NATIONAL SECURITY
INNOVATION NETWORK

NSIN Overview

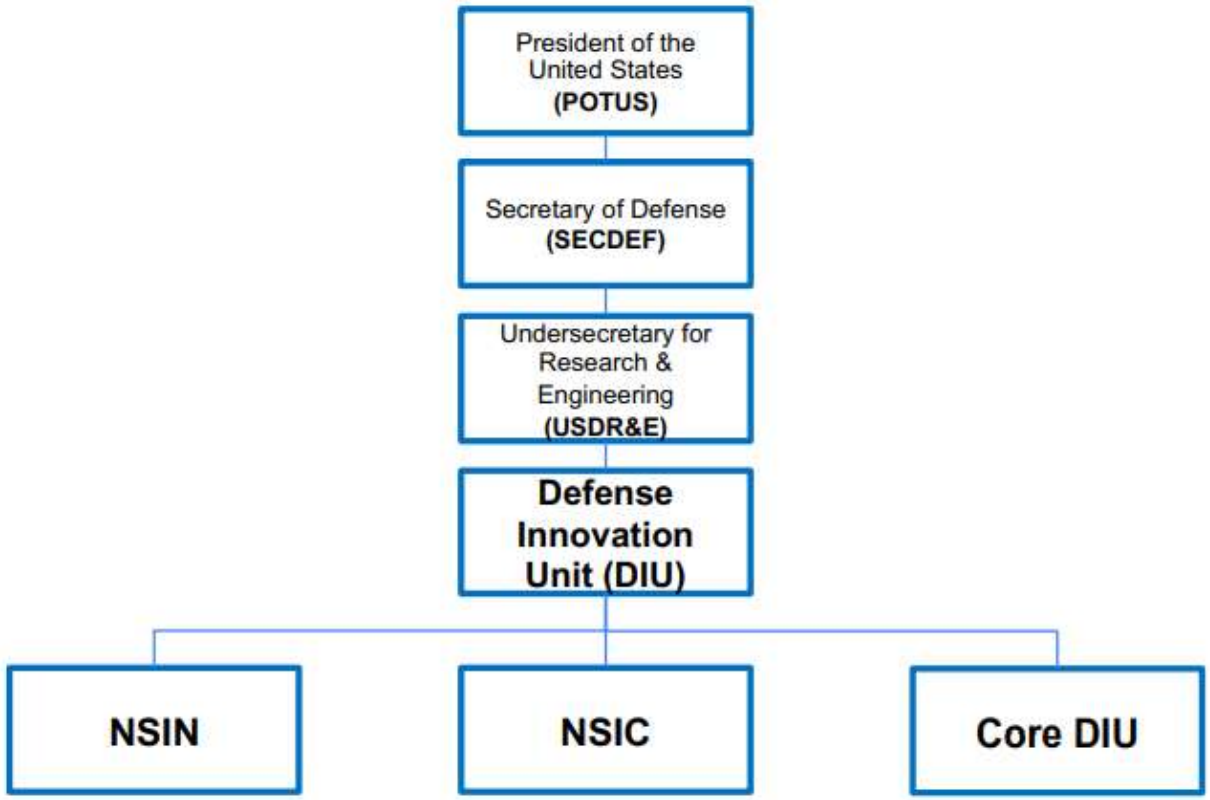
Mission

We build networks of innovators to generate new solutions to national security problems.

- The Department of Defense's (DoD) current model for problem-solving is expensive and inefficient.
- The complexity of problems the DoD faces and the speed at which solutions are required means new problem solvers are critical.
- Adding intellectual diversity from non-traditional solution providers (e.g. the academic and early-stage venture communities) is necessary to solve problems more economically, faster, and better.
- A networked approach enables the consistent problem-solving capability for the DoD that helps bridge the civil-military divide and improves outcomes for service members.

NSIN

NSIN

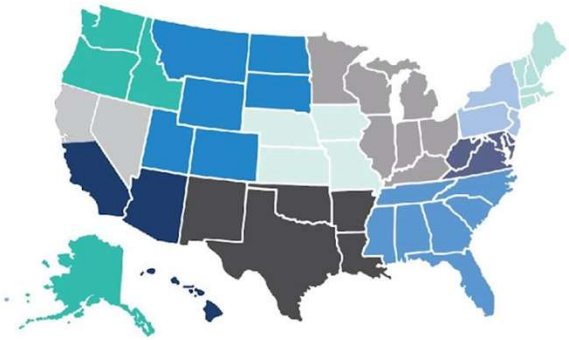

President of the United States (POTUS)
Secretary of Defense (SECDEF)
Undersecretary for Research & Engineering (USDR&E)
Defense Innovation Unit (DIU)
NSIN
NSIC
Core DIU

Who

- DoD program office reporting to the Under Secretary of Defense for Research & Engineering
- Program of Record FY20
- NSIN pays for all programming

What

- Partners with universities and the venture community to bring innovative tools and solutions to warfighters

