The Role of Community Colleges

Dr. Roy A. Church, President
Lorain County Community College
Northeast Ohio

Truman Commission Vision for Community Colleges (1947)

Mission

1. Baccalaureate Parallel Degrees
2. Applied Degrees
3. Developmental Education
4. Continuing Education
5. Community Service

- 1,250 Community Colleges Nationwide
- 8 million students
- 45% of All Students
- 55% of All First Time Students

Vision

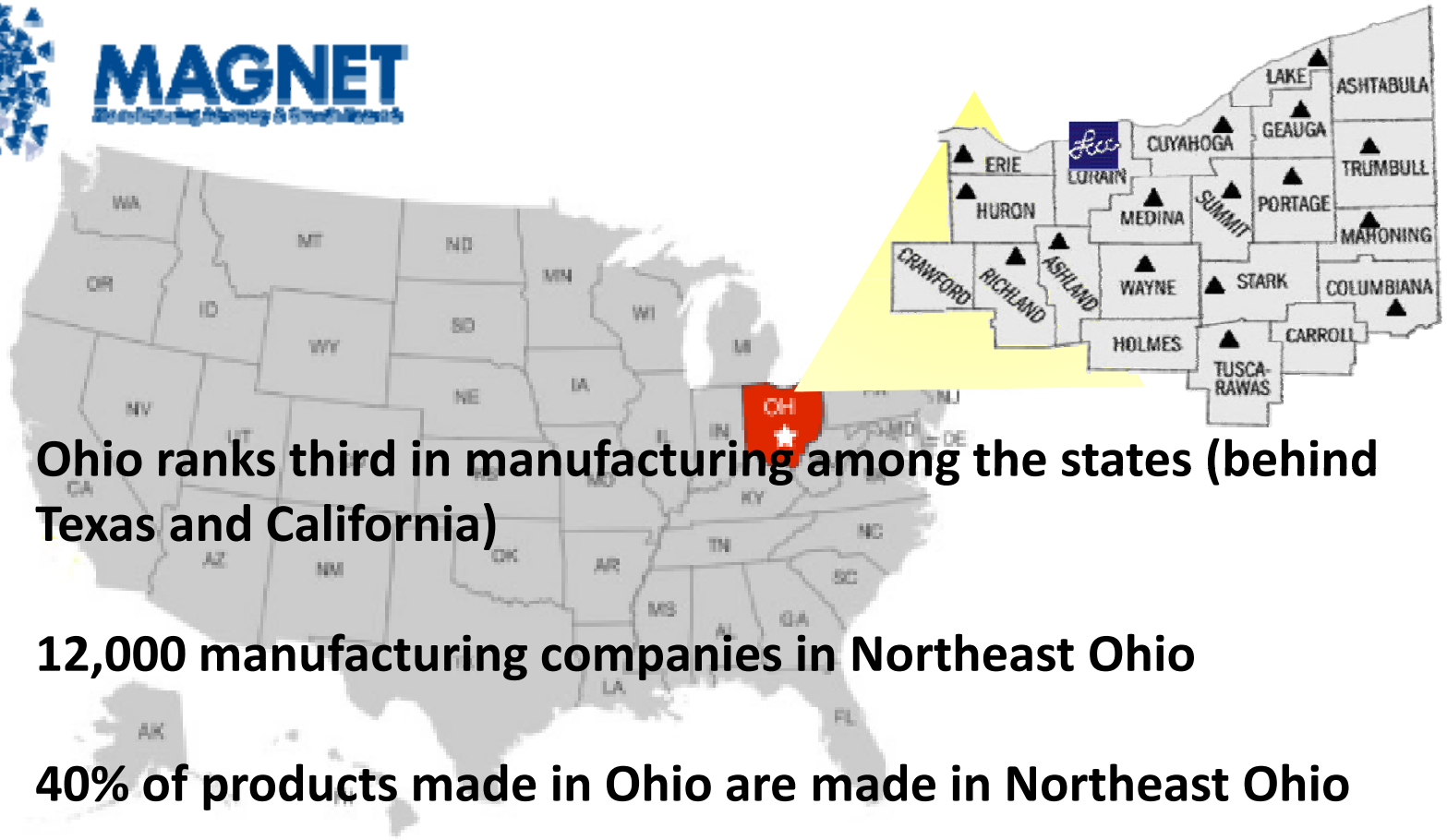
- Accessible and affordable post-secondary education
- Serve all constituents within geographical service districts
- Flexible curricula of varying lengths designed to respond to unique needs, as well as the five standard purposes.
- Mobilize higher education resources to meet unique needs of the local community

