

# North Dakota Legislative Council

## Briefing On UASs

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Dean

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# UND's Odegard School UAS Evolution

- 2005:
  - Convinced the BRAC to keep the GFAFB open and Realign to UAS mission
  - Recognized need to transition from military to civilian applications and access into the national airspace
  - Recognized need for pilots and system controllers and mechanics
- 2006:
  - Received DoD funding to begin development of a UAS flight test range in North Dakota \$1.9 million
  - Received first round of the Governor's Economic Development funding \$1.0 million
- 2007 - 2008:
  - Developed the undergraduate Bachelor of Science curriculum
  - Received second round of Federal funding \$6.525 million
  - Received second round of State funding from Economic Development \$1.5 million
- 2009 -2011:
  - Implemented first collegiate undergraduate major in UAS in the country.
  - 12 Undergraduate Student Majors in the first class
  - Received next three rounds of Federal funding \$14 million
  - Received State funding from Economic Development \$3.35 million
- 2012 - 2013:
  - Secured FAA designation as a National Test Site
  - Creation of the first UAS Compliance Committee
  - Substantial growth in the undergraduate majors; Now 134 Majors at UND
- 2014 and Beyond Projected Outcomes:
  - Rated #1 UAS training in the country
  - Substantial business opportunities to use Airspace to test and develop sensors and to certify UAS aircraft
  - Development of Regulations for UAS Operations
  - Collaboration within UND and with NDSU Engineering
  - Collaboration with the Enhanced Use Land Lease at GFAFB

# UND's Odegard School UAS COE Funding Leverage

- FY 2006 Funding: \$2.9 million
    - State of North Dakota: \$1 million UAS Economic Development Center of Excellence
    - DoD FY 2006 Funding: \$1 million
    - DoD: \$200,000 flight performance research
    - FAA \$700,000: for Center of Excellence for General Aviation Research
  - FY 2007 Funding: \$3.27 million
    - DoD FY 2007 UAS Funding: \$2.776 million
    - FAA: \$489,000
  - FY 2008 Funding : \$4.76 million
    - State of North Dakota State ED/COE \$1.5 million
    - DoD FY 2008 UAS Funding: \$3.0 million
    - FAA: \$260,000
  - FY 2009 Funding: \$3.9 million
    - DoD FY 2009 UAS Funding \$3.6.million
    - FAA: \$300,000
  - FY 2010 Funding :\$9.15 million
    - State of North Dakota ED/COE \$2.75 million
    - DoD FY 2010 UAS Funding \$6.4 million
  - FY 2011 Funding: \$7.6 million
    - State of North Dakota ED/COE \$0.6 million
    - DoD FY 2011 UAS Funding \$4.0 million
    - Private Sector Partner \$3.0 million (Cash)
  - FY 2012 Funding: \$12.0 million
    - State of North Dakota \$4 million PMATS
    - State of North Dakota \$4.0 million LD CAP (\$2.7 M UND and \$1.3 NDSU)
    - Private Sector Partner \$2.0 million (Cash)
    - UND Aerospace Foundation \$2.0 million (Cash)
  - FY 2013 Funding: \$3.0 Million
    - Private Sector Partner \$1.0 million (Cash)
    - Aerospace Foundation \$1.5 million (Cash)
    - State Funding for the NTS \$500,000
  - FY 2014 Funding \$5.5 Million
    - State Funding for the NTS \$4.0 million
    - Private Sector Partner \$1.0 million
    - ND Challenge Fund Match \$500,000
- CASH TO DATE: 52.08 million  
State Funding: \$18.85 million  
DoD / FAA Funds: 22.73 million  
Private Sector Cash \$10.5 million
- IN KIND: \$7.70 million
- TOTAL FUNDING TO DATE:  
Cash + In Kind: \$ 59.78 million