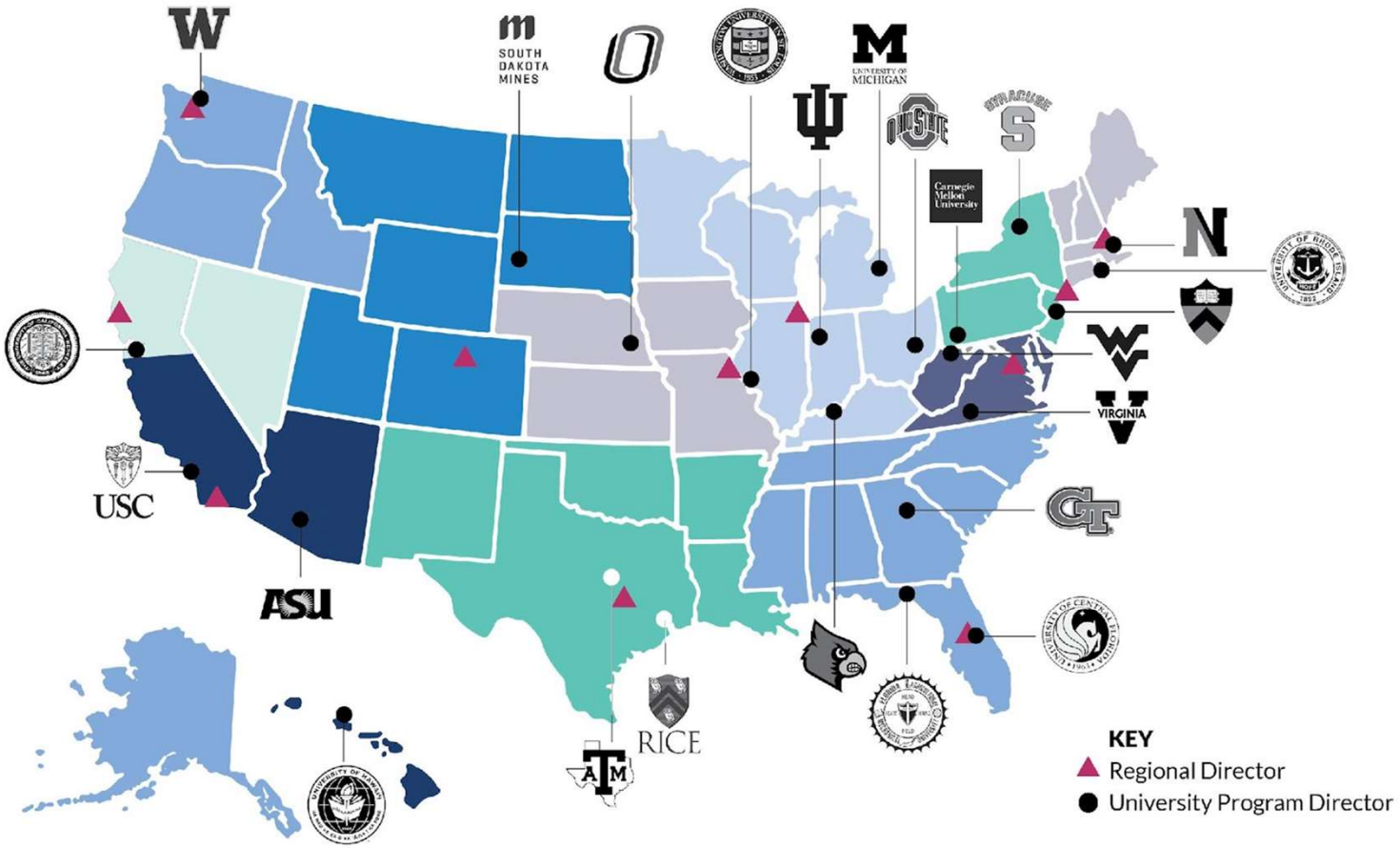


Where

- HQ in Arlington, VA
- 33 regional positions across 20 states
- 21 embedded personnel at universities

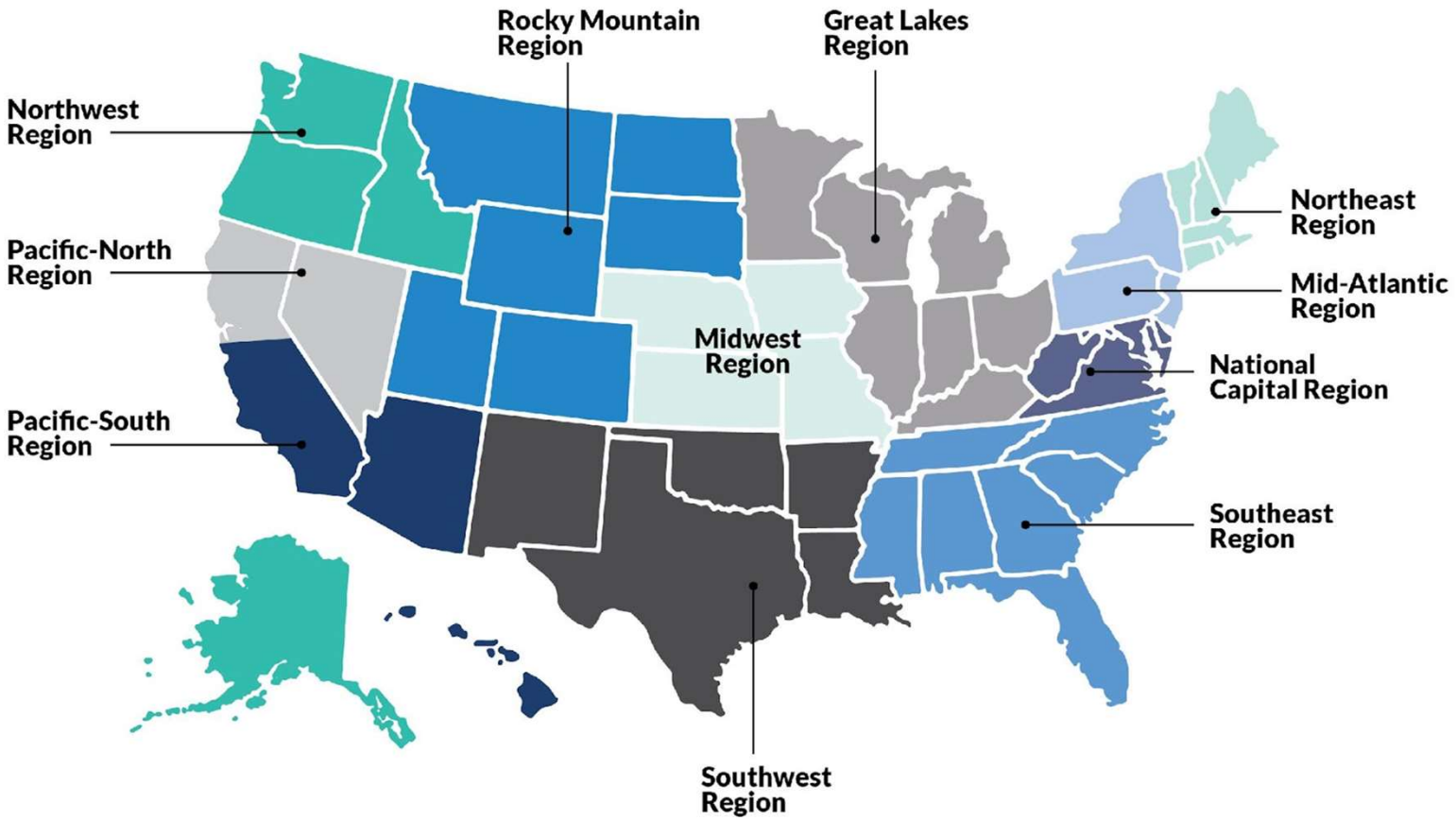
NSIN

NSIN University Partners



NSIN

NSIN Regions



NSIN

NSIN by the Numbers

NSIN Funding FY 2019-2021:

$95

million dollars

NSIN has helped

909

DoD organizations solve

963

problems

by generating

1,366

unique solutions.

Engaged

6,925

new people in the National Security Innovation Base.

Supported

370

new companies to enter the National Security Innovation Base and spun out **33 of DoD-funded technologies.**

Companies in NSIN programs have **raised**

$5.5

billion in private funding and

$1.1

billion in DoD funding.

NSIN

A New Model for National Security Innovation

NSIN delivers on its mission through three distinct portfolios:

1 National Service

Creates pathways to inject new talent into the DoD.

2 Collaboration

Integrates new communities of problems solvers through collision events.

3 Acceleration

Develops dual-use ventures to address capability gaps from commercial, academic, and DoD lab technology, processes, and ideas.

NSIN

Programs of Record

National Service

EXPERTS

Identifies mid-career faculty experts with STEM, cyber, or entrepreneurial backgrounds and pairs them with DoD leadership for periodic consults over the course of three months.

HIRETHON

Facilitates access for DoD organizations with direct or expedited hiring authority to hard-to-reach talent.

TECHNOLOGY AND NATIONAL SECURITY FELLOWSHIP

Embeds a technologist with a DoD organization or Congressional office to support strategy, policy, and special projects for one year.

TECH SQUAD

Connects early-career STEM professionals with DoD units to solve tech-oriented national security problems collaboratively.

X-FORCE FELLOWSHIP

During the summer, pairs recent graduates and current students with a DoD organization to solve problems ranging in complexity and across disciplines.

Collaboration

BOOTCAMP

Teaches service members how to use Human Centered Design to develop MVP solution concepts for problems that directly affect their command.

CAPSTONE

Pairs student teams with DoD to solve challenge as a part of an independent study or practicum course.