Community Colleges:

Responding to Unique Needs and Opportunities of the Regional Economic Ecosystem

Case Study: Northeast Ohio

MAGNET



- **Ohio ranks third in manufacturing among the states (behind Texas and California)**
- **12,000 manufacturing companies in Northeast Ohio**
- **40% of products made in Ohio are made in Northeast Ohio**
- **300,000 people work in manufacturing in Northeast Ohio**
- **The average manufacturing salary in Northeast Ohio $50,000**

Ohio | Third Frontier
Innovation Creating Opportunity

$2.3 billion initiative

supports existing industries that are transforming themselves with new, globally competitive products

fostering the formation and attraction of new companies in emerging industry sectors

create new technology-based products, companies, industries, and jobs

Industry Sectors

- Advanced Materials
- Aeropropulsion Power Management
- Agribusiness and Food Processing
- Fuel Cells and Energy Storage
- Medical Technology
- Software Applications for Business and Healthcare
- Sensing and Automation Technologies
- Situational Awareness and Surveillance Systems
- Solar Photovoltaics


Pre-Seed and Seed Funds
Akron BioInvestments Funds
Alliance Startup Fund
Appleseed Microfinance
Barberton Growth Fund
Canton Entrepreneur Launch
Cuyahoga County North Coast Opportunities Fund
Glengary LLC
Innovation Fund,
Founded by the Lorain County Community College Foundation
JumpStart Evergreen Fund
Tech Sprout
Wooster Opportunity Loan Fund
Other Service Providers
ARCHAngels
Austen BioInnovation Institute in Akron
IdeaCrossing
NorTech
Northeast Ohio Medical University
Ohio Aerospace Institute
Ohio Agricultural Research and Development Center
Tech Belt Energy Innovation Center
University of Akron Research Foundation
Venture Capital and Angel Funds
Concept Capital
North Coast Angel Fund
Funding Partner
Ohio
Third Frontier
Innovation Creating Opportunity
Incubators and Accelerators
Akron Global Business Accelerator
BioEnterprise
Bizdom
Braintree Business Development Center
Great Lakes Innovation and Development Enterprise (GLIDE)
JumpStart Inc.
LaunchHouse
TECHudson
The Incubator at MAGNET
Youngstown Business Incubator
Educators
The JumpStart Higher Education Collaboration Council

