An Assessment of Technology Innovation and Commercialization of Northeast Indiana Region: Opportunities and Capacities

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Max Yen, Dean, College of ETCS
Paul I. Lin, Professor of ECET
Sean Ryan, Director of University Engagement
Steve Frank, Director of Programs, NIIC
Scott Naltner, Executive Vice President, North East Indiana Economic Development Alliance

Topics of Discussion

- ITTIES and GATTE
- Challenges of Technology Innovation and Commercialization
- Technology-based Companies: Northeast Indiana/Fort Wayne
- The Alliance Projects, Fort Wayne-Allen County Economic Development Alliance
- University R&D as External Sources of Corporate' Advanced Technology Development
- Indiana University-Purdue University Fort Wayne: Northeast Indiana University Engagement
- ETCS College Assisted Technology Innovation and Commercialization
- Lesson Learned: College of ETCS's Technology Engagement Project Examples
- Opportunities and Capacity
- Innovation Park and Northeast Indiana Innovation Center and Entrepreneurs
- Summary
Challenges of Technology Innovation and Commercialization

- **Challenges**
  - Globalization
  - Time Compression
  - Technological Changes
    - New products
    - Value Chain
    - Rivalry
  - Technology Integration

- **Technological Characteristics of Competitiveness**
  - Technological Opportunity
  - Appropriability
  - Resource Requirements
  - Speed/Time
  - Process of Technology Change
  - Technology Strategy

Challenges of Technology Innovation and Commercialization (cont.)

- **Innovative Technology and Commercialization – Entrant Start-Ups**
  - Market Need
  - One piece of a new product / one kind of a new service
  - Breakthrough technologies: plug-in compatibility with existing systems of use
  - Competitive advantages
  - Start-up Technology Improvement and Management

- **Possible Assistance for Start-ups with Valued Technology for Commercialization**
  - Regional
    - Needs and Markets Analysis
    - Intellectual Property Resources: Patents, copyrights, trademarks
  - Indiana State Government Level
    - Certified Technology Parks (Innovation Centers)
    - Technical Assistance Program
  - U.S. Federal Government Level
Interrelations Among Key Concepts Concerning Technological Innovation and Commercialization

Demographics:
- ~685,000 people, 2010 Census
- ~3,960 sq. miles

Population growth this decade:
- 4.1% regionally
- 2.8% Midwest US (IL, IN, KY, MI, and OH)
- 8.7% nationally

Manufacturing employment, private, 2009:
- 24.1% of Northeast Indiana jobs
- 11.0% nationally

Wages from manufacturing, private, 2009:
- 31.8% Northeast Indiana
- 13.4% nationally

GDP from manufacturing, private, current $, 2009:
- 21.7% Fort Wayne MSA
- 12.3% nationally

Regional Industry Clusters:
- Advanced Manufacturing
- Defense
- Financial Services
- Food Processing
- Life Sciences
- Transportation and Logistics

Data from the Community Research Institute at IPFW
DEFENSE

Suppliers

Universities

Government Agencies

Centers of Excellence

• Systems Engineering
• Wireless Communications
• Visualization and Analytics

MEDICAL DEVICES

Businesses

Universities

Innovation
**NE Indiana Top Employers**

<table>
<thead>
<tr>
<th>Company</th>
<th>FTE</th>
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<tbody>
<tr>
<td>Lutheran Health Network</td>
<td>4,156</td>
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<tr>
<td>Parkview Health System</td>
<td>3,933</td>
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<tr>
<td>General Motors</td>
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<tr>
<td>Steel Dynamics</td>
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<td>Lincoln Financial Group</td>
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<td>BF Goodrich Tire Manufacturing</td>
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<td>ITT Corporation</td>
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<tr>
<td>Nucor</td>
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<td>Raytheon</td>
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<table>
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<tr>
<th>Company</th>
<th>FTE</th>
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<tbody>
<tr>
<td>Frontier Communication</td>
<td>1,200</td>
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<tr>
<td>Fleetwood RV</td>
<td>1,199</td>
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<tr>
<td>Navistar International</td>
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<td>Norfolk Southern</td>
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<tr>
<td>BAE Systems</td>
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<td>United Technologies</td>
<td>648</td>
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<td>Fort Wayne Metals</td>
<td>491</td>
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<tr>
<td>Vera Bradley</td>
<td>407</td>
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* Data from the Northeast Indiana Regional Partnership and the Community Research Institute

