Western Illinois University

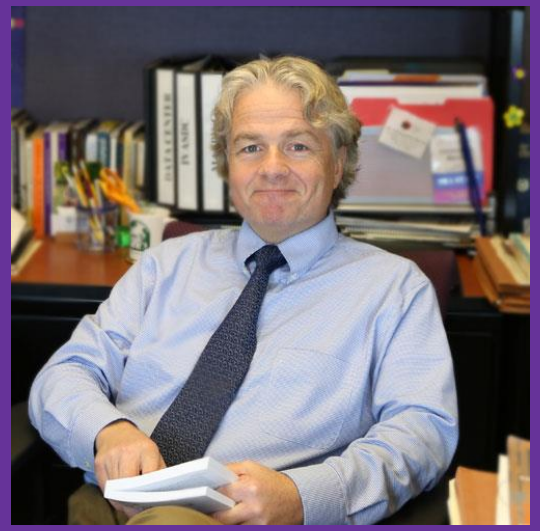
2024 Corn Belt Ports and Mid America Ports Commission Annual Meeting

Thursday, February 15

Quincy, IL

Advancing Smart Logistics – National Science Foundation

Regional Ports as Business Clusters and Centers for Logistics Innovation



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ADVANCING SMART LOGISTICS

Corn Belt PORTS

NSF National Science Foundation

Corn Belt Ports – Example of organizational innovation

Importance of Upper Mississippi and Illinois River Ports

PROBLEM

- Essential to Upper Midwest commodity flows
- Strategic disadvantage due to low tonnage at each individual port
- Hard to compete for federal infrastructure funding and business

Creation of Regional Ports

SOLUTION

- Improve Upper Midwest port competitiveness
- Aggregate individual ports into **Federally recognized regional ports**
- Consolidated 16 ports and 253 barge terminals into **four** regional ports:
  - Mid-America Port Commission (MAPC)*
  - Upper Mississippi River Ports (UMRP) [IL & IA]
  - Northern Grain Belt Ports (NGBP)
  - Illinois Waterway Ports Commission (ILWW)*
- Collectively – Four regional ports form the **Corn Belt Ports region**
- **Each regional port now ranks in the top 75 of US ports in tonnage handled, with 2 in the Top 25 by Dry Bulk Tonnage***

Meanwhile at WIU…

- **National Science Foundation**
  - CHIPS and Science Act of 2022
  - $1,000,000 Planning Grant for 2 Years
- **Purpose of NSF Program**
  - Boost regional innovation capacity
  - Grow sustainable innovation ecosystems
  - Demonstrate inclusive economic growth
  - Train & develop local workforce
  - Create new regional cultures of innovation
- **Participants**
  - GSU (PI), SIUE, SIUC, UIUC, UIC, & WIU
  - Numerous private sector partners
  - Numerous public sector partners
  - Illinois Innovation Network

- **Smart Logistics**
  - Supply chain technologies
  - Is Illinois Keeping Up?
- **Industry 4.0 Technologies Include:**
  - Automation
  - Artificial intelligence
  - Data analytics
  - Internet of things (IoT)

- **Advancing Smart Logistics (ASL):**
  - Multi-model research corridor in Illinois.
  - Electric vehicles, green logistics, drones, autonomous vehicles, cargo VTOL, and **smart logistics for marine highways**

U.S. National Science Foundation

ILLINOIS INNOVATION NETWORK

ADVANCING SMART LOGISTICS

Opportunity to help advance CBP efforts

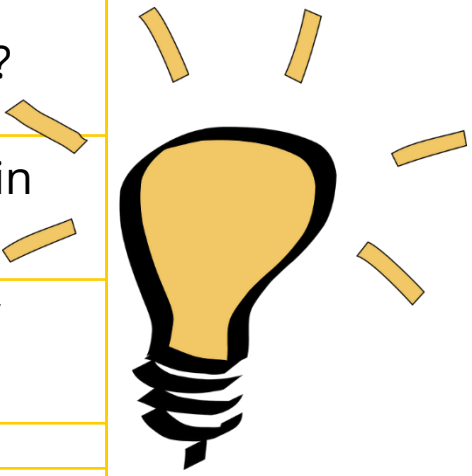
Now—How can we take regional ports to **the next level of competitiveness**?

How can ports **enhance competitiveness** through regional *collaboration*?

