently displayed on MSU-T website  
<http://technologies.msu.edu/listings.pl>

**MICHIGAN STATE UNIVERSITY**  
Advancing Knowledge. Transforming Lives.

**PRODUCT CENTER**  
The Product Center *supports existing businesses and new entrepreneurs* in the development and marketing of new products and services related to *agriculture, food, natural resources and the bioeconomy*

- > A **network** of resources to assist in the creation of new ventures
- > A **bridge** between entrepreneurs and support services
  - Business & marketing resources
  - Technical & scientific resources
  - MSU & external partner resources
  - Blend of external partnering & internal expertise

| SERVICES PROVIDED   | SINCE 2004      |
|---|-----------------|
| Various educational programs  | 2,898           |
| One-on-one client counseling  | 11,509 sessions |
| Assisted with business concept development  | 1,094 clients   |
| Assisted with venture start-up (earliest stage of bus. dev.)                                      | 754 clients     |
| Provided specialized services including product testing, market analysis, and feasibility studies | 538 clients     |

**127 known new businesses and business expansions:**

- Increased annual sales \$193.6 M (cumulative 1st year sales only)
- Increased investment: \$201.3 M
- Jobs created: 606
- Jobs retained: 348

**MICHIGAN STATE UNIVERSITY**  
Advancing Knowledge. Transforming Lives.

**Access to MSU Technology and Testing Resources**

Goal: *Where capacity exists, make these resources available to the private sector on a fee-for-service basis*

**Research Technology Support Facility (RTSF)**

- > Maintains state-of-the-art core facilities in:
  - Genomics, Proteomics, Mass Spectrometry, Molecular Structure, Flow Cytometry, Imaging and Bioinformatics
    - e.g., On-going product testing support for Emergent Biosolutions and Neogen
- > Developed a unique **In Vivo Pharmacology Facility** for early stage drug safety and efficacy studies

**Engineering Testing Facilities**

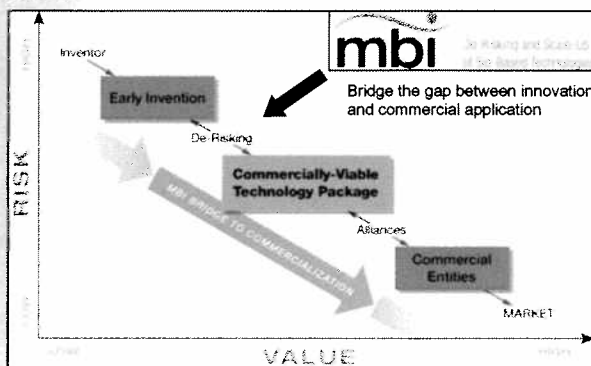
- > **Energy and Automotive Research Laboratory**, including Engine testing and mechanical engineering
  - Testing contracts with automotive, battery and parts suppliers
- > **Composite Materials and Structures Center**, including material science for energy storage (batteries, capacitors)
- > **Fraunhofer Center for Coatings and Laser Applications**

**Agricultural Testing**

- > Significant support for commodity groups, plant breeding and crop protection companies

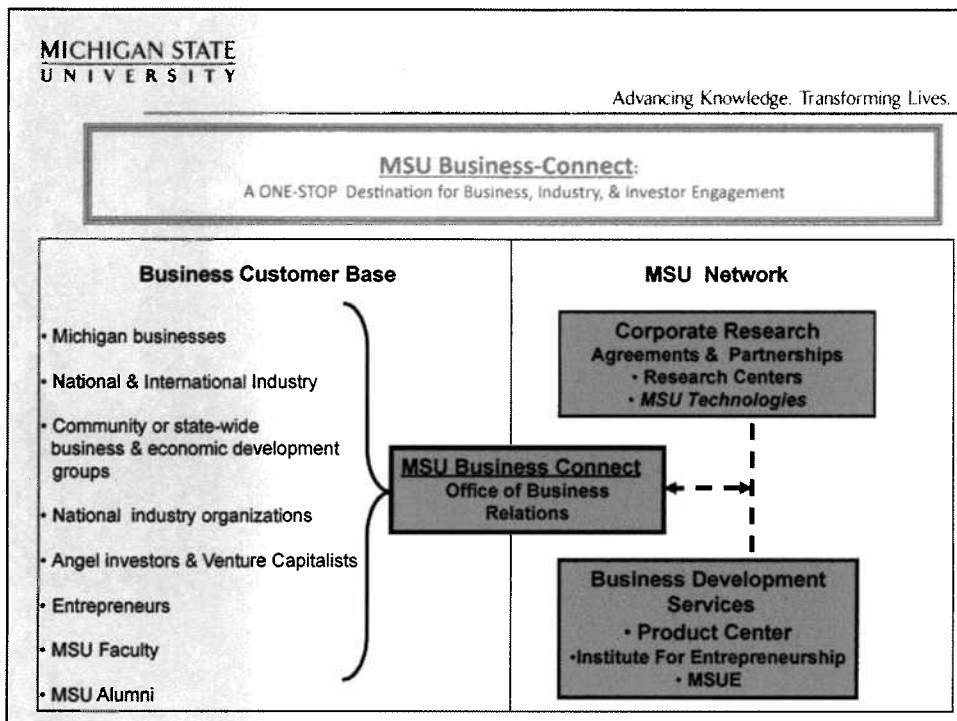
**Collaborative Corporate Research at MSU: Developing Partnerships to Promote Economic Activity**