Lorain County
Community College

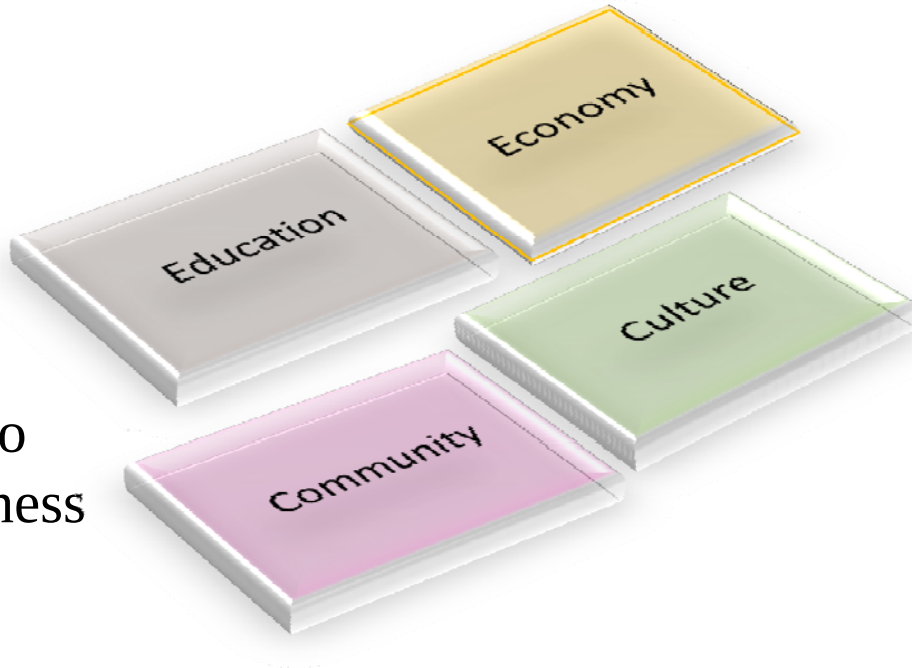
Vision 2.0: *Strategic Priorities*

Talent

1. Drive Student Completion and Academic Success
2. Meet Industry-Identified Talent Needs

Jobs

3. Foster Entrepreneurship and Business Innovation
4. Accelerate Commercialization to Enhance Regional Competitiveness
5. Stimulate a Vibrant, Connected Community
6. Expand College's Resource Capacity



Community College role in…

- ✓ Locating innovation
- ✓ Prototyping
- ✓ Pilot production
- ✓ Test and demonstration
- ✓ Early-stage manufacturing
- ✓ Full-scale commercialization

