Midwest Tech Cluster
Presentation Content Overview

- Technology Cluster
- Survey
- Industries
- Key Findings
- Recommendations

Midwest Tech Cluster
“A successful research cluster should increase the regional GDP through fostering constructive relations between researchers and business, advancing industry through technological developments, establishing job opportunities, creating new companies and augmenting established companies, and linking proximate universities, hospitals, research and business centers.”
Technology Cluster Framework

Overview

- Interact with Investors; Mentors; Incubators
- Technology Transfer; Applied Research
- Corporate Venturing; Professional Services
- Grants; Regional Incentives

Developed from Dr. Carl Schramm / Kauffman Foundation for Entrepreneurship
The Midwest is a diverse, patchwork quilt economy, comprised of natural linkages between hubs and spokes.
Entrepreneurship Survey
Population Totals
- University of Illinois at Urbana-Champaign
- 1,809 completed surveys
- 400 partially completed surveys

School Status
- Undergraduate: 1,676
- Masters: 298
- PhD: 195
- Professional Program: 42

Hometown
- Illinois: 1,603
- China: 122
- California: 50
- India: 31
- Texas: 24
Hometown VS. Work Locations

- Considering all majors and education levels, Illinois retains more students in state than originate from the state.
- Engineering and Computer/Information Science 2014 graduates, other states gain large multiples of students while Illinois loses a portion.
- Many students stay in Illinois for internship work but leave for fulltime work.

Survey

Midwest Tech Cluster
Entrepreneurial Cities

- Students view Chicago as an entrepreneurial city and feel as familiar with programs there as with Silicon Valley programs.
- Students do not feel very familiar with any of the listed cities programs.
- Outside of Chicago, Saint Louis, and Nashville, Midwest struggled to be viewed as entrepreneurial.
### Key Factors in Choosing Location

#### IMPORTANCE OF FACTORS IN CHOOSING STARTUP LOCATION

<table>
<thead>
<tr>
<th>Factor</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to capital</td>
<td>72%</td>
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<tr>
<td>Talent pool</td>
<td>63%</td>
</tr>
<tr>
<td>Entrepreneurial support</td>
<td>58%</td>
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<tr>
<td>Culture</td>
<td>51%</td>
</tr>
<tr>
<td>Related companies nearby</td>
<td>49%</td>
</tr>
<tr>
<td>Past startup success in the</td>
<td>45%</td>
</tr>
<tr>
<td>Mentors</td>
<td>43%</td>
</tr>
<tr>
<td>Proximity to family</td>
<td>42%</td>
</tr>
<tr>
<td>Weather</td>
<td>26%</td>
</tr>
<tr>
<td>Location of friends</td>
<td>23%</td>
</tr>
</tbody>
</table>

#### Three Largest Factors
- Access to Capital
- Talent Pools
- Entrepreneurial Support Networks

#### Key Points
- Focus on Business Factors > Personal Factors
- Weather not a factor
- Friends rated low but certain friends can be considered as talent pool also
Midwest Factors to Grow

Three Largest Enhancement Factors
- Entrepreneurial Support Networks
- Access to Capital
- Culture

Key Points
- Entrepreneurial Networks and Access to Capital ranked high for preferences and low for Midwest
- The Midwest may have these resources but the students still have lingering perceptions
**Chicago Factors to Reinforce**

**Three Largest Enhancement Factors**
- Crime
- Programs connecting college to city
- Entrepreneurial Support Networks

**Key Points**
- Students view entrepreneurial infrastructure as needing less enhancement in Chicago
- There is a perception of crime which may be enhanced due to likelihood of news publishing crime over startup news

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**ENTREPRENEURIAL FACTORS TO BE ENHANCED IN CHICAGO**

- **Crime**: 69%
- **Programs connecting college to the cities**: 57%
- **Entrepreneurial support networks**: 39%
- **Not familiar enough with the city**: 32%
- **Culture**: 30%
- **Past startup success in the region**: 29%
- **Access to capital**: 29%
- **Mentors**: 25%
- **Related companies nearby**: 20%
- **Talent pool**: 18%

**Survey**

**Midwest Tech Cluster**
Industry Overview

Midwest Tech Cluster

Overview

- Biotechnology
- Healthcare
- Manufacturing
- Agriculture

Midwest
Midwest Tech
Cluster

Industry Overview

Biotechnology
Healthcare
Midwest
Manufacturing
Agriculture

Midwest Tech Cluster
Overview of the Biotech Industry in the Midwest

Midwest Biotech Industry

- 1.5MM employees nationwide--the largest biotech market in the world
- 22% of the jobs in the Midwest
- Chicago: $47.5BB biotech sales
  50,000 bioscience employees
Biotech Cluster Framework—Education & Incubators

Midwest Biotech Statistics

- 7 of the world’s top 50 university programs for biotech
- 7,100+ biotech-related degrees granted every year
- 39 incubators evenly distributed among each state
- BioEnterprise in Cleveland, Ohio:
  - 170 companies
  - #1 Job creator in Cleveland
Investments in Midwest Biotech