- Trend – To reduce risks, companies are becoming increasingly reliant on outside partners for R&D
- MSU's approach – Broaden the traditional strategy of one-off research contracts with faculty
  - Understand company research needs and the value proposition
  - Facilitate research contracts consistent with MSU's mission and company objectives
  - Develop faculty teams for corporate research (e.g., BioCollaborate)
  - Collaboratively engage MBI resources to address critical pre-commercial development gap

**Michigan Agricultural Experiment Station and MSU Extension****Economic Impact across the State**



- \$1.062 B and thousands of jobs
- For every \$1 in state investment, leverages \$2.33
- Initiatives and programs in place to develop Michigan's economic future
  - Alternative Energy and the Bioeconomy
  - Food Systems
  - Entrepreneurship
  - Public and Community Health
- Proven track record of success
  - Support of the \$71B Michigan agricultural sector
  - Rural development and outreach to every county





**URC Urban Impact – Campus Wide**

- Campus and community-wide commitment to entrepreneurship
  - College of Liberal Arts and Sciences; Law School; School of Business Administration; College of Engineering; College of Fine Performing and Communicating Arts; Center for Professional Development; Procurement Technical Assistance Center
- TechTown
- Partnerships with government and business

Office of the Vice President of Research, Wayne State University

## URC Urban Impact – Research

- Bio-Banking Center of Excellence
  - Partners include National Institutes of Health, Michigan Department of Community Health, Henry Ford Health System, Van Andel Institute, private business
  - Objective: develop and discover new cures for diseases
  - Support WSU spin-outs and research



Office of the Vice President of Research, Wayne State University

## URC Urban Impact – Public Health

- North American Public Health Institute
  - Additional partners include University of Windsor, Michigan Department of Community Health
- Childhood deaths of auto accidents reduced, asthma study reveals hot spots that impact childhood health



Office of the Vice President of Research, Wayne State University

**URC** Urban Impact – the Environment

- Great Lakes environmental data library
  - Additional partners include Macomb County, First Nation, Oakland County, Wayne County
  - Information on water quality for research, government and the public



Office of the Vice President of Research, Wayne State University

**URC** Urban Impact – New Companies/New Jobs

- SmartStart at TechTown
- Additional partners include: Kauffman Foundation, Detroit Economic Growth Corporation, Michigan Economic Development Corporation, Microsoft
- 75 companies in TechTown
- 272 jobs created
- 100 additional companies in next 24 months

SMART  START



Office of the Vice President of Research, Wayne State University

URC

## Urban Impact – Foreign Business Attraction

- Soft Landings for foreign businesses at TechTown
  - Partners include Mexican Ministry of the Economy; Wuhan University, China; Odette School of Business, Windsor; Wayne County Economic Development; Detroit Regional Economic Partnership; Automation Alley
- 25 high tech companies seek North American partners in Michigan



Office of the Vice President of Research, Wayne State University

URC

## Urban Impact – Campus Culture

- Internships for students
- Student business creation challenge
- Student P.R. and marketing agency
- Art students working with arts companies
- Partnership with Bizdom U
- Indian and Chinese Business Forums
- Monthly entrepreneur's breakfast meeting
- Multiple courses on entrepreneurship
  - Additional partners include Kauffman Foundation, U.S. Small Business Association, MI-SBTDC, *Corp! Magazine*, E2Detroit business conference, venture capital conference



Office of the Vice President of Research, Wayne State University

URC

## Urban Impact – Community Culture

- First Friday networking events
- Faith-based and non-profit forum for business development
- Math Corp
- CEO boot camps for small businesses
- Computer lab training programs for video animation
- Center for Professional Development for Detroit businesses



Office of the Vice President of Research, Wayne State University

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP  
*Foundation for a New Economy*

### What we propose

- **Forge partnerships** between foundations, universities, industry & investors
- **Generate risk capital** for Michigan ventures
- **Make education and investment in entrepreneurship** a priority
- **Create a culture of innovation and risk**
- **Strengthen policy and infrastructure support**