HACKING FOR DEFENSE (H4D)

Utilizes principles of entrepreneurship to solve national security problems as part of a university course.

HACKS

Brings together civilian and military innovators develop novel concepts to solve DoD problems.

MAKER

Offers the required funding or the technical expertise necessary to construct prototypes from NSIN generated concepts.

SOURCE

Presents opportunities for Service Members to provide bottom-up, direct feedback to senior leaders for utilization and adoption through virtual innovation challenges.

Acceleration

EMERGE

Connects DoD mission partners (e.g., operational units, program offices, etc.) with emerging technology teams and startups at our nation's top research universities.

FOUNDRY

Facilitates the development of startups in the national interest as part of a DoD Lab-to-market tech commercialization program.

PROPEL

Partners with commercial startup accelerators to lower barriers to entry for dual use ventures and lowers risk for DoD end users in discovering novel solutions.

STARTS

Provides unique opportunities to early-stage venture teams for access to public capital and follow-on funding by DoD problem sponsors.

VECTOR

Seeks prior Hacking for Defense and Hackathon teams to compete for a follow-on contract.

NSIN

UNUM

Join innovators from the defense, academic, and venture communities to change the way national security innovation works.

- UNUM communities provide an online platform for like-minded innovators to connect, ideate, and collaborate on specific topics.
- Communities can exist to benefit a single community within the DoD or allow broader audience participation.
- Current community focus areas range from additive manufacturing and 3D printing in the Marine Corps to implementation of artificial intelligence within the entire DoD.
- Communities are simple to build and curate.

In Action

Sponsor: Marine Corps

Community: Marine Maker is an UNUM community where Marines collaborate and share CAD files for 3D printing. Marine Corps Systems Command helped develop the community and added functionality to label the files based on their tested and approval status.

Learn More about UNUM: **www.unum.nsin.us**

NATIONAL SECURITY INNOVATION NETWORK

Connect With Us

John Whiteaker
NC Strategic Engagement Director
National Security Innovation Network
U.S. Department of Defense

jwhiteaker@nsin.us

Join Our Network of Problems Solvers **unum.nsin.us**

Northeast Region

HUB CITY:
Boston, MA

David Schiff
At-Large Regional Director

John Griffin
University Program Director,
Northeastern University

Matt Merighi
Director of Operations

George Nickolopoulos
University Program Director,
University of Rhode Island

NSIN

Mid-Atlantic Region

HUB CITY:
New York City, NY

Grant Fox
Mid-Atlantic Regional Director

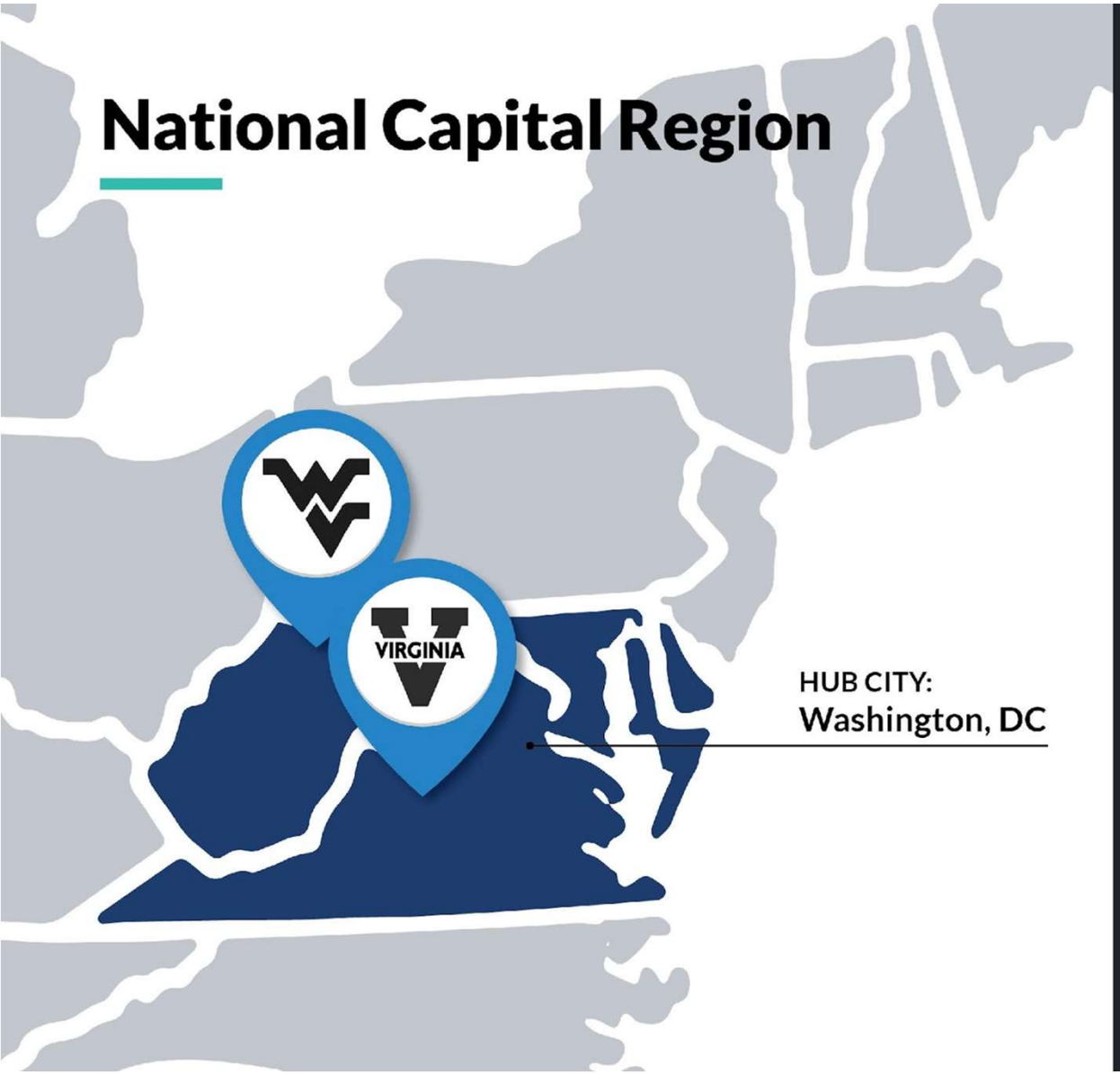
Liz Caruso
University Program Director,
Carnegie Mellon University

