



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

“Stakeholders and the Bioeconomy”

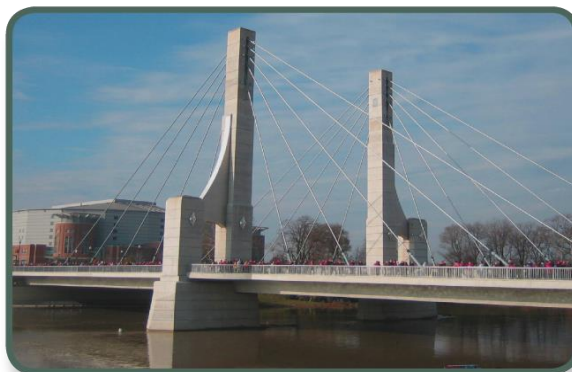
OBIC



agriculture

OBIC

polymers &
specialty
chemicals



OBIC, the Bioproducts Innovation Center located at The Ohio State University, was created in 2005 to integrate academia and industry linking expertise from two major industries, agriculture and polymers/specialty chemicals.



US Market Position



paints & coatings



rubber

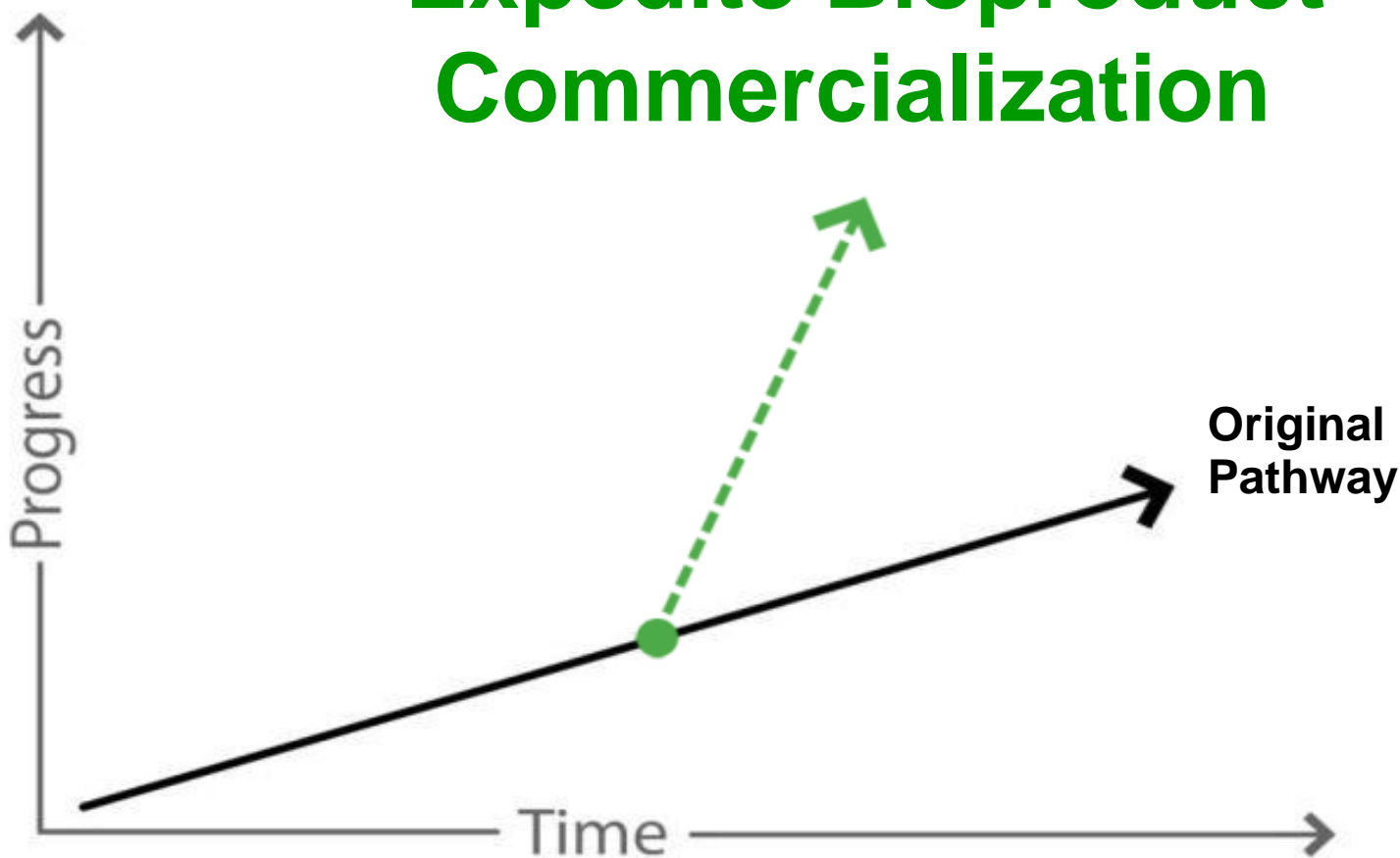


adhesives



soaps

Expedite Bioproduct Commercialization



The Biobased Marketplace: **Survey of Consumer Attitudes**

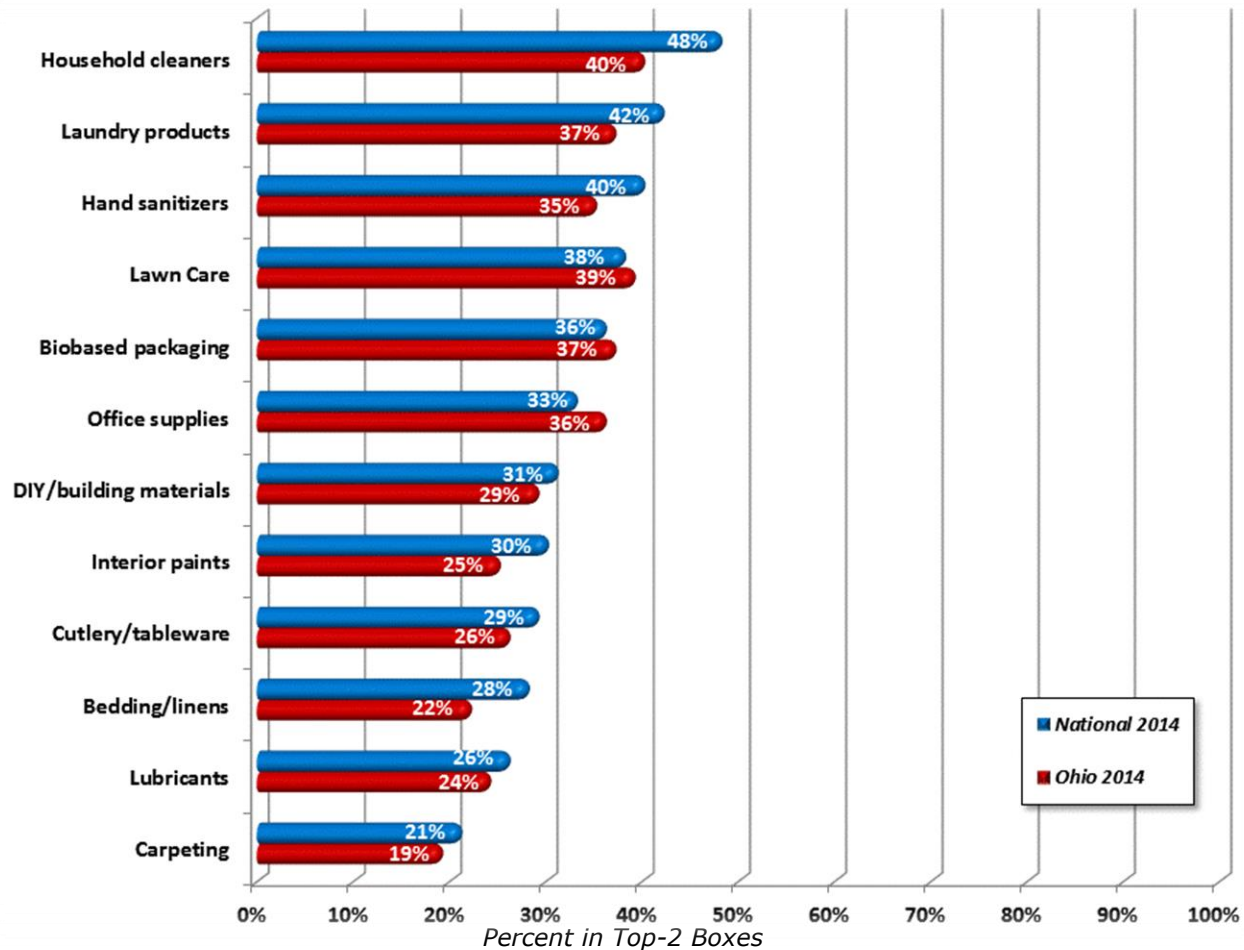


Summary of Topline Findings
*Prepared by **b4 Branding***

Presented: January 16, 2015

Interest in Purchasing Biobased Categories