# UND's Odegard School UAS COE Objectives

- Establish Private Industry Partnerships
- Provide a Cold Weather Test Site
- Lead the Transition of UASs from  
the Military to Civilian Applications
- Capture Aerospace Research Funding  
Department of Defense  
National Institutes of Health  
Federal Aviation Administration
- Develop and Provide Training for “Everyone who Touches a UAS”  
Commercial / Instrument Ratings  
Maintenance
- Develop Commercial Applications for UASs
- Develop National Standards for UAS Operations, Training,  
Maintenance, and Research
- Provide “Ever Vigilant” Northern Border Homeland Security  
Establish Ties to Border Patrol, Law Enforcement, and TSA
- Safely Integrate UASs Into the National Airspace

# Why a UND UAS Center of Excellence?

- Within the next 15 years UASs will become the airborne platform of choice for everything except passenger travel and general aviation
- The Fargo Air National Guard and Grand Forks Air Force Base already have extensive UAS missions
- The UAS applications include:
  - Precision agriculture
  - Low altitude crop assessment
  - Range management
  - Invasive species emissions measurement
  - Wind farm maintenance
  - Chemical and irrigation applications
  - Natural and man made disasters assessment
  - Hazardous materials assessment and tracking
  - Department of Natural Resources
  - Law enforcement
  - Border Security, and
  - Many More.....
- UASs will impact almost all North Dakota Government Agencies
- The UAS COE has tremendous funding leverage to benefit its state wide partnerships
- The UAS COE has already attracted UAS manufacturing, operations, and maintenance companies to North Dakota

# Agricultural Applications:

- Monitor farm and agriculture related features:
  - Precision application of chemicals and fertilizers
  - Moisture levels in fields
  - Crop growth and density
  - Applications in hard to reach places
  - Spread of any crop destroying pests
  - Location of farm equipment
  - Vandalism and theft of crops or farm animals
  - Progress and quality of work of autonomous combine harvesters
  - Crop conditions; healthy, diseased, and dead vegetation in fields
  - Crops impacted by pests, insects, or rodents
  - Timber maturity, Forest products health
  - Plot outbreaks of animal diseases

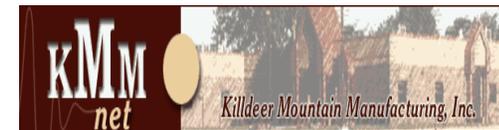
# Our Private Sector Partners



INSITU (Boeing)



Killdeer Mountain Mfg.



**Microsoft®**

Micro Systems Tech.