Community College role in… ***Locating Innovation***

Coaching, teaching, mentoring

Pre-seed Funding

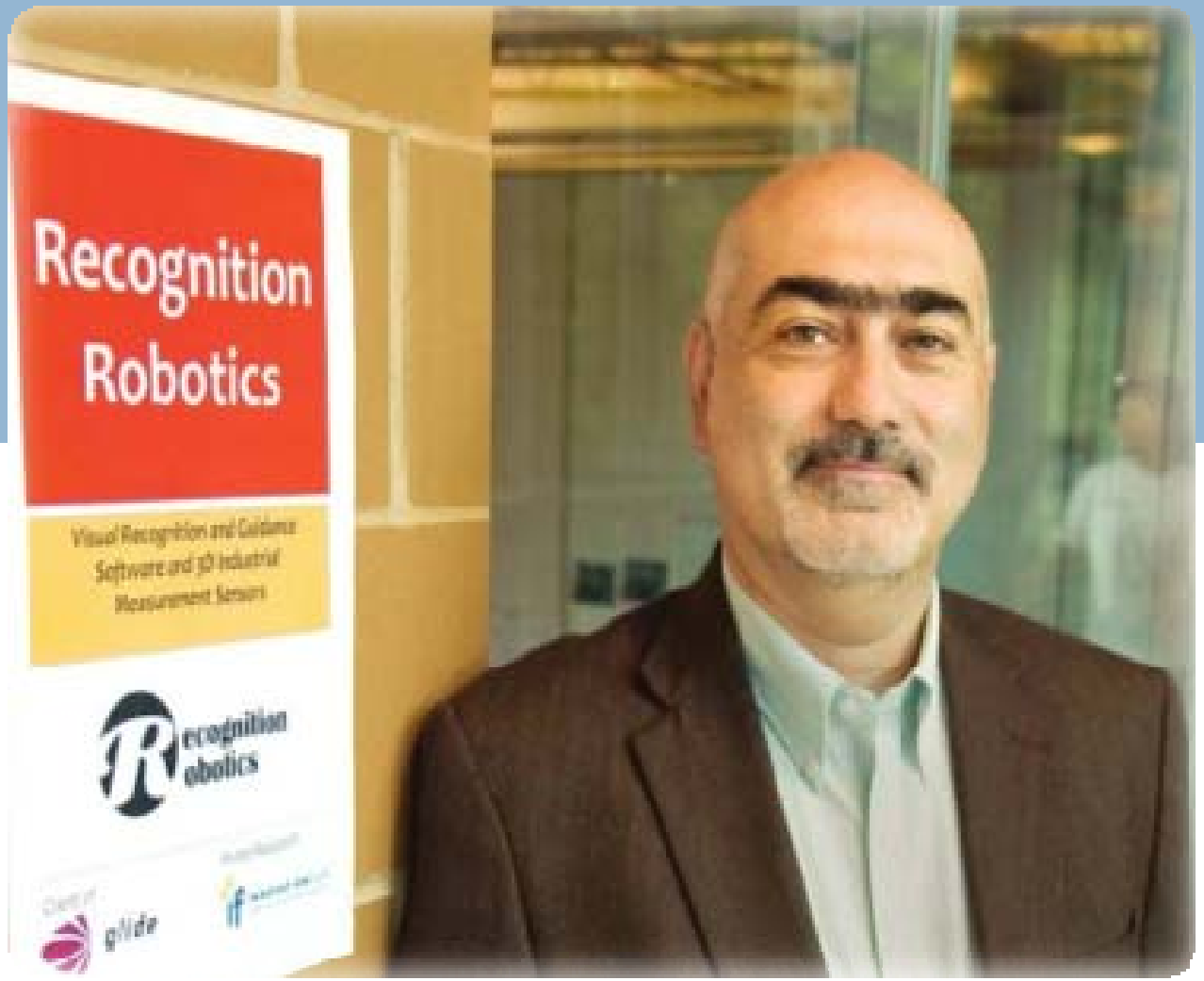
INNOVATIONFUND

2007	2008	2009	2011
Lorain County Community College FOUNDATION	The University of Akron	YSU Youngstown State University	Cleveland State University 1964
Lorain County Community College	University of Akron UARF Research Foundation	Youngstown Business Incubator cultivate innovate accelerate	Northeastern Ohio Universities Colleges of Medicine & Pharmacy
glide			Stark State College of Technology 1960
Ohio Third Frontier Innovation Creating Opportunity	★	***Awarded: $2.125 mil on December 13, 2012; OTF investments of $6.5 million***	
$400K	$500K	$1.5 mil	$2.0 mil

$14 million Evergreen Fund Created when matched with Partner & Philanthropic Support

EARLIEST STAGE PRE-SEED SUPPORT

Activity	*Impact*
>5,300 *inquiries*	**$104 mil** *follow-on funding*
822 *accepted applications*	**$33.6 mil** *sales revenue*
135 *awards*	**>150** *internships*
112 *companies*	**>375** *jobs*
$7.5 mil *value of awards*	**$31k – $120k** *salary range*


Recognition
Robotics
Visual Recognition and Guidance
Software and 3D Industrial
Measurement Sensors
Recognition
obotics
glide

Technology Transfer & Commercialization Task Force

Office of Community Technology Transfer

Features:

- Investor Focused Vetting Process
- Patent Search
- Provisional Patent Filing
- 98/95 model
- Accelerator-based Business Support using Proactive Launch Program approach

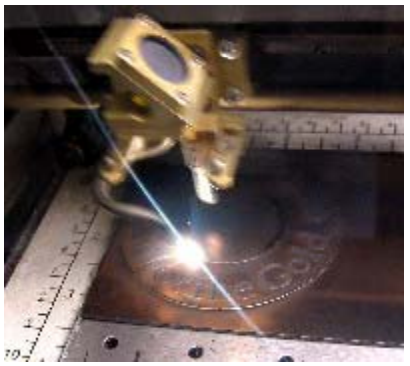
PROACTIVE LAUNCH PROGRAM (PLP)

1. IP > Determine ability to dominate; file & pay provisional patent application
2. Incorporation > Reduced fee incorp. w/all starting docs; boiler plate documents
3. Operations > Establish mutually agreed upon meeting calendar (weekly, monthly)
4. Commercialization Plan > Implement task/timeline Project management w/interns
5. Engineering > Multiple relationships, early stage to commercial unit
6. FDA/regulatory > Design history/documentation platform
7. Capitalization plan > Initial equity positions; timing, amounts, valuations, investor presentation development
8. Management > Advisors/mentor network; board participation
9. Funding > Innovation & seed fund, Series A relationships
10. Budget/forecasting > Proforma P&L support
11. Prototyping > Additive mfg/Fablab access
12. Presentation > PPT, PPT > website, logo