Pat Mahaney
Senior Advisor

Spencer Reynolds
University Program Director,
Princeton University

NSIN

National Capital Region



HUB CITY:
Washington, DC

Trish Martinelli
At-Large Regional Director

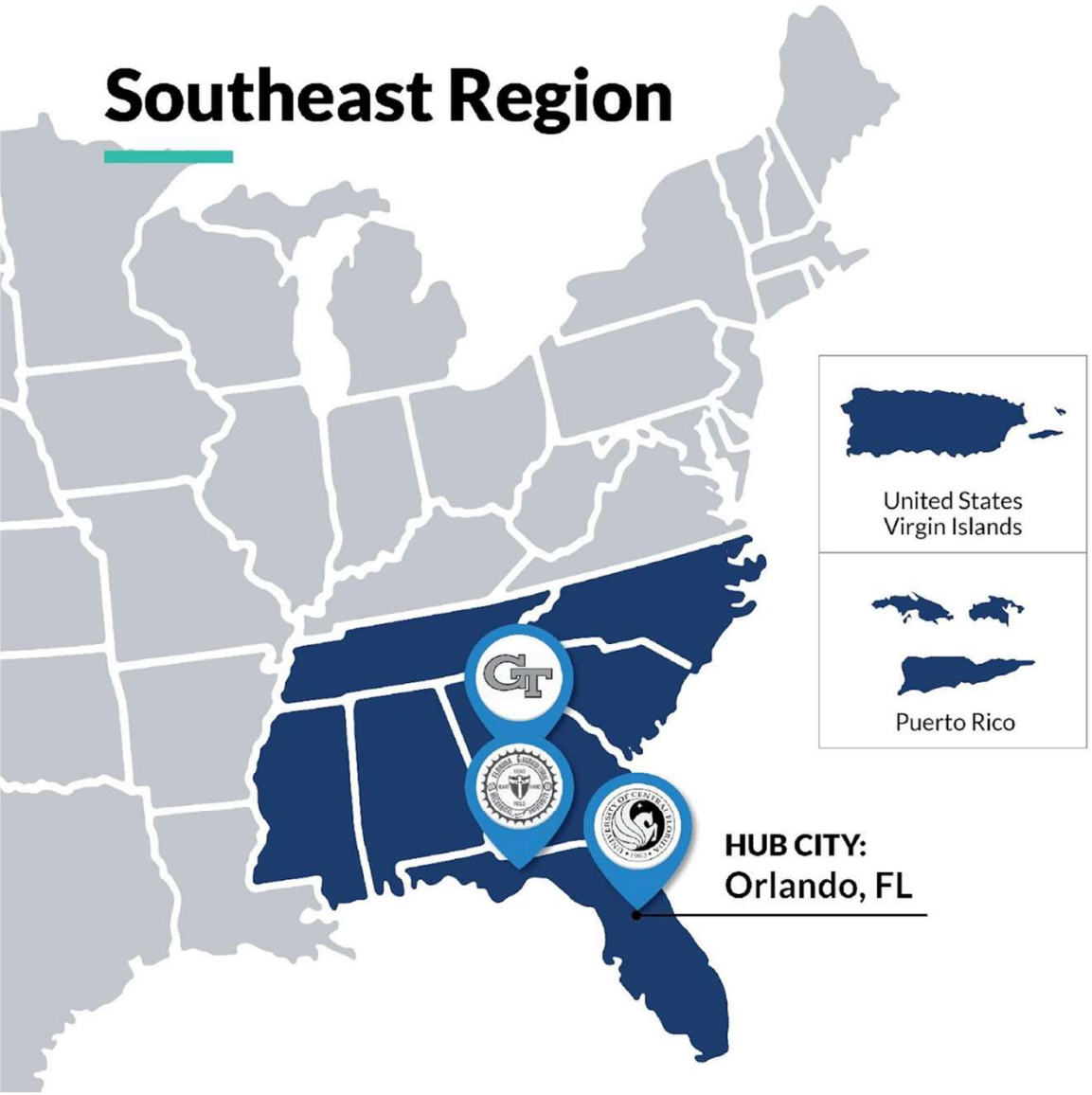
David Schiff
At-Large Regional Director

Patrick Edwards
Senior Advisor

John Reisenweber
University Program Director,
West Virginia University

NSIN

Southeast Region



Beverly Seay
Southeast Regional Director,
University of Central Florida

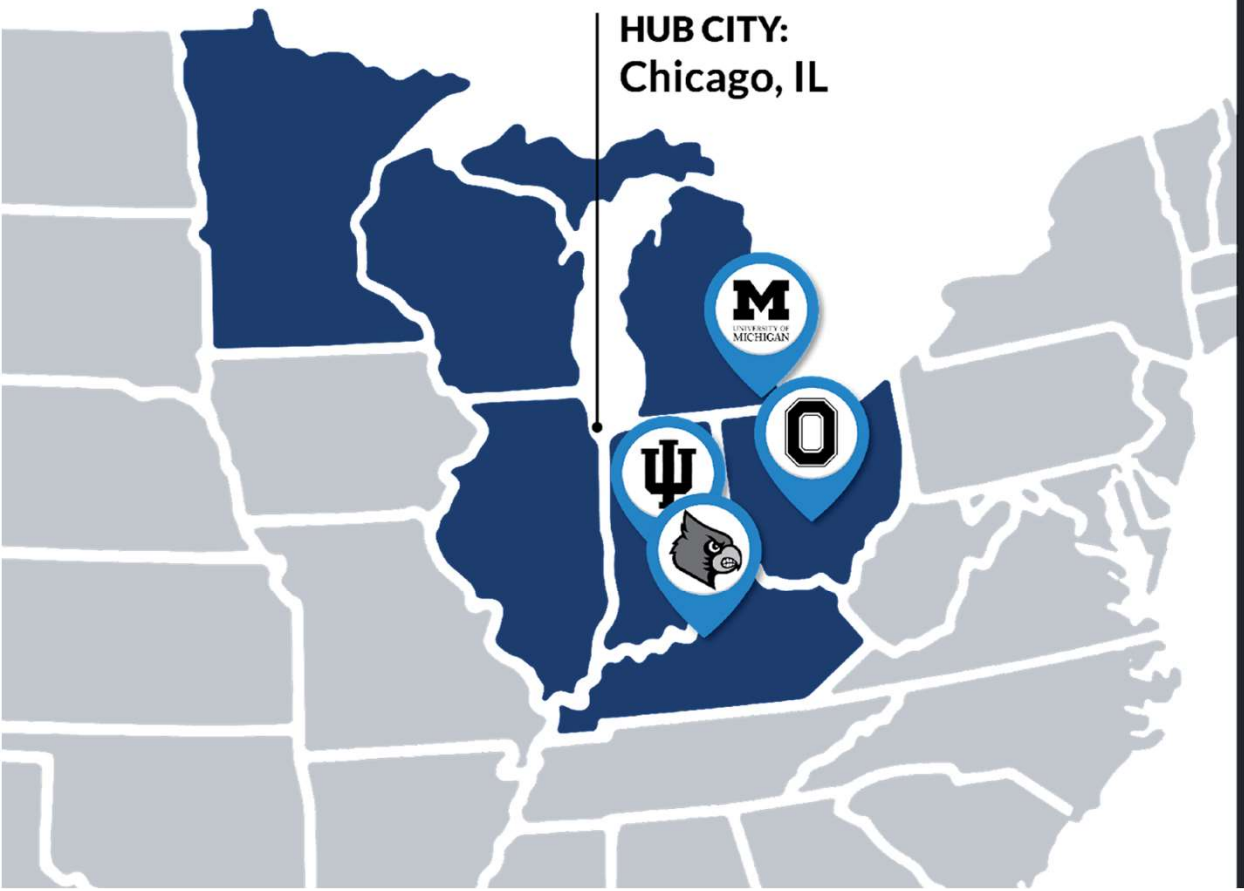
Patrick Reynolds
University Program Director,
Georgia Institute of Technology