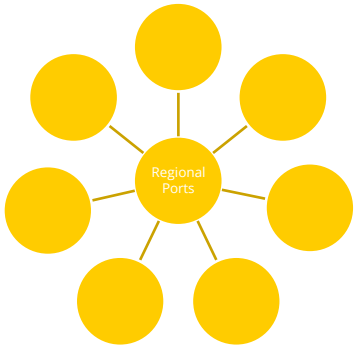
How do regional port stakeholders **spark** supply chain **innovation**?

What role or impact does **advanced technology** have in supply chain innovation within regional ports?

By acting in a collective manner, can a regional port be a **model of innovation** that other regional ports can adopt?



Research: Regional Ports as Business Clusters



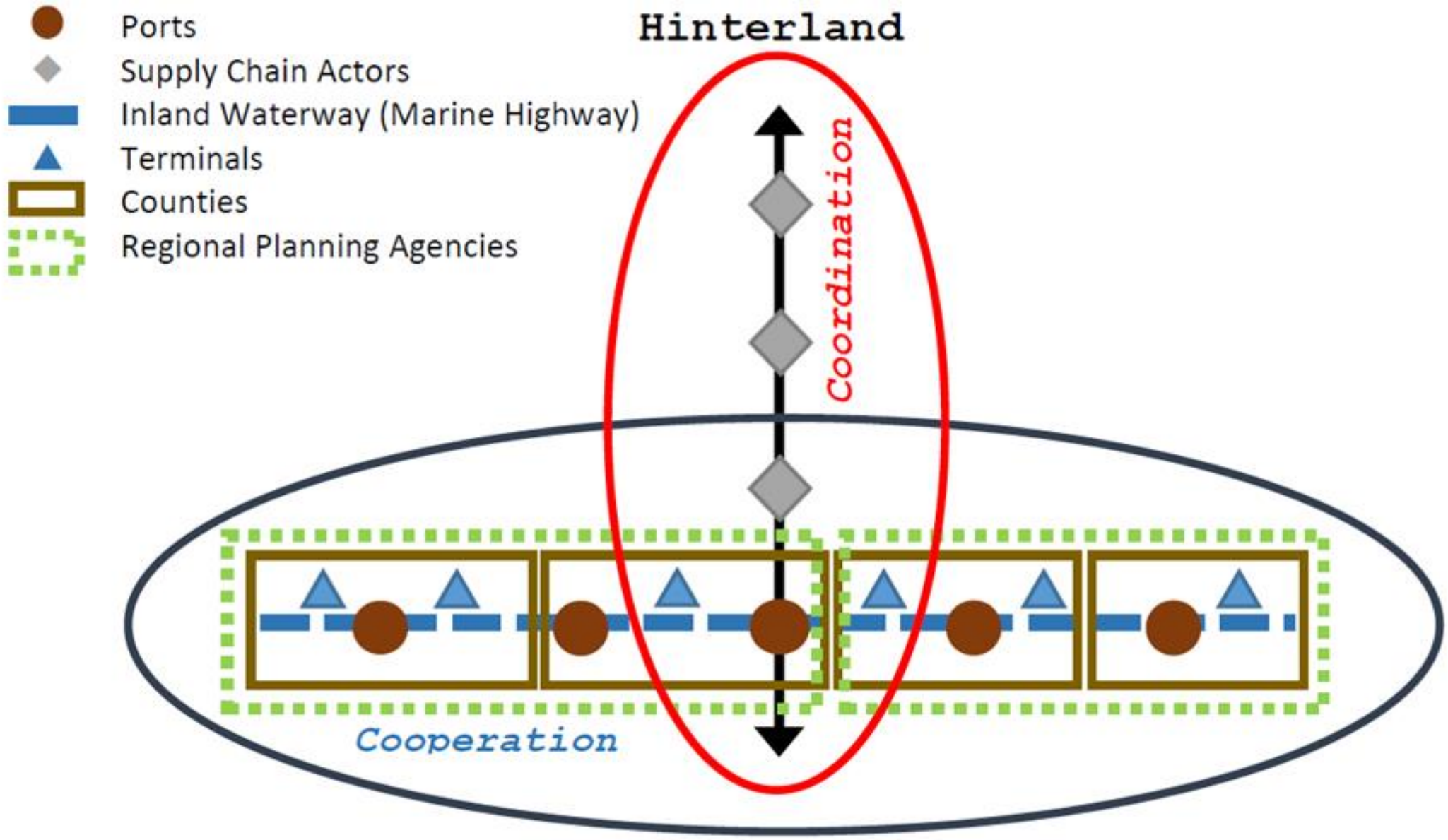
- What is a business cluster?
  - Regional ports ARE business clusters
- Research shows
  - business clusters can be **catalysts for innovation**
  - each company or organization in a business cluster can **benefit from improved regional competitiveness**
  - *BUT no single entity can make large improvements* ***on their own***
  - The cluster can only improve its competitiveness through **"joint action"** and governance provided by a collective action regime