Please rate your level of interest in buying biobased products in the following categories: (Rating based upon 7-point scale)



The OBIC Sustainable World Tour...





Vilsack Visit



“We can virtually make everything and anything from biobased materials. It’s a new economy, it’s a new way of doing business.”



By the Numbers:

- **11** Sponsors
- **41** Exhibitors
- **250** Attendees
- **50** High School Students
- **16** Education Session Speakers
- **8** Mini Session Speakers
- **24** Bioproduct Innovation of the Year Finalists
- **2** Bioproduct Innovation of the Year Winners
- **550** Days Spent Planning





Quick Facts

- **392 Facebook Likes**
- **643 Twitter Follows**
- **Over 20 articles written on the conference**
- **7 Countries Represented**
 - Belgium
 - Canada
 - China
 - Denmark
 - France
 - Mexico
 - United States
- **20 U.S. States Represented**
 - California
 - Florida
 - Georgia
 - Illinois
 - Iowa
 - Louisiana
 - Maryland
 - Michigan
 - Minnesota
 - Missouri
 - New Jersey
 - New York
 - North Carolina
 - North Dakota
 - Ohio
 - Pennsylvania
 - Texas
 - Virginia
 - Washington D.C
 - Wisconsin





The “Bioeconomy”

Feedstocks

agriculture/
forestry

crops/residue

wood residue

livestock

manure



industrial/ municipal

municipal
solid waste

CO₂ emissions

food/industrial
by-products



Technologies

extraction/
separation

mechanical, chemical

.....
bioconversion

microbes, algae

.....
hydrolysis

acids, enzymes

.....
gasification

high heat, low oxygen

.....
pyrolysis

catalysis, heat,
pressure

Markets

food

oil

proteins

carbohydrates

additives

.....
fuels/energy

ethanol/butanol

biodiesel

heat

electricity

.....
materials

plastics

fibers

adhesives

rubber

paints/coatings

dyes/pigments/ink

detergents/solvents



The “Bioeconomy”

