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

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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 2000-2009
- 4.1% regionally
- 2.8% Midwest US (IL, IN, KY, MI, and OH)
- 8.7% nation

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

Northeast Indiana
Adams, Allen, DeKalb, Huntington, LaGrange, Noble, Steuben, Wabash, Wells, and Whitley Counties

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

Data from the Community Research Institute at IPFW

Interrelationships Among Key Concepts Concerning Technological Innovation:
- Technical world
- Technological entrepreneurship
- Commercial world
- Administrative capabilities
- Inventions/discoveries/technologies
- Technical innovations

Tinkering/experimenting
Research Activities
Development activities
Product process development activities
Market Development activities

**DEFENSE**

**Suppliers**

- Riverside
- excellon Technologies, Inc.

**Universities**

- IPFW

**Government Agencies**

- Innovation Center

**Centers of Excellence**

- Systems Engineering
- Wireless Communications
- Visualization and Analytics

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**MEDICAL DEVICES**

**Businesses**

- Zimmer
- DePuy
- Medtronic
- Paragon Medical Inc.
- NEMCOMED
- MediTECH

**Universities**

- Purdue University

**Innovation**

- Innovation Center
**NE Indiana Top Employers**

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<td>Parkview Health System</td>
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<td>General Motors</td>
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<td>Steel Dynamics</td>
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<td>Lincoln Financial Group</td>
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<td>Nucor</td>
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<td>Raytheon</td>
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<table>
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<tr>
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<th>FTE</th>
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<td>Frontier Communication</td>
<td>1,200</td>
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<tr>
<td>Fleetwood RV</td>
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<tr>
<td>Navistar International</td>
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<td>Norfolk Southern</td>
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<td>BAE Systems</td>
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<td>United Technologies</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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</table>

* 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
- **Franklin Electric**, $25M,
  - The world’s leading global provider of complete water and fueling systems
- **General Mills Inc**, total investment $34.6 M, May 2011,
  - 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**
  - 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
  - Applied Research
  - Capturing the Returns from Research
  - Capability Development
  - Value Added

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

Factors for Successful Academic R&D – Tech Transfer

- Physical Proximity of University R&D Group to Receiving Organization
- Advanced Tech Research Group at University
- Corporate Absorptive Capacity: External Advanced Technologies
- Primary Factors for Successful Academic R&D - Tech Transfer
- Joint Participation by R&D during the Tech Dev. Phase
- After Tech Transfer: continue on overlapping/complementing work
- Tech Transfer Value Recognized
- External Market Pressure/Timing
College of ETCS: Centers of Excellence

ETCS Centers of Excellence
- Energy and Management (Built Environment)
- Information Analysis & Visualization
- Wireless Communication
- Nano Tech Education Center
- Systems Engineering

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
- 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)

Technology Owners/Suppliers
- Intellectual Property Exchange
- Markets

Technology Commercialization
- Technology Licensing
- Technology Acquisition

Non-Profit Organizations
- Spin-Offs
- Start-ups
- Service Developer
- Product Developer

Academic R&D
- Patents Acquisition
- Patents Licensing

Industrial R&D
- Government R&D

Sean Ryan, Office of University Engagement
Engagement Presentation - July 2008
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
  - Scadata 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