

Realize The Strengths of a Unified System

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REALIZE THE STRENGTHS OF A UNIFIED SYSTEM

POINTS OF EMPHASIS



NEW NATURAL RESOURCE

The World's new natural resource, and how it impacts the core ND industries.



OUR ENVIRONMENT

A look at the rapidly changing environment, and where we currently fit.



REALIZE THE STRENGTHS OF A UNIFIED SYSTEM
A conceptual framework of how best to compete on an international scale.



DATA

THE WORLD'S NEW

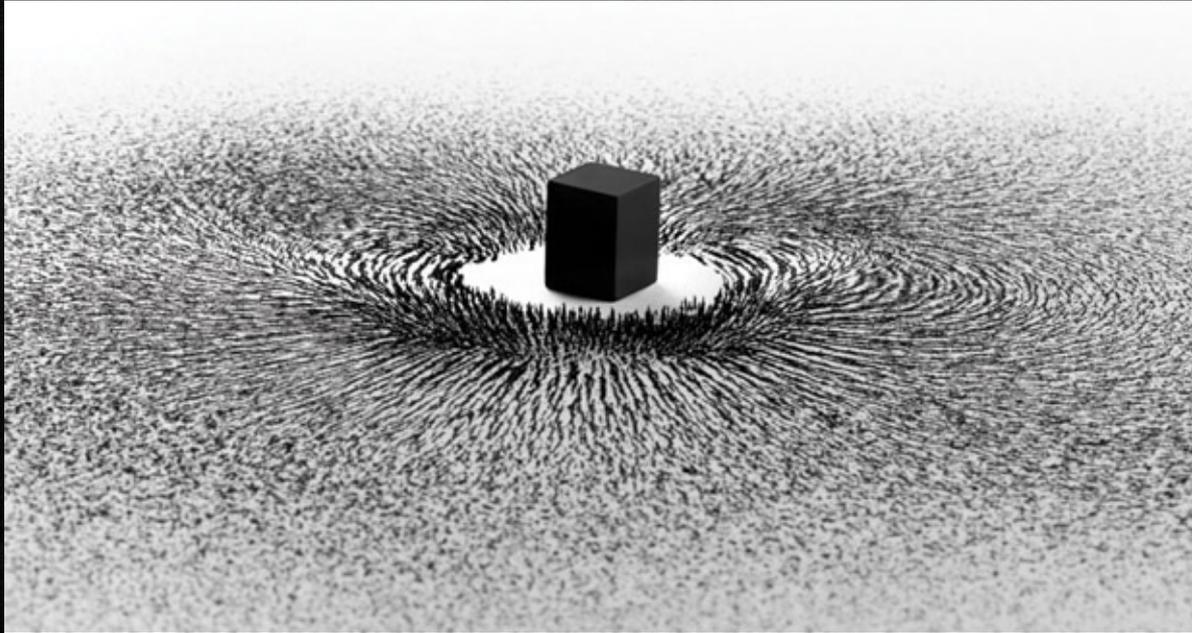
NATURAL RESOURCE

"Big Data is the World's natural resource for the next century"

- Ginny Rommetty, IBM CEO

MISSION NORTH DAKOTA

MAGNET FOR BIG DATA AND TECHNOLOGY



Be the First to Attract Industry by Offering Services
Essential to Supercomputing and Big Data

The Key to Our Continued Success...

Energy
North Dakota's New #1
Industry

UAS
Beyond the Test Site

Store, Process

DATA

& Deliver

Agriculture
North Dakota's Staple Industry

Government
Local, State, Federal Partnerships

Medicine

Epigenetics, Healthcare Research

Business Partners

Private & Public including Small Business

A photograph of Ernest Moniz, US Secretary of Energy, speaking at a World Economic Forum event. He is wearing a dark pinstriped suit, a white shirt, and a blue patterned tie. He has grey hair and is gesturing with his right hand, holding a pen. The background is a dark blue wall with the words "WORLD ECONOMIC FORUM" repeated in white capital letters. A semi-transparent black box with white text is overlaid on the bottom right of the image.

WORLD ECONOMIC FORUM

“This next stage of (HPC) development will require an unprecedented level of cooperative effort among the private sector, national labs, and academia.”

- Ernest Moniz, US Secretary of Energy

5 days ago...

Department of Energy Awards

\$425 Million

For Next Generation
Supercomputing Technologies

OUR ENVIRONMENT



90%

IN 2 YEARS

90% of the World's Total Data was produced in the past 2 years (IBM)*

Currently, we can handle...

1.3TB

/HOUR**

1 MONTH OF THAT POTENTIAL

UAS vehicles are currently capable of recording up to 1.3TB per hour of data. That is equivalent to the data contained in 1,331 pick-up trucks filled with books.**

OR... **1,395,864,371 YEARS**

of Flight Op Log Data****



In 2009, the University of North Dakota was the **FIRST** and **ONLY** university offering a major in unmanned aircraft systems.



