



Connecting emerging economic opportunities
to North Dakota's future

Interim Higher Education Committee
April 19, 2016



What is NexusND?

Organic integration of 3 emerging industries:

- Unmanned Aircraft Systems (UAS)
- High Performance Computing/Big Data
- Cybersecurity

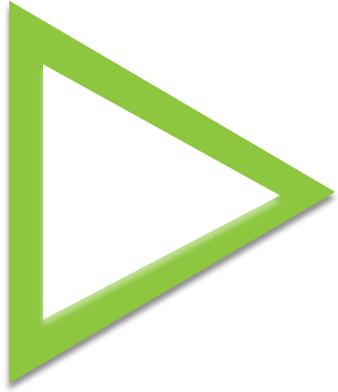
These 3 industries directly contribute to ND's ability to maintain a lead role in other industries like Energy, Ag, and Healthcare.

Leverage resources of all 11 NDUS institutions to prepare future workforce and create new economic growth sectors for North Dakota



How does it all fit together?

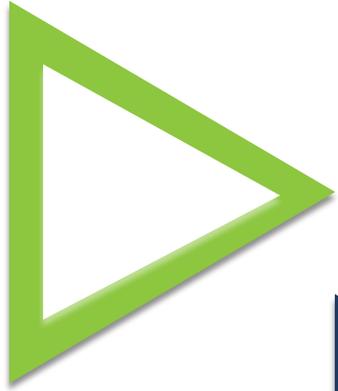
UAS



Unmanned System could map the entire Red River Valley with 3 or 4 passes

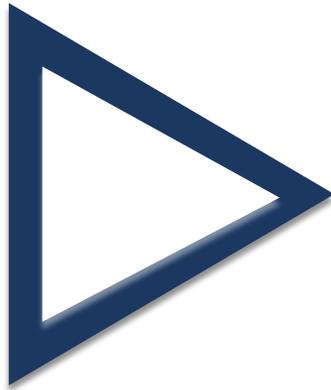
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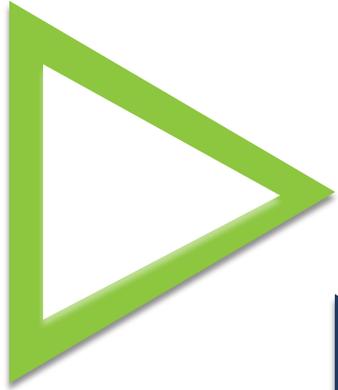
HPC



Computing power to crunch the numbers and store data

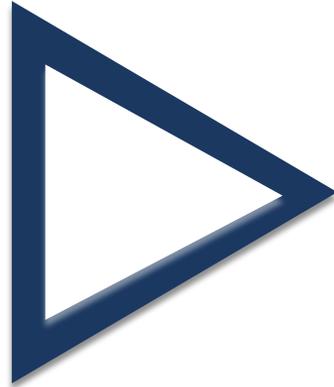
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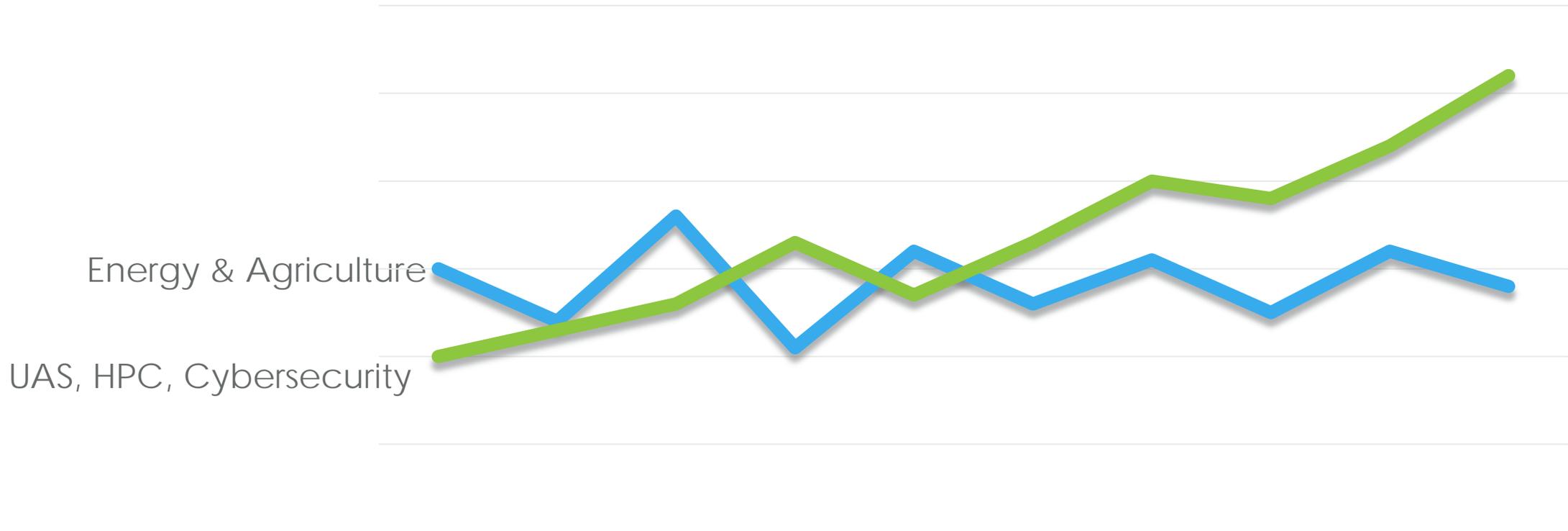
Cybersecurity