Feedstocks

agriculture/
forestry

crops/residue

wood residue

livestock

manure



industrial/ municipal

municipal
solid waste

CO₂ emissions

food/industrial
by-products



Technologies

extraction/
separation

mechanical, chemical

.....
bioconversion

microbes, algae

.....
hydrolysis

acids, enzymes

.....
gasification

high heat, low oxygen

.....
pyrolysis

catalysis, heat,
pressure

Markets

food

oil

proteins

carbohydrates

additives

.....
fuels/energy

ethanol/butanol

biodiesel

heat

electricity

.....
materials

plastics

fibers

adhesives

rubber

paints/coatings

dyes/pigments/ink

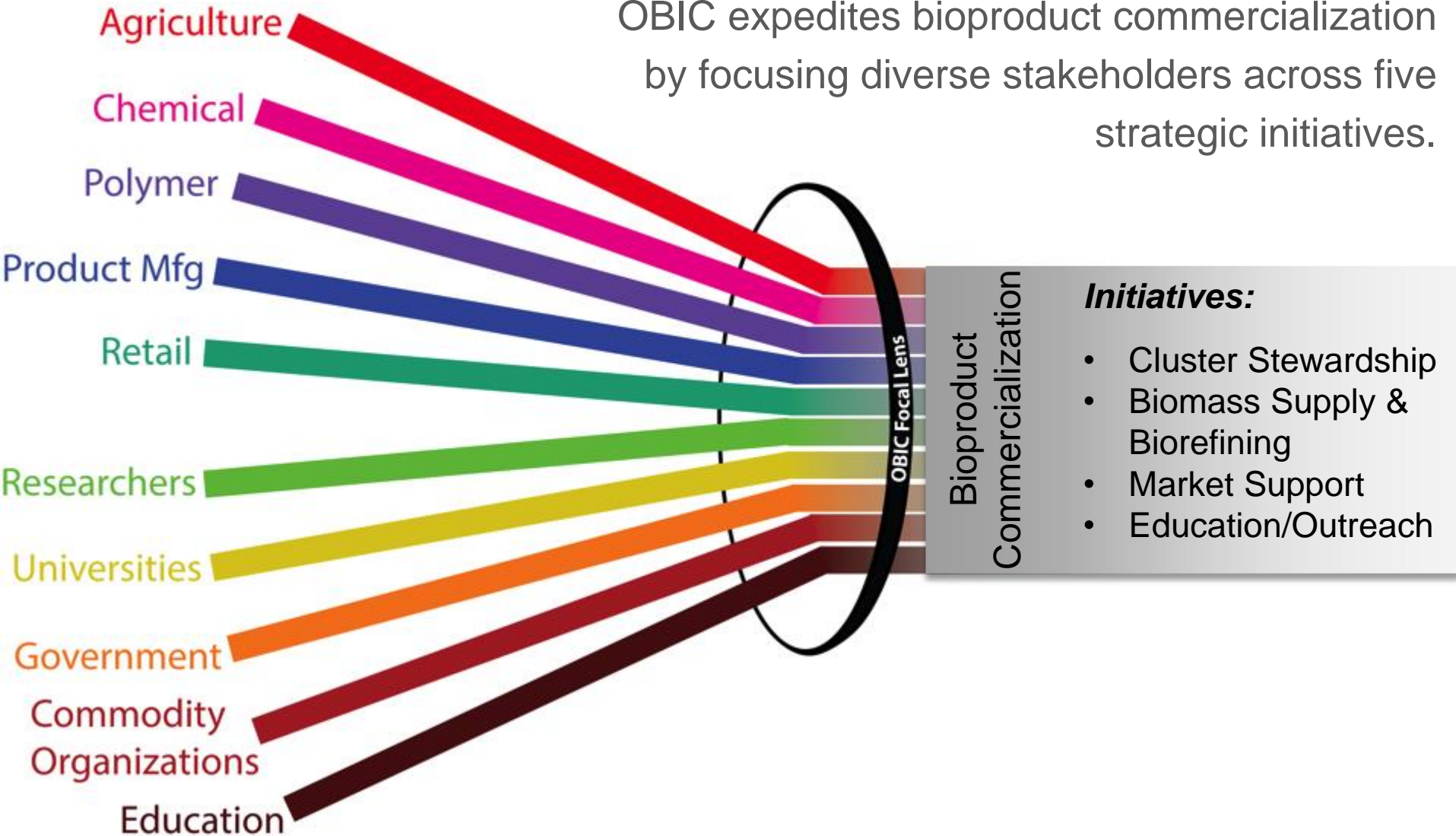
detergents/solvents





Stakeholder Groups...

OBIC expedites bioproduct commercialization by focusing diverse stakeholders across five strategic initiatives.