**MITRE**



# Our Public Sector Partners

Cavalier County Job Development Authority

Federal Aviation Administration



Grand Forks Region Economic Development Corporation



North Dakota National Guard



Red River Valley Research Corridor



# Our University Partners

- Odegard School of Aerospace Sciences



- UND School of Engineering and Mines



- UND College of Nursing
  - Northern Plains Center for Behavioral Research



## Northland Community College



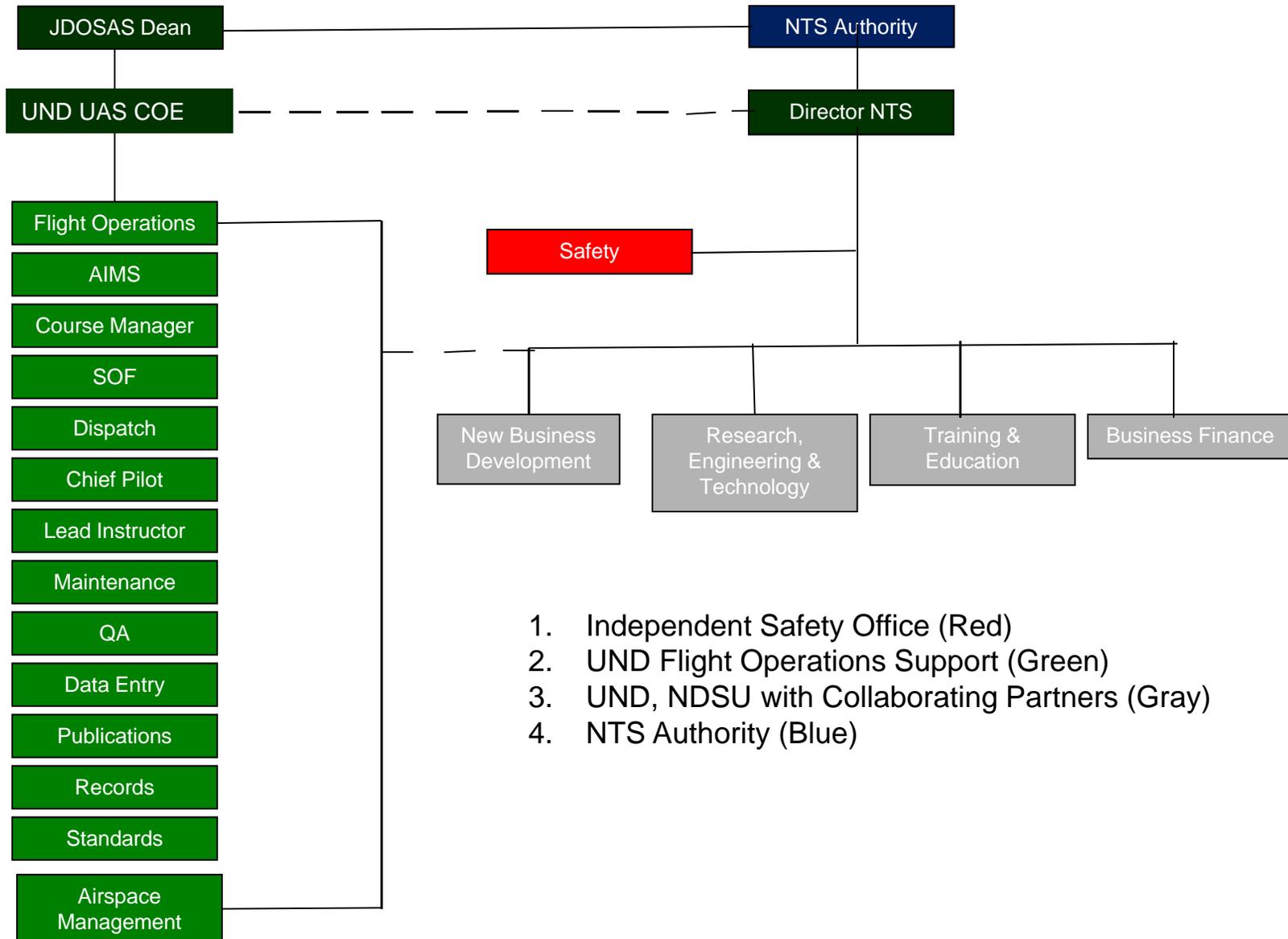
- NDSU College of Engineering



- NDSU Tech Park
  - Appareo Systems



# NTS Organization



1. Independent Safety Office (Red)
2. UND Flight Operations Support (Green)
3. UND, NDSU with Collaborating Partners (Gray)
4. NTS Authority (Blue)

# National Test Site Opportunities

- Provide a Large, Safe, All-Weather Flight Airspace Site to Test:
  - UAVs (All Platforms) Certification
  - Sensors / Payloads
  - Training (Operations, Ratings, and Certifications)
  - Structures / Composites
  - Emerging Technologies (NDSU anti-icing research)
- Provide Test Airspace for Technologies and UAV Platforms Needed to Safely Integrate UASs Into the National Airspace
- Attract the Major Aircraft Manufacturers to North Dakota
- Capture Additional Aerospace Research Funding
- Capture Additional Engineering Research Funding
- Develop Commercial Applications for UASs (Amazon.Com – 60 Minutes)
- Develop National Standards for UAS Operations, Training, Maintenance, and Research
- Develop Security and Privacy Measures and Regulations

# Nowhere but North Dakota

Nowhere but North Dakota exists all of the elements needed for the success of the UAS Center.

North Dakota has unlimited-uncontested airspace, low population density, northern border proximity, support from the FAA, ND State Aeronautics Commission, local airports and local communities, Federal Legislative Contingent, the Governor, along with existing UAS missions for the US Air Force, ND Air National Guard, Homeland Security, Border Protection, tied to two major research universities (UND and NDSU), a premier 2-year maintenance training community college (NCTC), the largest collegiate flight training program in the country, and in a cold weather climate with a complete range of flying conditions.

And, two things we have to offer that no one else has.....



**Clear Skies and Open  
Airspace**