Marcy Muldrow Sanders
University Program Director,
Florida A&M University

John Whiteaker
Strategic Engagement Director,
North Carolina

NSIN

Great Lakes Region



Tony Arendt
Great Lakes Regional Director

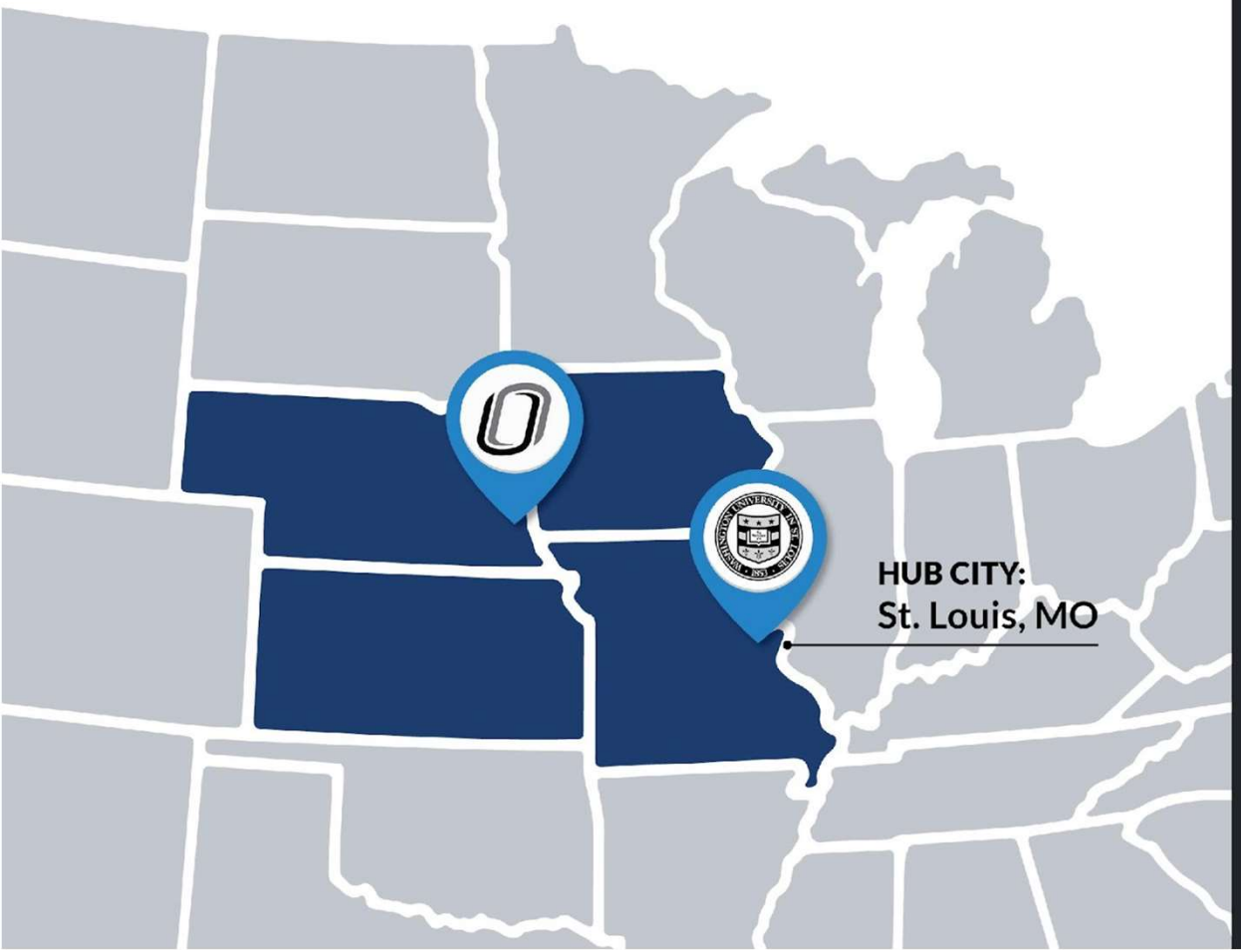
Alison Beatty
University Program Director,
University of Michigan

