

North Spark Defense Laboratory

Grand Forks AFB

Annual Acceleration Report (2021)

January 2022



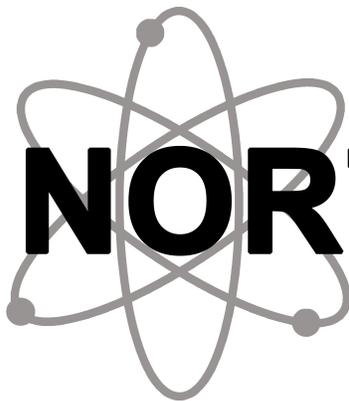
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NORTH SPARK
DEFENSE LABORATORY

Impacts

Mission

To establish a culture of innovation that produces time-sensitive, cost-effective solutions to today's problems and game-changing ideas for the future.

Vision

To increase and foster innovation and collaboration across the Wing and local communities in order to impact Airman's lives, mission effectiveness, and operational capabilities.

The Meaning of Innovation

- ..."*Explore the unknown, experiment radically with new ways of thinking, and work together collaboratively*" from the International Interaction Design Foundation North Spark Defense Laboratory seek to promote responsible risk taking and revolutionary ideation in order to meet the AF 2030 strategic goal to "*dominate time, space, and complexity*".

Research & Development

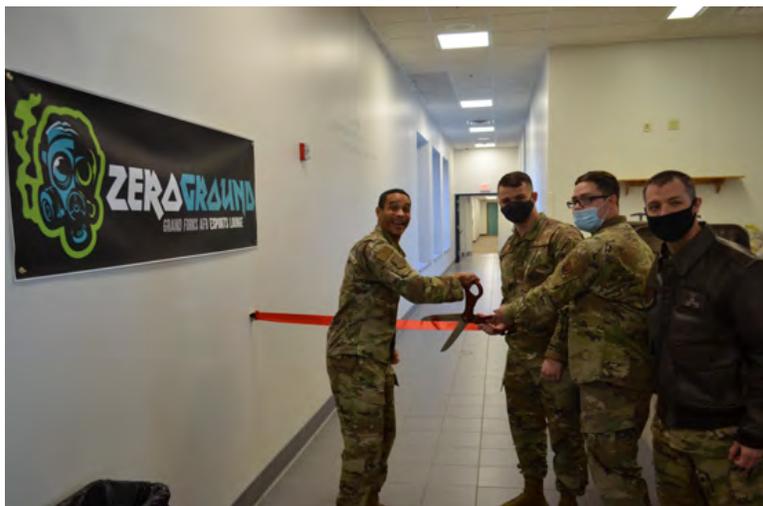
The Goal

As the technological, manufacturing and cybernetic environment continues to evolve at such a rapid pace, our Airmen need to be at the cutting edge of that development cycle to ensure our continued superiority in the Global Theater. Through the efforts of North Spark Defense Laboratory(NDSL) here in Grand Forks AFB, Airmen will be provided the tools to not only keep up with our adversaries, but to overcome the fierce competition as well. With every completed project, it is another victory for the USAF over the adversaries that seek to subvert us.

eSports Center



A new eSports center was added to the GFAFB fitness facility, with the inclusion of all next-gen systems such as the Nintendo Switch, XBOX Series-X, top-of-the-line gaming PCs, and VR. With less than 10 eSports facilities stateside, GFAFB has joined the ranks of the elite few Air Force bases that aims to create their own professional gaming teams taking on leagues and tournaments worldwide. This facility was deliberately designed to attract and retain talented Airmen and Civilians, increase connectedness, and decrease mental and physical health issues.



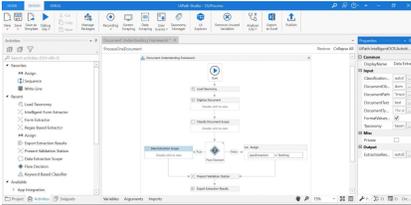
Research & Development



Research & Development

Robotic Workforce

We hosted the robotic process automation center of excellence, training 32 Airmen to utilize advanced, programmable electronic assistants to reduce man hours on simple tasks. The programs made by the Airmen can be designed specifically for inventory, file management, routine equipment check and material transport to name a few of the many applications for this project. Programs made by the Airmen can also be shared across the Air Force. The initial cadre deployed 14 RPAs, saving two-thousand hours annually.