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**The Alliance Project**

(Allen County Economic Development Alliance)

- **SDI La Farga, LLC**, April 2011
  - Steel Dynamic Inc. invests $39 million in new joint-venture
  - La Farga Group, Spanish Metals Manufacturer, headquartered in Barcelona, Spain
  - Advanced Manufacturing Technology to make copper wire
  - Created by La Farga Group

  - The world’s leading global provider of complete water and fueling systems

  - The 6th largest food company and market some of the world’s best-loved brands: Cheerios, Green Giant, Betty Crocker, Pillsbury, Yoplait…
About IPFW

- Largest and most comprehensive public university in Northeast Indiana
- Opened in 1964 as a combined campus of Indiana and Purdue universities
- Indiana University and Purdue University degree programs
- IPFW has grown into a multi-campus community with over 20 buildings
- Graduates over 1,700 students per year at all degree levels

About IPFW

- Over 14,000 students
- Diversity of students with 45 states and more than 67 countries represented
- Additional 24,000 students pursue non-credit opportunities through Continuing Studies
- Nine academic units offer more than 200 academic degree programs
- Students can earn Associate, Bachelor, and Master’s degrees, undergraduate and graduate-level certificates
IPFW Office of Engagement

- **Key contact for access to IPFW, Purdue and Indiana University programs** for businesses, government and community partnerships

- Facilitate access to:
  - Research capabilities (Government Grants & Industry Research)
  - Technical expertise (Faculty and Student Projects)
  - Intellectual property (Purdue, Indiana University and NSWC Crane)
  - Educational services & training opportunities
  - Internship/co-op/student hiring programs

- Provide representation for regional businesses to the universities in the development and enhancement of programs.

Concept

- The Engagement Office was created as a **partnership between the regional business community and three universities**
  - Indiana University – Purdue University Fort Wayne
  - Purdue University, West Lafayette
  - Indiana University, Bloomington
  - Northeast Indiana Corporate Council
  - Northeast Indiana Innovation Center
  - Work One Northeast

- Community partner in **key regional initiatives**
  - Economic development
  - Workforce development
  - Strategic planning
• Engagement Office
  – Serves to focus the resources of multiple complementary institutions to a single geographic region
  – Launched in January 2006

Relationships & Results (through 06/11)
  – 418 businesses & organizations
  – 172 businesses with completed engagements
  – 41% completion rate

Engagement Office Projects

• Business Plan Competition (5 years)
  – Program to educate entrepreneurs and support writing of business plans
  – Entrants competed for $50,000 in prizes to fund their business venture

• IU – Purdue Technology Showcase (5 years)
  – Presentations of university IP ready for commercialization
  – Showcase technologies for businesses, entrepreneurs and investors

• Work One Economic Growth Summit (4 years)
  – Program to connect industry and K-12 educators to enhance student outcomes

• Defense Industry Association – NIDIA (3 years)
  – Lilly Endowment Talent Initiative($20M grant)
  – Networking and educational programs with regional business and federal labs
Engagement Examples

- **Large Defense Contractor**
  - IPFW RF Communications Research Project (in partnership with the City of Fort Wayne)
  - IPFW Industrial Design, Computer Science and Engineering Student Projects
  - Department of Workforce Development Training Grant (Wireless Communications)

- **Hospitality Management – Resort and Hotel Project**
  - Faculty Sponsored Applied Research and Student MBA Projects
  - On-site program at Palm Island Resort (FL) with classroom and work experience (8 students)

- **Large Automotive Manufacturer** *(opened technical center in Indiana)*
  - Faculty Technical Assistance, Student and Research projects
  - Co-op student placements – one full-time hire

- **Mid-Size Orthopedics Manufacturer**
  - Purdue Intellectual Property Technology Licensing (new company start-up)
  - State Research Grant Partnership (successful application for $2M funding)

Engagement Partners

- **Purdue Technical Assistance Program**
  - Faculty and graduate student short-term assistance projects on a broad range of business and technical issues.
  - Up to five days of no-cost assistance available.