Will Fortune
University Program Director,
University of Louisville

Ian Haynes
University Program Director,
The Ohio State University

NSIN

Midwest Region



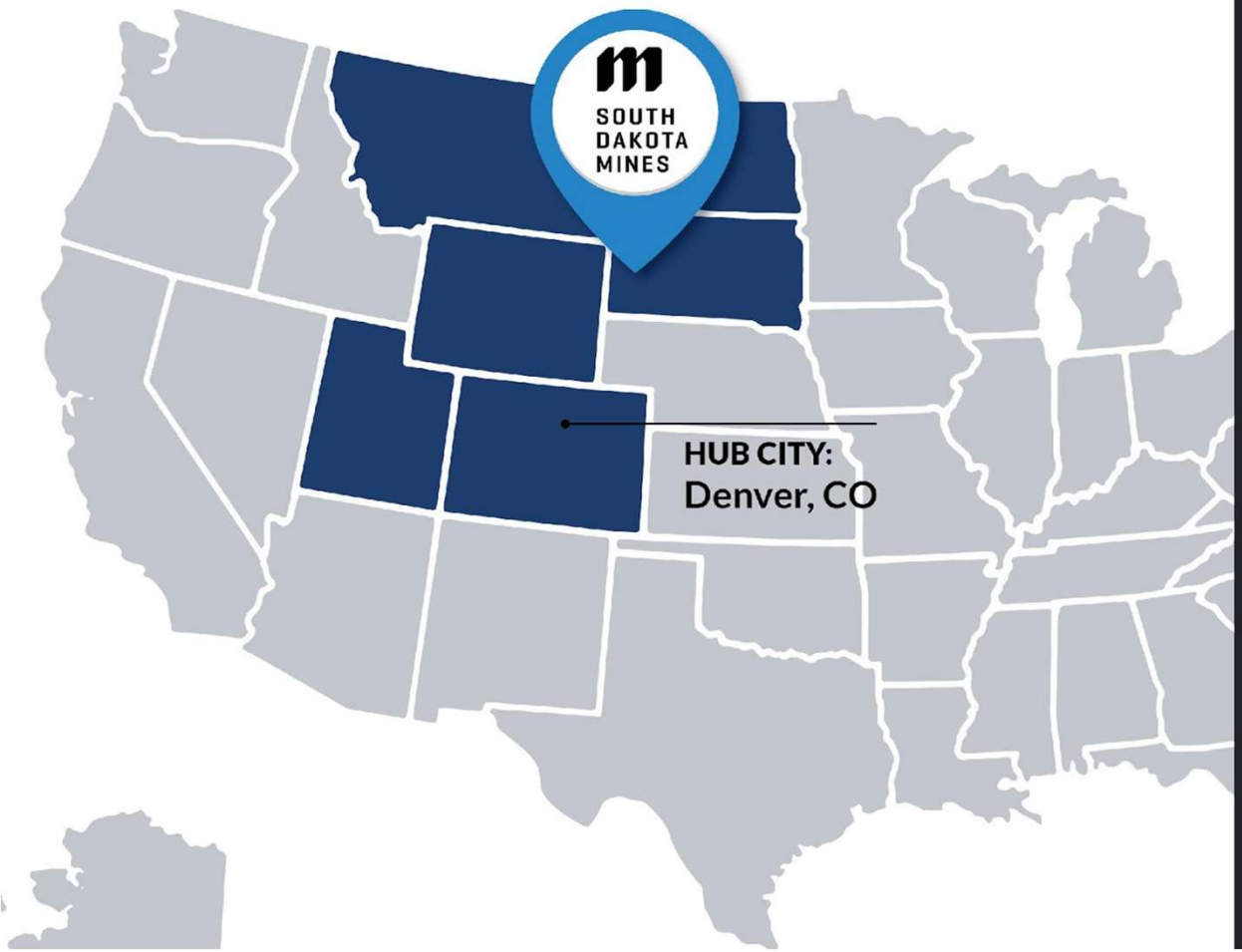
Jake Laktas
Midwest Regional Director

Mike Seper
University Program Director,
Washington University
in St. Louis

Wade Watts
University Program Director,
University of Nebraska
at Omaha

NSIN

Rocky Mountain Region



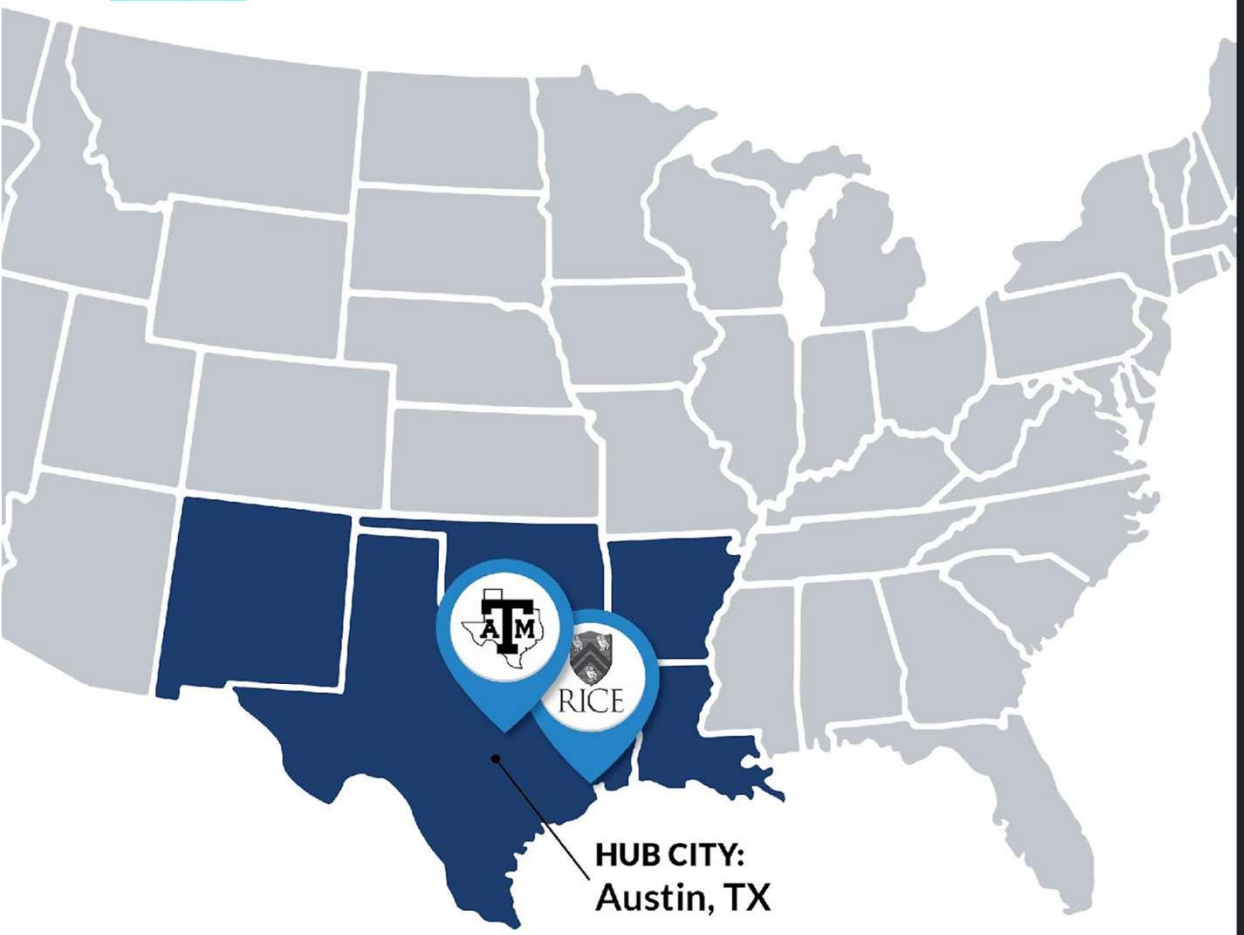
Brandon Greene
Rocky Mountain
Regional Director