- 35% of National Institutes of Health (NIH) grants
- 33% of U.S. research and development (R&D) spending
- 14% of total venture capitalist investment

Venture capital funding in Illinois increased 209% from 2009-2012

Source: PwC MoneyTree
• 20 companies with market capitalizations over $200MM
• Sophisticated investors: venture branches seek to invest in and acquire start-ups
Biotech Cluster Framework—Challenges & Opportunities

**Resource Dispersion**
- Fragmented resources
- Information asymmetry

**Funding**
- Need more sophisticated early-stage investors

**Perception of Failure**
- Failure not as widely accepted as in the West Coast

**Talent Outflow**
- Corporate hiring
- Coasts for more opportunities
Biotech Cluster Framework—Challenges & Opportunities

- Collaborative Efforts among stakeholders
- 209% increase in VC Fund
- 7000+ professionals
- Magnet company concentration
- Lower living expenses
- 20 Corporate giants
- No.1 year travel and distribution
- 39 incubators
- 7 world top 50 biotech programs

Biotechnology has the resources, capabilities, and network to create a strong tech cluster in the Midwest.
Biotech Cluster Framework—Challenges & Opportunities

Collaborations

**Academic institutions:**
Midwest Research University Network

**State government and industry groups:**
Midwest Governors Association

**Start-ups and investors:**
Mid-America Healthcare Investors Network
Industry Overview

Midwest

Healthcare

Biotechnology

Midwest

Manufacturing

Agriculture

Midwest Tech Cluster
Developmental Challenges in Healthcare

- Emigration of talent to the coasts
- Enhancing early seed and series funding in healthcare technologies
- Utilization of existing medical and business student human capital
- Building bridges between stakeholders in entrepreneurial continuum
Healthcare—Existing Resources/Framework

- 525,000+ employed in health services industry in Chicago
- 24,000+ healthcare related degrees are earned in Chicago every year
- Top 10 Medical & MBA programs in the Midwest

By bridging existing resources, Chicago & the Midwest will rise as a health tech hub for innovation.
Illinois provides the highest percent of NIH funding in the Midwest, which as a whole, is greater than the Northeast and California.
Chicago investment

- **$966MM** in funding raised in 2012
  - Investments up 23% from 2011
  - **$146.2MM**, 2012 total in Chicago

- **$177MM** in Healthcare IT & Services companies

Source: BioEnterprise 2012 Report
Industry Overview

- Biotechnology
- Healthcare
- Manufacturing
- Agriculture

Midwest Tech Cluster
Midwestern states constitute 21% of U.S. total land area and account for:

- 37% of U.S. farmland
- 56% of U.S. cropland
- 21% of U.S. pastureland

Source: Final report Power & promise: Agbioscience in the North Central United States
Precision Agriculture is the integration of emerging technologies and farming.
Agriculture–Magnet Companies

- 10 of the top 25 food manufacturers
- 2 of the top 5 seed companies
- 2 of the largest agriculture equipment manufacturers
- 5 large animal science corporations
- 35 agriculture firms with over $2BB in annual revenue

Midwest Ag. Firms
Agriculture–Universities, Incubators, & Investors

Midwest Ag. Startup Resources

- 7 of the top agriculture & forestry colleges
- 4+ venture capital firms specializing in agriculture
- 3+ research parks
Although funding for agriculture research has remained stable for the past several decades, private sector funding now outpaces public funding.
Key Findings

- **Stable** levels of USDA funding
- **Lower** proportion of USDA funding compared to NIH, NSF, DOD, DOE, NASA.
- **Increases** in NIH funding
Industry Overview

Midwest Manufacturing

- Biotechnology
- Healthcare
- Manufacturing
- Agriculture
Manufacturing - Overview

- Provides an avenue for the region to grow into the future
- Remains a sizeable contributor to the U.S. economy
- Directly employs over **11.5MM** people
- Digital technology is transforming manufacturing

![Manufacturing Share of Total GDP, 2000 and 2010](chart)

**Source:** World Resources Institute
Chicago Manufacturing

- $34BB of goods exported in 2010
- 5% job increase in Chicago vs. 4% in U.S.
- Growth primarily in durable goods

Industry Multipliers

- 3.2x in Manufacturing for the Chicago region
- 1.54x in Business Services
- 1.17x in Health Services
- .88x in Retail Trade

Manufacturing Value Added (billions $)

- Ohio
- Illinois (highest, red bar)
- Indiana
- Michigan
- Wisconsin
- Minnesota
- Missouri
- Iowa

Midwest Tech Cluster
Manufacturing - Challenges

- Industry Stigma
- Perception of Off-Shoring Benefits
- Machine and Infrastructure Costs
- Investment Model
- Fragmentation
UI Labs

• Newly established, $320MM organization to:
  • Define problems of the future
  • Design ways to align the right resources and people
  • Deliver brilliant solutions to the market

Transform the Manufacturing Brand

• Emphasize the cutting-edge nature of many manufacturing firms
• Strong salaries for all levels of educational attainment
• Push for the unemployed to consider vocational education for new jobs
### Information Sharing
- **Creation of manufacturing liaisons at universities**
  - Connections between universities, tech transfer offices, and SMEs
  - Decrease the information asymmetry between these stakeholders
  - Assist startups with finding local manufacturers