Secure the data; keep it safe from bad actors



Diversifying has its advantages



Employment Trends

Unmanned Aircraft Systems

- A point of prestige for Red River Valley
- Offers economic growth potential
- Competition: UND among the first; now many institutions focusing on UAS research
- Economic impact of UAS extends beyond the skies



Autonomous Corridor

Obama announces \$3.9B

- Vision: Highway 83 as corridor for unmanned vehicles to transport goods for commerce
- From North Dakota to Texas, Canada and Mexico
- Unmanned commercial vehicles with other drivers
- Above airspace for unmanned aerial



Big Data = Big ROI

- For every dollar invested on high performance computing, the **return is \$356.50** in revenue, according to Univ. of Houston and Dept. of Energy research



Big Data = Big ROI

Competition: Wyoming's National Center for Atmospheric Research – a partnership among state, university, & private businesses, sponsored by National Science Foundation.



Big Data = Big ROI

Big Data in Healthcare is being used to predict epidemics, cure disease, improve quality of life and avoid preventable deaths.



The 'big data'
revolution in healthcare

Accelerating value and innovation



Big Data = Big ROI

NexusND will actualize SBHE's goals for the NDUS Collaborative Center for Computation and Data, which will be a key player for the region's economic development.



Big Data = Big ROI

- HPC component will establish North Dakota as a major destination for research and education pertaining to Big Data
- By housing its own data, North Dakota will be more able to safeguard its lead role in Precision Ag, Energy, UAS, and Rural Healthcare



Taking the Lead in Cybersecurity

- No longer a computer science problem for programmers
- IT Security touches every area of society
- Forbes estimates **one million job vacancies** for cybersecurity professionals in the United States
- Higher education needs to address this massive workforce shortage in cybersecurity



Taking the Lead in Cybersecurity

In the News: The U.S. Army Cyber Command unit relocating to Fort Gordon, Augusta, Georgia.

Competition:

Georgia Regents University launching Cyber Institute to develop research, new curriculum and outreach opportunities in cybersecurity starting this summer.



Taking the Lead in Cybersecurity

In the News: US Navy Needs Help to Defeat UAS Cyber Threats.

Navy kicks off project to collaborate with outside scientists on R&D that will help protect the branch's UAS fleet.



Taking the Lead in Cybersecurity

North Dakota's research institutions have access to:

- FAA-certified unmanned aerial systems test site
- UAS Center of Excellence
- two air bases with UAS activity
- public-private partnerships through the Grand Sky and Research ND initiatives



Taking the Lead in Cybersecurity

Using North Dakota's existing strength in unmanned aerial systems and pairing it with the major labor shortage of data analysts and cybersecurity professionals, North Dakota can diversify its economy and grow its prestige.





NexusND = Opportunity ND