Jason Combs
University Program Director,
South Dakota Mines

Jeremiah Starr
National Security
Engagement Director

NSIN

Southwest Region



Jim Rabuck
Southwest Regional Director

Charles 'Fritz' Kuebler
University Program Director,
Rice University

Andy Riise
University Program Director,
Texas A&M University

NSIN

Northwest Region

HUB CITY:
Seattle, WA

David Schiff
At-Large Regional Director

NSIN

Pacific-North Region

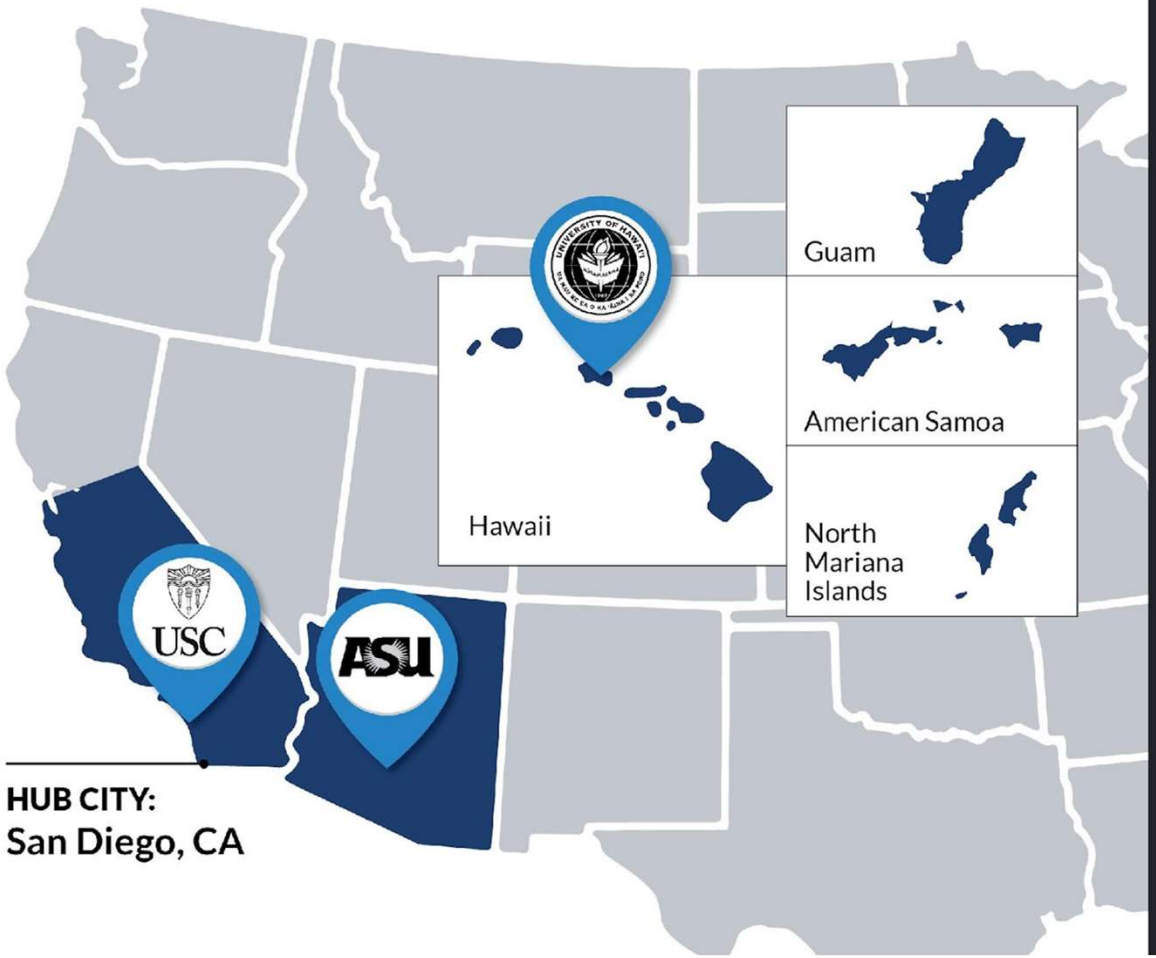
HUB CITY:
San Francisco, CA

Trish Martinelli
At-Large Regional Director

Kaitie Penry
University Program Director,
University of California,
Berkeley

NSIN

Pacific-South Region



HUB CITY:
San Diego, CA

Jesse Gipe
Pacific-South Regional Director

Gloria Choo
University Program Director,
University of Hawai'i at Mānoa

Samantha Hiller
University Program Director,
Arizona State University

Tai Sunnanon
University Program Director,
University of Southern California

NSIN

Transition Cell

Offers post-NSIN programming support to alumni teams and companies.

- Our expertise and resources are available through one-on-one consultations, curated collection of resources, and customized support plans.
- Subject Matter Expertise:
  - Government Contracting
  - Private Investors and Capital Access
  - Planning Government as a Customer 101
  - Testing and Evaluation Resources
  - Market Analysis
  - Scaling Solution Adoption
- Our Network:
  - Private Investors
  - Small Businesses Resources
  - University Resources
  - Testing and Evaluation Resources
- Government Contracts Expertise:
  - SBIR/STTR
  - OTAs
  - Prize Authority
  - Other Non-FAR Options
  - Customer Memorandums of Agreement
  - Rapid Acquisition Authority

The Transition Cell is currently engaged with 30+ companies, supporting them with subject matter expertise to achieve DoD adoption through multiple contract strategies as well as navigating the process of raising private capital.

The Transition Cell is also building a network of 900+ investors and mentors to help further connect NSIN ventures within the DoD ecosystem and relevant startup ecosystems across the country.

Learn More about the Transition Cell: **www.nsin.mil/transition-cell**

National Service

Identifying the best and the brightest to work for the DoD

Experts

Connecting subject matter experts with DoD sponsors who seek outside expertise and are open to unconventional solutions to national security problems.

- DoD organizations engage technical subject matter experts biweekly on an unclassified technical or entrepreneurial problem.
- Subject matter experts serve in a part-time, non-uniform capacity.
- NSIN recruits participants on an ongoing basis.
- Impact memo developed at conclusion of the engagement.

Sponsor: Naval Surface Warfare Center Crane (NSWC) and the National Geospatial-Intelligence Agency (NGA)

Project: Advance machine learning and hypersonics research at universities.

Solution: NSWC and NGA collaborated with professor and graduate student experts at the University of Missouri, St. Louis University, Washington University at St. Louis, Notre Dame, Purdue, Texas A&M, Florida A&M, and the University of Virginia to develop new research and white papers about advanced modern hypersonic flight systems in support of national defense.

Learn More about Experts: **www.nsin.mil/experts**

Hirethon

The NSIN Hirethon is an accelerated recruitment program that connects STEM talent with DoD organizations seeking candidates for civil service.

- NSIN manages recruitment of top STEM talent from universities across the country to support an organization's specific needs and timelines.
- DoD customers are required to have direct hiring authority as well as open billets that they are looking to fill.
- Planning usually takes 5-6 weeks and execution 6-7 weeks.
- STEM talent from all levels and backgrounds are hired in critical positions at the DoD.

In Action

Sponsor: JSOC Global Analytics Platform

Project: Sought 10+ candidates for software engineering, development, and design roles. The hiring manager (Deputy Commander) was engaged throughout program planning and execution, including personally participating in interviews and post-program hiring actions.

Solution: JSOC reviewed 125+ resumes and conducted two full days of interviews, resulting in three successful hiring actions within a month.

Learn More about Hirethon: **www.nsin.mil/hirethon**

X-Force Fellowship

Multidisciplinary student teams bring unconventional thinking and novel approaches to building solutions as an embedded fellow or "intern" in military commands.

- NSIN hires up to 125 interns every summer to work on your national security projects.
- Full-time, project-based summer internship.
- In-person, embedded with military sponsor.
- Open to U.S. citizens at the undergraduate and graduate level.
- No cost to the sponsor.
- Sponsor receives a minimum viable product (MVP).
- Sponsor gains significant new, creative analysis and thinking.

DEVCOM ARMY RESEARCH LABORATORY

Sponsor: Army Research Lab – West

Project: Quickly identifying armored fighting vehicles in an individualized, gamified approach to training.

Solution: Student team developed app that applies the training approach to armored vehicle identification.

Learn More about X-Force: **www.nsin.mil/x-force**

Collaboration

Integrates new communities of problems solvers through collision events.

Bootcamp

Solution generation by teaching innovation methods and exposing service members to problem-solving tools in the context of a command problem.

- A 3-day* crash course in design thinking that brings innovation tools and practices to bear on the DoD's toughest problems.
- Human-Centered Design and Lean Launchpad training offered to a cohort of up to 40-participants.
- University of California, Berkeley teaching team.
- Sponsor gains a more agile and adaptable team trained in innovation thinking.
- Sponsor achieves a clearer understanding or solution to a command-level problem.
- Assists with stakeholder buy-in.

*COVID-19 virtual contingency — 24 hours of instruction, planned over four weeks (subject to your schedule)

HANSCOM AIR FORCE BASE

Sponsor: Hanscom Air Force Base

Project: In a remote environment, how might we maximize the effectiveness of local training while optimizing both engagement and retention?

Solution: The customer has started working with a local startup to develop podcasts and other new content delivery mechanisms to provide training while also increasing participation in other Air Force contracting trainings.

Learn More about Bootcamp: **www.nsin.mil/bootcamp**

Capstone

Multidisciplinary student teams from university capstone courses bring unconventional thinking and novel approaches to your toughest problems.

- Students from diverse educational backgrounds work directly with military units where the solution is known, just need the expertise to build it out.
- Student teams configured to meet the unique skill sets of each project.
- Conducted both Spring and Fall semesters (some Capstones are two semesters long).
- Sponsor receives a minimum viable product (MVP).
- Sponsor receives significant new, creative analysis and thinking on the topic.

In Action

Sponsor: 305th Air Mobility Wing

Project: Develop a way to scan quickly for survivors after a crash that utilizes drone technology.