Regional Ports as a Collective Action Regime

This project will

- explore if and how stakeholders along the regional port can **cooperate** to improve **coordination** along the regional supply chain **(Fig. 2)**
- explore the role & impact of technology on regional ports, business clusters, and supply chain competitiveness

Regional Port Cooperation and Coordination



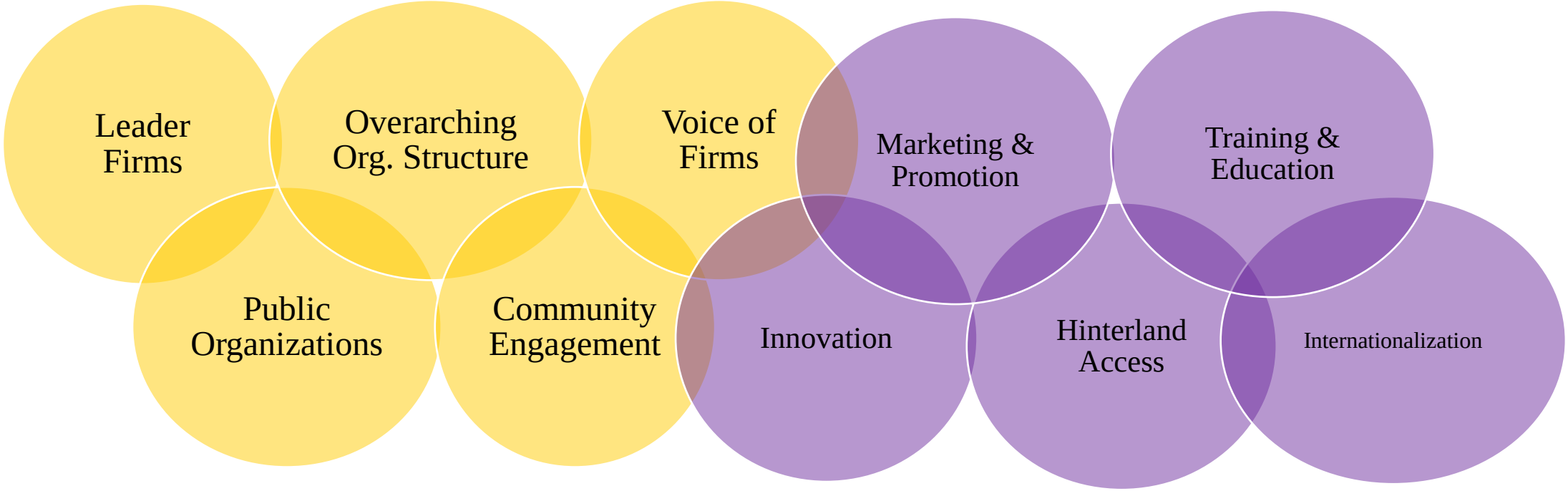
Adapted from Brooks et. al. (2010).