- **Purdue Research Foundation – Office of Technology Commercialization (OTC)**
  - In 2010, Purdue Research Foundation’s Office of Technology Commercialization reported 257 invention disclosures, 99 deals finalized, 52 issued U.S. patents, and gross royalty income at $3.93 million.
  - The foundation also reported the creation of 11 startup companies in 2010 founded on Purdue University innovations.

- **Indiana University Research and Technology Corporation (IURTC)**
  - Facilitates Indiana University affiliated research and technology collaborations.
  - Technology commercialization, business development, funding in support of innovation.
  - In 2010, the IURTC reported 154 invention disclosures, 27 license agreements, 15 new issued U.S. patents.

- **Northeast Indiana Innovation Park / Northeast Indiana Innovation Center**
  - Business Incubator and Certified Technology Park adjacent to the IPFW campus.
  - Provides support for entrepreneurs and start-up business ventures.
University R&D as External Source of Corporate’ Advanced Technology Development

• Comprehensive University-based R&D
  o Applied Research
  o Capturing the Returns from Research
  o Capability Development
  o Value Added

• Strategies to Profit from Investment in Research and Technology
  o Technology Centers
  o Joint R&D
  o IP Strategy
  o Funding the Technology Startup

Factors for Successful Academic R&D – Tech Transfer
College of ETCS: Centers of Excellence

- Energy and Management (Built Environment)
- Information Analysis & Visualization
- Wireless Communication
- Systems Engineering
- Mass Tech Education Center

ETCS R&D Strategy: Crafted Cross-Multifunctional Teams

College of ETCS: R&D Service Models

- Market Need
  - Technology Push
  - Solution for Technical Problem/Application
  - Academic R&D

- Market Need
  - New Product/Service
  - Technology Need Pull
  - Technology Acquisition
Technology Push Model Example - ITTTES

- Indiana-Taiwan Technology Transfer & Entrepreneurship Summit (ITTTES), Sept. 27-30, 2011, hosted by IPFW
  - Indiana Partners: Indiana University-Purdue University Fort Wayne, Purdue University, Indiana University, U of Southern Indiana, NSWC Crane
  - Taiwan Partners (from North to South)
    - National Taipei University of Technology
    - Chung Yuan Christian University
    - Feng Chia University
    - National Formosa University
    - National Cheng Kung University

ITTTES – Technology Presentations

- Track 1: Nano-Scale, Electronics and Thermoelectric Material technologies
- Track 2: Renewable Energy, Environmental and Water Management Technology
- Track 3: Wireless Sensors, Data Acquisition, and Monitoring Technology
- Track 4: Novel Instrumentation and Detection
- Poster Presentations: NSWC Crane (17), Purdue Research Foundation (6), Taiwan Research Partners (5)
Opportunities and Capacity: GATTE
(Global Alliance for Technology Transfer & Entrepreneurship)

INNOVATION PARK PROFILE

Founded: December 1999
Temporary Incubator Operational: August 2001
Innovation Center Occupied / Innovation Park Established: September 2005
Park Site: 55-Acre Greenfield Campus
Organization Type: Community Non-Profit
Organization Focus: Higher quality, higher paying jobs/companies
Host Institution: Indiana University / Purdue University Fort Wayne (IPFW)
Full-Time Employees (FTEs): 10
Number of On-Campus Client Companies: 39
Indiana CTP Certifications: 2004 / 2009
Outreach: 11-County Region