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

### Engaging Higher Education

- Create campuses that integrate entrepreneurial activity *in their core*
- Drive entrepreneurial activity on campuses and communities
  - Build capacity for innovation
  - Attract a *critical mass* of companies and talent
- Build campus cultures to sustain entrepreneurialism
- Encourage intellectual risk-taking

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

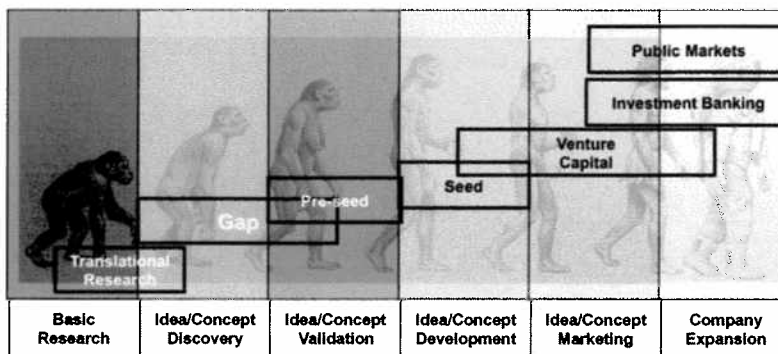
### Roles for Foundations

- **Create “Gap Funds”** to advance high-potential discoveries to commercialization (\$50M)
- **Launch “Engagement Funds”** for collaborative relationships between industries and universities (\$15M)
- **Provide “Entrepreneurial Education Funds”** for training entrepreneurs (\$10M)
- **Encourage “Co-Investment Seed Fund”** to invest in promising Michigan companies

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

### Stages of Capital Investment



**Highest Risk,  
Lowest Valuation**

← The critical "Gap" ⇒

**Lowest Risk,  
Highest Valuation**

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

"Money for pre-seed activity is tough money to find."  
Venture capital firms invest little in raw technology.

"We normally want to know that there is already a market." Working prototypes, understanding the technology's benefits needed prior to significant investment.

"The bar is set high in terms of the knowledge we need before we'll invest."

Tim Petersen, Managing Director,  
Arboretum Ventures

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP  
*Foundation for a New Economy*

### Who participates?

- All 15 Michigan public universities
- Representatives from industry, economic development and venture capital communities review proposals
- Foundations support MIIE efforts
- Federal and state economic development agencies are potential partners

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP  
*Foundation for a New Economy*

### Achievements of MIIE

- Collaboration among all state universities
- Sharing and aligning best practices, encouraging inter-institutional collaboration
- Project competitions completed– two cycles, \$1.9M
- Next cycle under sponsorship by NEI



MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

### MIIE Awards to date

- **July 2008 Pilot funded by C. S. Mott Foundation**  
20 Awards, \$1.3 million granted, \$66K average  
39 proposals submitted, engaging all universities
- **November 2008 funded by C. S. Mott Foundation**  
8 commercialization awards, \$570,000
- **Spring 2009 New Economy Initiative**  
\$1.5 million New Economy Initiative grant will fund two rounds
- **Matching funds** required for each project

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP

*Foundation for a New Economy*

### Sample projects funded

- Entrepreneurial internships and boot camp through Mid-Michigan Innovation Center (CMU, MSU, SVSU, UM-F)
- New polymers out of biofuel by-products at Saginaw Valley
- Expansion of U-TEAMED tech transfer streamlining among Central, Eastern, Michigan Tech and Oakland
- Genesee County-based "Launch Pad" student entrepreneur center at UM-F and including Kettering, Baker and Mott Community College students
- **Deep strategic change** process with 7 industry partners at Michigan State
- **Novel, high-volume circuit printing** at Western Michigan Lake Superior State's **Prototype Development Center**

MICHIGAN INITIATIVE  
FOR INNOVATION & ENTREPRENEURSHIP  
*Foundation for a New Economy*

## MIIE Funding Plan

- **Seek philanthropic funds for first 7 years**
  - \$50 million for Gap (commercialization)
  - \$25 million for industry engagement and entrepreneurial education
- **Seed funded with \$2 million**
  - C. S. Mott Foundation, November 2007
- **First contribution by New Economy Initiative**
  - \$1.5 million, January 2009

**muci**  
MICHIGAN  
UNIVERSITIES  
COMMERCIALIZATION  
INITIATIVE

### Continuing the partnership with the State **Economic Growth Through Entrepreneurialism**

- \$7.5 million re-granted since 2001 launch
- Advisors and reviewers from the partners, industry, VCs, economic development groups
- 2:1 matching funds provided at the start
- 42 start-ups ready to launch or launched
- Follow-on funding at 6:1