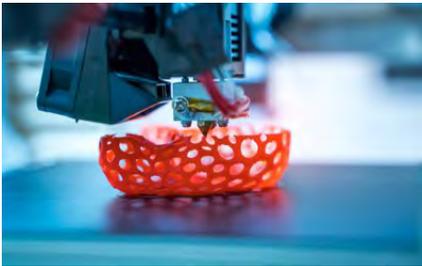
Bod Pod

Our Airmen now have access to advanced hardware inside the fitness center that can quantify their overall physical fitness and body composition with extremely accurate results. This device can be entered by any Airman on a routine basis to measure their overall health, and help commanders better determine their "fit to fight" ability score.



Additive Manufacturing

NSDL has been equipped with additive manufacturing capabilities. With this addition, 3D printers have the ability to create a wide variety of parts, from small components to large, complex structures. This technology allows for the production of custom parts that are difficult to manufacture using traditional methods. The use of 3D printing in manufacturing offers several advantages, including reduced lead times, lower costs, and the ability to produce parts with complex geometries. This technology is particularly useful for the production of prototypes and small-scale production runs.



3D Printing

In conjunction with 3D printers, personnel can utilize a variety of tools and equipment to create custom parts and components. This includes the use of CNC machines, lathes, and mills. These tools allow for the production of parts with high precision and accuracy. The use of 3D printing and other manufacturing technologies offers several advantages, including reduced lead times, lower costs, and the ability to produce parts with complex geometries. This technology is particularly useful for the production of prototypes and small-scale production runs.



Research & Development



Winter is Coming

In partnership with National Security Innovation Network (NSIN), AFCYBERWORX, and University of North Dakota (UND) Center for Innovation (CFI) lead a design sprint of 14 Airmen to improve quality of life for their peers who face harsh Winter months. This project highlighted the need for additional amenities to the dorms and opened the door for future improvements for GFAFB Airmen.



UC Berkley Innovation Boot Camp

Through NSIN, the University of California, Berkeley virtually trained 28 members through a virtual design sprint, working towards new solutions for the in/out-processing of new members for the Mission Support Group. The course trained students in the innovation process, providing new students and members of our nation's workforce to approach problems and create solutions with vital knowledge in project management



Project Mercury

Our Airmen have participated in 2 cohorts of Project Mercury lead by the University of Michigan. This rigorous 12 week course created 11 Certified Professional Innovators, introducing students to innovation vernacular while deconstructing different tactics and strategies to approaching new projects.



Ongoing Efforts

Tech Wearables

-Arming Airmen with advanced tech-wearables that track a member's health and overall readiness.

Vennli

-AI driven software that can aggregate information and data points for Air Force leaders to increase mission effectiveness.

1Huddle

-Gamification of training content for GFAFB personnel.

Kinderspot

-Mobile app for parents of CDC children that streamlines the process for sharing unused day-care time slots.

Duality Systems

-AI scheduling program expected to return 8500 personnel hours to the flying squadron.

Innovation Design Sprint

-12 week journey conducted by UND CFI, to select and design a more inclusive mascot/logo for 319 RW.

Hacking For Defense

-Universities identified solutions for improving inventory tracking, readiness, retention, mental health, academic connections, and contract connections.

Bouncer Bot

-RPA designed to expedite Security Forces background investigations.



Resources

North Spark

Bldg. 811

VISION

<https://vision.apps.dso.mil/>

GAIN

<https://gain.apps.dso.mil>

Robotic Process Automation

<https://www.uipah.com>

AFWERX

<https://www.afwerx.af.mil>

AFCYBERWORX

<https://afcyberworx.org>

Hacking For Defense

<https://www.h4d.us/submit-a-problem>