Next step: Survey stakeholders

A. Importance of Business Cluster Variables

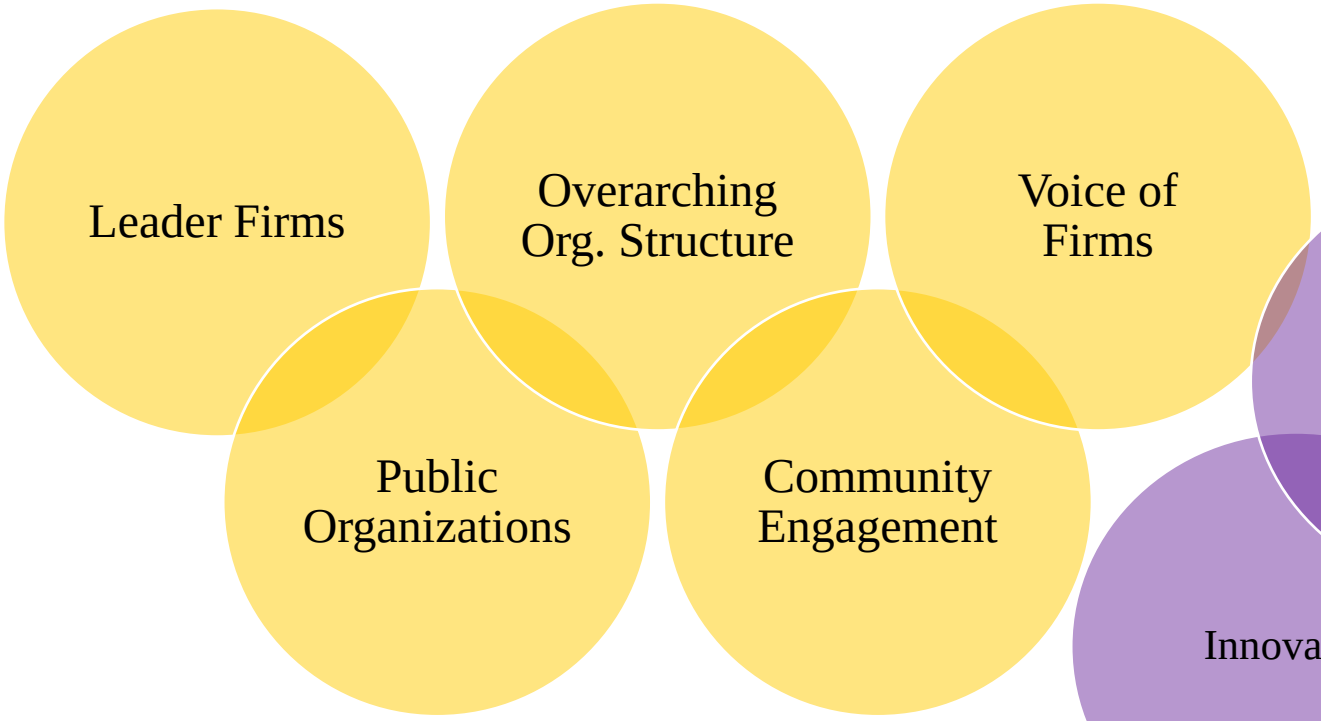
B. Presence of Business Cluster Variables

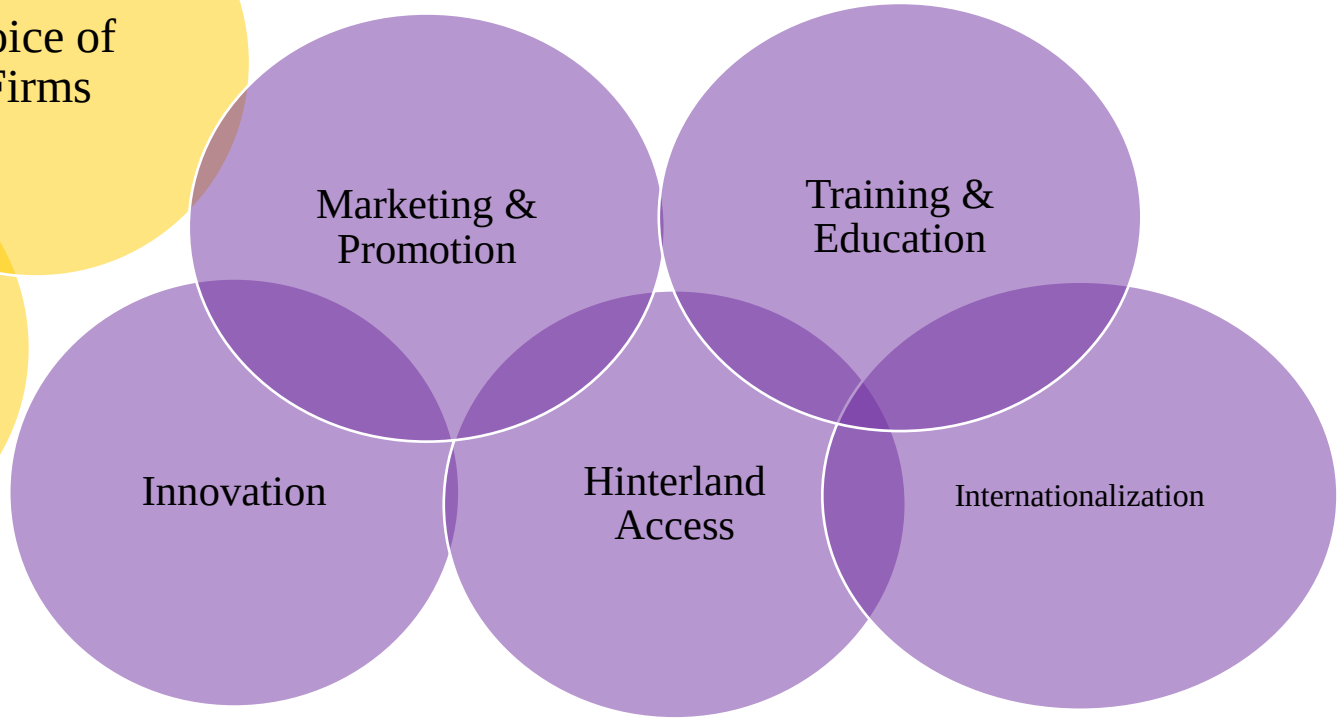
C. Importance of Related Supply Chain Technologies & Issues