DATA

Today, the number of states offering training and research in Unmanned Aircraft Systems covers the nation.



Realize the Strengths of a Unified System

Establish enhanced high performance computing
resources for the State of North Dakota.

Infrastructure Step #1: Northern Tier Network

The Northern Tier Network—North Dakota (NTN-ND) is a joint network effort between the State Information Technology Department (ITD), North Dakota State University (NDSU) and the University of North Dakota (UND) to connect North Dakota to the nation's research and education network.

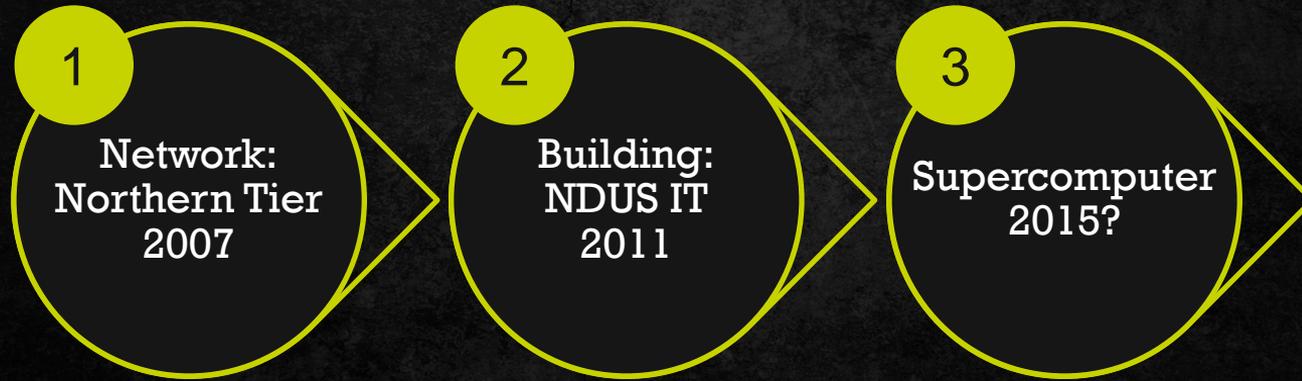
Infrastructure Step #2

NDUS IT Facilities: \$12.5M Appropriation + \$4.5M+ Reallocation



REALIZE THE STRENGTHS OF A UNIFIED SYSTEM

STEP-BY-STEP



DEPLOY A TOP500 SUPERCOMPUTER



FLORIDA SUPERCOMPUTER



In an effort to remain competitive and relevant, UF embarked upon a mission to outfit itself with “a Top 10 research computing infrastructure”.

— HIPER GATOR CHOMPING DATA —

- UAS DATA
- RESEARCH MED
- RESEARCH ENGINEERING
- RESEARCH AGRICULTURE

— TOP500 SUPERCOMPUTER —

- GRANT FUNDING
- ±\$ 2,419,682 PER POSITION ON TOP500 LIST
- GLOBAL COLLABORATION

01 MOVING UP!

According to a 2010 study, institutions operating a Top500 supercomputer saw a contemporaneous increase in NSF funding of USD **\$2,419,682** for each position it achieved above the 500th place on the Supercomputer Top 500 list.



NCAR-Wyoming
Supercomputing Center

Operated under the sponsorship of
the National Science Foundation



8120 Vera Drive

University of Wyoming
NCAR-Wyoming Supercomputer
mutually benefits the University of
Wyoming, the state, and Federal Agency,
NCAR.

DATA

THE WORLD'S NEW NATURAL RESOURCE

Midwest Big Data Hub

Edward Seidel

Director, NCSA

Founder Prof. of Physics, Prof of Astronomy

On behalf of the Midwest Big Data Hub



Brian Athey



Sarah Nusser



Beth Plale



Josh Riedy



Ed Seidel

SEEDCorn: Sustainable Enabling Environment for Data Collaboration (aka MBDH)



- A partnership of academia, government, industry, nonprofits
- Over 100 partners already
 - Colleges, Universities, Medical Centers, of all types
 - Industry, Non-profits, NGOs
 - States, cities, communities

Midwest Big Data Hub

Accelerating the Big Data Innovation Ecosystem



Spokes *Currently* Identified by MBDH

(Leaders across midwest for each area!)

- **Network Science**
 - *Including Data Intensive Research in the Social, Behavioral, and Economic Sciences....*
- **Urban Science**
 - *Including Smart and Connected Communities...*
- **Business Analytics**
- **Digital Agriculture**
- **Transportation**
- **Advanced Manufacturing**
- **Food, Energy, Water**
- **Healthcare & Biomedical Research**
 - *Including neuroscience...*
- **Others as proposed...**
 - *Including Data Privacy*



Spokes are supported by the Hub