Community College role in… *Prototyping, Pilot production, Test and demonstration and Early-stage manufacturing*

Lorain County Community College

FABLAB



- Based upon the concepts of Dr. Neil Gershenfeld, the Director of the Massachusetts Institute of Technology's Center for Bits and Atoms
- A collection of commercially available machines – manufacturing to the desktop level
- Offers tools needed to "conceptualize, design, develop, fabricate and test" a wide variety of products

Desich SMART Center

The Richard Desich SMART Commercialization Center for Microsystems at Lorain County Community College

Mission Statement

The Desich SMART Center develops manufacturable packaging integration solutions for customers developing next-generation microsystem products by leveraging world-class facilities and a highly experienced engineering team to accelerate time to market.

Desich SMART Center

The Richard Desich SMART Commercialization Center for Microsystems at Lorain County Community College

Overview

- We provide microsystems packaging and system integration solutions
- Advanced packaging, assembly, and test capabilities yielding high performance and reliable manufacturing solutions
- Capabilities include package design, assembly, characterization, performance testing and accelerated reliability testing
- Our comprehensive microsystem packaging and testing services in one location yields a cost and cycle time effective solution
- Launched in September 2011, opening new 47,000 sq. ft. facility in 2013 featuring class 100 and class 1000 cleanrooms

Desich SMART Center

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Package design, assembly and MEMS / Micro Scale testing / Low-volume Production

Standard & Custom Packaging

- Design & Simulation
- Wafer dice
- Die bond
- Wire bond
- Potting, sealing, underfill
- Package types: QFN, DIP, TO

Microsystem Testing

- Calibration – pressure, motion, and chemical
- Environmental – thermal, humidity, vibration, and shock

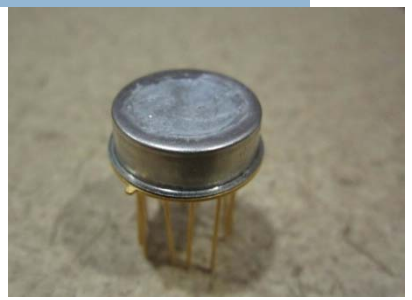
Reliability

- Accelerated tests – process and materials analysis
- Failure probability – software simulation

Advanced Microsystem Packaging

- Chip to chip bond*
- Chip to wafer bond*
- Flip chip bond*

Early fault warning for oil-immersed electrical equipment



Technology

1. Electrochemical micro sensor that measures acetylene gas in transformer oil
2. Challenging packaging and performance issues
3. Field reliability is a ”must have”
4. Technology Acquired from University of Toledo

Key Technical Objectives

1. Low cost, real-time sensor system for gas measurements in liquid
2. Optimize sensor sensitivity and selectivity for harsh environment application
3. Integrate sensor with other system components

Commercialization

1. Large utility has expressed interest in field prototype units
2. Electric Power Research Institute has requested proposal for assessment of sensor readiness
3. Prototype volumes to be manufactured at SMART

Community College role in…*Full Scale Commercialization*

NE Ohio Speed to Market Accelerator

Advanced Energy and Flexible Electronics Clusters, Career Pathway Development

JOBS & INNOVATION
ACCELERATOR CHALLENGE

NorTech
Growing Northeast Ohio's High Tech Economy

Lorain County Community College

MAGNET
Manufacturing Advocacy & Growth Network

jumpstart

UniControl, Inc

- Century old manufacturing firm selling combustion control products, gas analyzers and switches
- Workshop identified need for Application Sales Engineer
- Participant in STMA Talent Planning workshop
- Profiled job; split into two parts
- Hired from within

"The methods and tools learned there will help us build our most important business attribute: our employees."

We have received immediate return from the time invested in this workshop, and I would recommend it to every business employer."

~Steve Craig, President, UniControl, Inc.

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