“Cell to Sell”[®] Innovation Pipeline

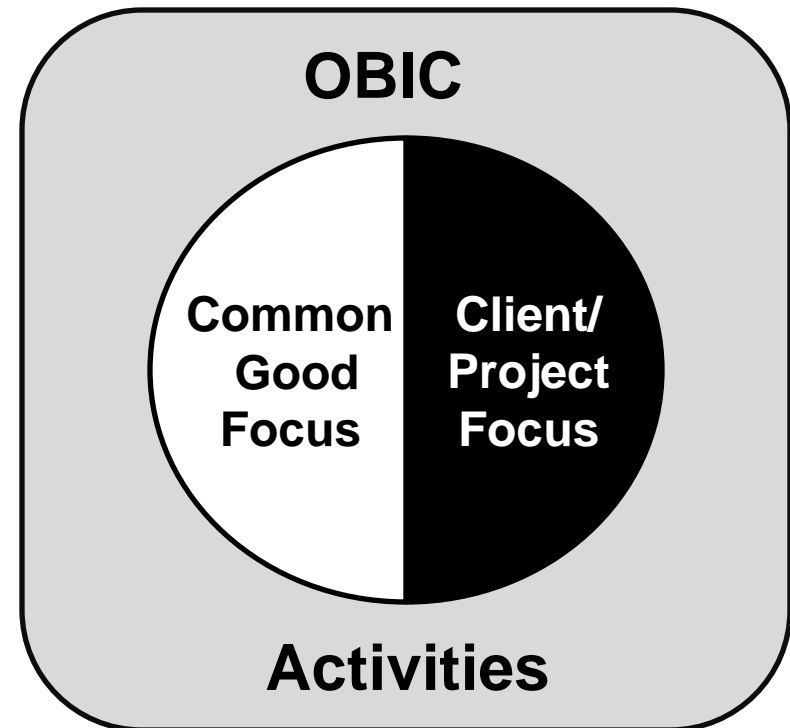


- Identify enabling technologies
- Assess available feedstocks
- Establish market needs and business case
- Facilitate linkages within and between clusters
 - Provide impartial advocacy
 - Build relationships and value propositions
 - Leverage policy, industry, and academic assets
- Develop and manage functional supply chain



- **Prospecting**
 - Market Data
 - Needs & Opportunities
 - Technology & Feedstock Assets
 - Resources
- **Networking**
 - Industry Outreach
 - Collaborator Input & Ideation
- **Assessment**
 - Technical & Economic Analysis
 - Application & Market Analysis
 - Value Proposition/Business Case
- **Leverage Resources**
 - Talent – Public & Corporate
 - Facilities
 - Strategic Investments
 - Grant Proposal Development
- **Program Oversight**
 - Partnerships & Agreements
 - Project Development
 - Project Deployment

Goal: Increase probability of success





ELEMENTS

Assets

- Feedstocks
- Facilities
- Technology
- Talent
- Fund\$

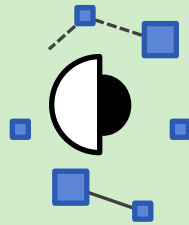
Drivers

- Industry
- Markets
- Policy

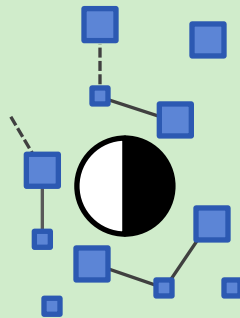


Stages of Cluster Development

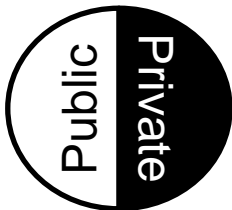
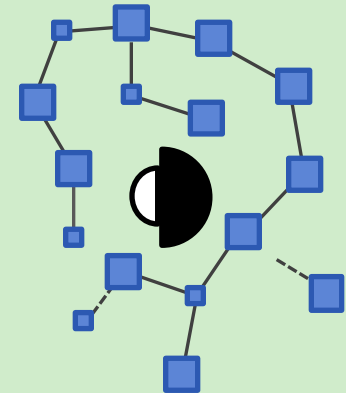
Nascent