### High School Education
- **Develop consolidated programs** between the associations for manufacturing job shadows and industrial technology **summer programs for high school students**
  - Ensure students have ample access to vocational curriculum and courses

### Secondary Education
- **Experiential learning opportunities** through enhanced curriculum
- **Partnerships between SMEs and universities and community colleges** for access to students
- **Classes and projects** focused on team-based design challenges faced by sponsor firms
Key Findings
### Investor Awareness
- Need for **better understanding of business and investment models** accompanying capital-intensive industries and advanced technologies
- Opportunity for **greater deal syndication**
- Expressed discontent by entrepreneurs and outside VCs over discontinuity in term sheet structure

### Geographic Dispersion
- Expansion of capital beyond traditional Midwest metropolitan hubs can serve to scale nascent firms in supporting metropolitan areas
- **Presence of tier-1 research institutions across the Midwest** creates potential for encouraging spin-outs to stay

### Regional Initiatives
- Individual states and cities have certain industry specializations, but **few efforts on innovation and entrepreneurship have pushed collaboration beyond traditional boundaries**
- Cities must view relationships and the sharing of resources as being mutually beneficial and grow together
Despite an increasing amount of angel investment and established community for private equity / mezzanine levels of funding, there is a significant opportunity to bridge the funding gap at the mid-tier (Series A) levels.

Data courtesy of CB Insights
Publicity and Linkages

Publicity

- Increased awareness of the resources and infrastructure available for entrepreneurs across the entire Midwest
- Opportunity for national recognition of the existing and growing ecosystem

Consolidation of Resources

- Improved utilization of existing, under-utilized infrastructure at universities and research centers
- More coordinated and proactive effort to mentor young firms and provide professional services

Linkages Between Stakeholders

- Greater collaboration / information sharing between established firms, start-ups, universities
- Facilitation of technology transfer and applied research has largely been unpublicized to small and emerging-growth enterprises
Increasingly, Chicago and the Midwest have shown an increase in the volume and velocity of connections necessary for an entrepreneurial environment.

The opportunity lies in creating greater density and linkages on a regional level, with geographic hubs taking a leadership role.

Going forward, the collaboration between universities, industries, and government must focus on ways to better allocate formerly disparate resources to aid in tech transfer, commercialization, and the scalable growth of emerging firms.
Recommendations
Background

- A program dedicated to the development of agriculture and food science startups in the Midwest
- Dedicated co-working space
- Linkages between established firms, professional services, and startups
- Features monthly programs gathering executives and investors in a multitude of industry subsets including:
  - Data analytics and Big Data in agriculture
  - Drone and electronics in agriculture
  - Innovations in food processing
  - Health and wellness

At the conjunction of agriculture and entrepreneurship
School Collaboration

Practicum Institute

• Unite 25 of the top juniors from 3 tier-one research universities in Illinois

• Meet one Friday a month
  • Vary location based upon topic of class
    • 1871 for digital seminar
    • Digital Manufacturing Institute
    • MATTER for healthcare seminar

• Seminars taught by executives and professionals
  • Ex: Venture Capitalist discusses startup valuations

Seminar Topics

• Frontier of Digital
• Challenges in Manufacturing
• Trends within Bio/Health sciences
• Future of Agriculture

• Valuations
• Market Research
• Business Plan Creation
• Legal Aspects

Midwest Tech Cluster
Midwest Showcase

**Background**
- Startup event and experience for the entire Midwest

**Goal:**
- Present the best and most exciting startups from throughout the universities and research park incubators from across the Midwest
- A focus on attracting investors to a single location to experience the most promising new companies
- Excite the community with new technologies that can change the world and a chance to interact with entrepreneurs on a wide scale

**Target Audience**
- Investors
- Startups
- Companies
- Students (college and high school)
- Chicago Community
# Midwest Showcase - How It Will Work

<table>
<thead>
<tr>
<th>Participants</th>
<th>Universities</th>
<th>Event Coordinators</th>
<th>After party</th>
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</thead>
<tbody>
<tr>
<td><strong>Pre-Event</strong></td>
<td>• Partner with Big Ten and Midwest universities</td>
<td>• Market event to schools and Chicago</td>
<td>• Closing speeches</td>
</tr>
<tr>
<td></td>
<td>• Each University selects 3 startups</td>
<td>• Council selects 15 startups for each industry</td>
<td>• Dinner with companies and/or institutions</td>
</tr>
<tr>
<td><strong>Showcase</strong></td>
<td>• Schools bus in interested students</td>
<td>• Judges critique startups and investors watch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Startups Present</td>
<td>• Guest speakers (interlude)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Startups stay at booths after presenting to talk crowd</td>
<td>• Awards if applicable</td>
<td></td>
</tr>
<tr>
<td><strong>After party</strong></td>
<td>• After-event session where startups and investors can talk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Joint activity for college students</td>
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**Midwest Tech Cluster Recommendations**
Questions

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The full report can be found on the World Business Chicago website
http://www.worldbusinesschicago.com/