Northwest Indiana Innovation Center
High Technology Business Incubator

Emerging Growth Center
Our new home for NIC graduates & 2nd-stage ventures

Cole Foundation Conference & Training Center
Emerging Growth Center
The Innovation Park’s **VISION** is to:
- Be a dynamic campus for growth, research, and commercialization
- Create, attract, and retain high quality, high paying jobs
- Enhance learning at all levels of education, and
- Contribute to the vitality and competitiveness of our community

The Innovation Center’s **MISSION** is to:
- Create jobs and grow companies throughout northeast Indiana by accelerating innovation and energizing entrepreneurship

**Northeast Indiana Innovation Park**

A synergy of Northeast Indiana's assets generating innovation, entrepreneurship, technology, and knowledge

- **Growth of Existing Companies**
- **Creation of New Companies**
- **Commercialization of New Ideas & Intellectual Property**

Increases in Technology Cluster Jobs & Companies
Average County Wage Rates
Innovation Park Payroll Base

Innovation Center Performance through 12/31/2009:
- **AVERAGE PARK WAGE** = $52,875
- **TOTAL PARK PAYROLL** = $8.1 MM
- **$71 MM OF INVESTMENT**
- **458 JOBS CREATED**
- **99.1% OF PARK CLIENTS STAY IN OUR REGION**
- **91.8% OF PARK CLIENTS ARE STILL IN BUSINESS AFTER 5 YEARS**
Key Focus Areas
Some of the areas that NIIC focuses on are:
• Life Sciences/Healthcare
• Clean Energy/Alternative Energy
• Defense Applications
• Material substrates
  • Composites
  • Biomaterials, or other Material Science Applications
• Mobile Computing Applications
• Areas that have significant national or global reach.

Clients
Established companies:
• American Axle - leading companies in the automobile industry,
• IPFW
Emerging Companies
• 'Bee Mobile' - Enabling customers to advertise via the mobile channel,
• 'Mesco' - focused on the development commercialization, manufacturing, and sales of the Cardiac Guardian System

On-Campus: Clients who have leases spaced at NIIC at Stellhorn, Fort Wayne, IN
Off-Campus: Clients who are not leasing space at the center but are NIIC clients
NIIC’s Current Tenant Profile

• Information Technology Companies – 23
  ▪ Cirrus ABS – a web technology company
  ▪ GooRoo LLC – a NIIC student venture Lab company
  ▪ Guild Press LLC – a NIIC student venture Lab company
  ▪ Honor Education – a NIIC student venture Lab company
  ▪ IntelliTek Systems – a Cloud-based integrated CRM, Sales Force Automation, etc.
  ▪ BBK Group, Inc – corporation telecommunication management and cost control
  ▪ Scidata Scientific, LLC – communication and data transfer technologies

• Biomedical Companies – 5
  ▪ BioDuct LLC – developing patent protected avascular tissue repair platform technology
  ▪ BioPoly RS LLC – developing a joint resurface biomaterial
  ▪ Schwartz Biomedical – Tissue engineering research
  ▪ Solistice Medical - a medical device asset lifecycle management company

NIIC’s Current Tenant Profile (cont.)

• Advanced Manufacturing Companies – 3
  ▪ Digital Hydraulic LLC
  ▪ Phoenix Consulting, LLC
  ▪ American Axle - leading companies in the automobile industry
  ▪ SysteMental Inc – Lean manufacturing/enterprise methods technical services and software

• Entrepreneurial Service and Support and Other Companies – 18
  ▪ Siemens Industries, Inc
  ▪ Stahl Engineering & Failure Analysis, LLC
**NIIC SWOT Analysis**

**Strengths**
- High quality customer services.
- International Recognition
- Compiles with NBIA Benchmark
- Provides capital access.
- Growing company
- R&D

**Weakness**
- Working with critical employees.
- A large number and variety of customers
- Investment issues

**Opportunities**
- Exponential growth
- Enhance the City role as a partner and catalyst
- Affiliated with big universities

**Threats**
- Lack of funding
- Recession effects
- Harder to compete in Bio –Life Sciences
Summary

Q/A