Business Cluster Variables

The second group of five variables are **"outward looking"** and identify five strategy areas that a regional port, acting **cooperatively** as a collective action regime, could pursue.





The first five variables are **"inward-looking"** and examine the extent to which **coordinated** action is likely to take place.

Importance of Supply Chain technologies & issues such as…

- Big data
- Sensors (IoT)
- Cloud-based computing
- Drones
- Electric vehicles
- Automation
- Reliable high speed internet (broadband)
- Renewable energy production
- Aging infrastructure
- Sustainability

Conclusions and Discussion

- Regional ports have reorganized and elevated their visibility
- **Now—How can we take regional ports to the next level of competitiveness?**
- **Use research outcomes as input into a larger NSF Grant Proposal**
  - $160 million – 10 Year Grant
  - Improve logistics in Illinois and the Midwest
  - Position regional ports as part of a larger logistics business cluster in the Midwest

Conclusions and Discussion

Ultimate Project Goal:

Spur ***innovation*** and increase Corn Belt Port ***competitiveness*** while driving economic ***development*** and ***investment*** in our region.

Questions? Comments?

Thank you!

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Additional slides

Business Cluster Variables

Conduct surveys that focus on 10 variables identified by previous researchers. The first five variables are **"inward-looking"** and examine the extent to which **coordinated** action is likely to take place:

1. ***Presence of leader firms***. Financial and relational resources to effect change.
2. ***Presence and participation of public organizations***. Local and state governments and planning agencies can provide financial support, but also influence decisions beyond the region.
3. ***Presence of an overarching organizational structure***. This organization welcomes stakeholders from multiple sectors with a shared interest in port success and economic development. This public entity "reduces the transaction costs of cooperation" (de Langen and Visser 2005, 174).
4. ***Community Engagement***. Is there a local interest expressed by the host community in supporting regional improvements in the port and supply chain?
5. ***Voice of Firms***. This is the capacity of local businesses beyond leader firms to influence economic development discussions.

Regional Ports as Collective Action Regimes

The second group of five variables are **"outward looking"** and identify five strategy areas that a regional port, acting **cooperatively** as a collective action regime, could pursue:

6. ***Innovation***. Are there systematic strategies or cooperative agreements to conduct research or make investments in new technologies? This is important given the age of the inland waterway infrastructure, coupled with the explosion of data-driven technologies that could improve port and supply-chain efficiencies.
7. ***Hinterland Access***. Are there collective agreements in place to improve supply chain infrastructure including roads, rail, air, or broadband.
8. ***Marketing and Promotion***. Does the collective action regime have a marketing strategy beyond what individual ports might do?
9. ***Internationalization***. To what extent does the regional port organize its constituent members to expand its perceived market area beyond the United States?
10. ***Training and Education***. **Industry 4.0 Technologies** are transforming our economy. These technologies include automation, artificial intelligence, big data and analytics, sensors, and the industrial internet of things (IofT), which already influence waterborne commerce. This variable explores how a collective action regime is working to ensure its **workforce** can implement these technologies to drive innovation.