Immature



Mature



OBIC

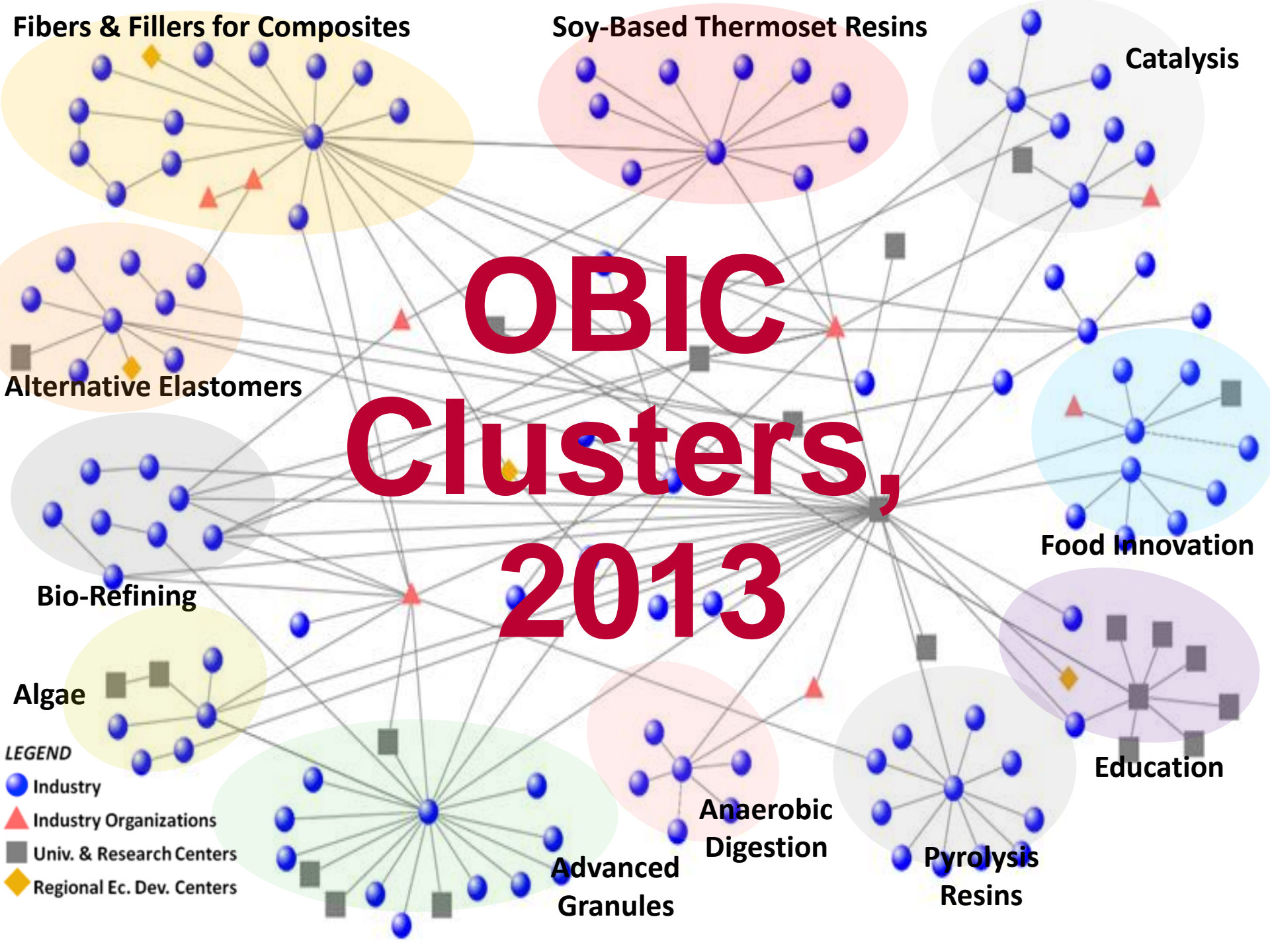
Discover

Assist

Connect

Assess

Steward





Example: Alternative elastomers cluster



OBIC assisted with securing a \$3 million Ohio Third Frontier Award to initiate the **Program of Excellence in Natural Rubber Alternatives (PENRA)** research and pilot plant in Wooster, Ohio to commercialize renewable and alternatives sources of rubber.



PILOT SCALE DIGESTERS



Integrated Anaerobic Digestion





The Biobased Promise:

Biobased innovations offer consumers intelligent, sustainable choices because they use renewable materials derived from plants.