Solution: An app where you can circle on a map where the drone needs to scan, the drone deploys and send back 3D imagery of the crash site to the app.

Learn More about Capstone: **www.nsin.mil/capstone**

Hacks (Hackathon)

Hackathons present a unique opportunity for students and ventures to engage deeply with DoD customers.

- Teams of entrepreneurs, technologists and students gather for 72 hours of intense problem solving on one specific problem.
- Sponsors engage with NSIN to define problem scope and send select members to provide feedback during the event.
- Held 4-5 times a year at innovation hubs, on the campuses of partner universities, and virtually.
- Teams develop novel concepts and solutions to address Sponsor problems.
- Winning teams receive between $15K-$30K award to pursue their idea and develop it alongside DoD customers.

Sponsor: U.S. Army 1st Cavalry Division, Army Futures Command - Combat Capabilities Development Command - Ground Vehicle Systems Center, Next Generation Combat Vehicle Cross Functional Team

Project: "Mad Hacks: Fury Code" developed concepts, technologies, or systems to help human-controlled and autonomous vehicles operate through cyber-attacks/ and return with or without human intervention.

Solutions: Spectrum analyzing tool that assesses when a vehicle system is under attack by electronic warfare vectors; Blockchain and quantum key distribution-based security; PiCryption based algorithms.

Learn More about Hacks: **www.nsin.mil/hacks**

Hacking for Defense (H4D)

Multidisciplinary student teams bring unconventional thinking and novel approaches to your toughest problems.

- University course pairs DoD problems with student teams to develop solutions to STEM, business, and/or policy challenges.
- Instructed in Lean Startup principles; required to conduct at least 100 stakeholder interviews.
- Fall or Spring semester at 47 universities.
- Sponsor receives a validated problem and a novel concept or early-stage minimum viable product (MVP).
- Sponsor receives significant new, creative analysis and thinking on the topic.

DEVCOM ARMY RESEARCH LABORATORY

Sponsor: Army Research Lab – West

Project: Protecting the Internet of Things (IoT); Distinguishing between IoT and non-IoT traffic and types of devices.

Solution: Many of the protocols used by IoT devices to communicate are proprietary and non-standard. Identifying IoT devices, who and what they are communicating with, and what their capabilities are greatly helps analysts with everyday tasks and ultimately permits allocation to more important analytic activities.

Learn More about H4D: **www.nsin.mil/hacking-for-defense**

Source

Online platform designed for military personnel to share, test and prototype their best ideas via innovation challenges.

- Online innovation challenge that addresses a command-sponsored problem.
- Engages all stakeholders within a command.
- Crowd-sources solutions from all levels and stakeholders.
- Generates bottom-up solutions through team engagement.
- NSIN provides support for winning submissions.

Sponsor: Marine Corps Rapid Capabilities Office

Project: How should the Marine Corps generate and sustain combat power as part of a naval force operating forward? Identify a DOTMLPF-P solution that addresses a maneuver, logistic, or force protection challenge specific to Marines operating as part of a Naval Forward Force.

Solutions:
- Littoral Small Craft Squadron
- Pioneer Teams for Rapid Forward HLZ Construction
- Littoral Fuel Sustainment Platform
- Riverine Assault Integration participation in other Air Force contracting trainings

Learn More about Source: **www.nsin.mil/source**

Acceleration

Develops dual-use ventures to address capability gaps from commercial, academic, and DoD lab technology, processes, and ideas.

Emerge Accelerator

Explore the dual-use potential of emerging technology startups from top research universities.

- Open to any university-based startup with nomination from tech transfer office.
  - The The 8-week program teaches business fundamentals of dual-use venture creation.
  - Concludes with a final pitch showcase.
  - Many opportunities to engage with DoD stakeholders.
- Teams selected based on technology uniqueness, stage, and our ability to match to DoD partners within our network.

Sponsor: City of Phoenix

Company: Argos Vision Inc.

Project: Object Detection at the Edge

Solution: Accurately determining the counts of pedestrians, vehicles, and bicycles for traffic analysis with low power computation at the edge, thus reducing cost.

- Purchased by city for traffic management.
  - Fulton Entrepreneurial Professors Program Fellowship awarded.

Learn More about Emerge: **www.nsin.mil/emerge**

Foundry

Foundry is a 4-6 month cohort-based program that increases technology, transfer, and transition (T3) of U.S. Government inventions by matching technologies and inventors with entrepreneurs interested in starting a high-tech company.

- Finds breakthrough technologies from DoD labs and Federally Funded Research and Development Centers (FFRDCs) and leverages them to solve real-world problems of DoD and commercial customers.
- Teams of entrepreneurs, working with DoD scientists and technologists, assess the market viability and the potential to commercialize DoD technologies.
- Entrepreneurs receive extensive training in Lean Startup principles and an opportunity to form a new venture around a cutting-edge technology.
- DoD researchers gain valuable insight into the market potential of their technologies and possible development pathways.

Lab of Origin: Army Research Lab

Project: Isotopic power source

Company: Direct Kinetic Solutions

Solution: DKS radioisotopic battery solution offers an ultra-light power solution that lasts for decades and goes far beyond current market offerings, reducing the number of rechargeable batteries in the field by half and disposable batteries by tens of thousands.

- >$2M in government funding to date.
- $150k in private capital raised to date.
- Awarded three SBIR Phase I contracts.
- Selected for the Capital Factory Ventures accelerator program.
- Named one of Hello Tomorrow's Deep Tech Pioneers.

Learn More about Foundry: **www.nsin.mil/foundry**

Propel

Supports the DoD's effort to maintain its competitive edge by collaborating with innovative and non-traditional partners and influencing the development of solutions delivered by early-stage ventures and accelerates their transition readiness.

- Three-to-four month accelerator program for the DoD and 10-12 dual-use ventures to work together to shape solutions that solve DoD customer problems.
- Includes targeted services and DoD-specific mentorship and education to prepare early-stage ventures for DoD adoption.
- Early-stage dual-use ventures are better prepared to successfully transition solutions to the DoD.
- Can lead to multiple adoption opportunities including SBIR Phase I, direct to Phase II, OTAs, BAAs, etc.

In Action

U.S. AIR FORCE

PISON

Sponsor: PEO Digital

Project: Human-Machine Teaming

Solution: A participant in the 2019 program, Pison, explored adopting a wearable device intended to assist Parkinson's patients to defense needs:

- Pison contracted with several DoD organizations, securing more than $7 million in research and development funding.
- Pison's first product that enables gesture control with autonomous systems and software, such as ATAK, is being sold to the DoD.

Learn More about Propel: **www.nsin.mil/propel**

Starts

Showcases event featuring new ventures that are developing solutions to address warfighter needs.

- Platform for early-stage companies to showcase technology to potential DoD customers, mentors, and investors.
- Pairs a pitch event with on-the-spot collaboration on MOUs to support later-phase SBIR awards.
- DoD entities collectively screen applicants to find the most relevant companies.
- Sponsor gains a better understanding of emerging technology and how it can be applied to their problems.
- Provides sponsors with the opportunity to survey, collaborate, and do business with cutting-edge companies.

In Action

Sponsor: F-35 Lightning II Joint Program Office (JPO)

Project: Increase the efficiency of software development by providing the warfighter with innovative software tools and an agile development framework.

Solution: Various AI, Data Optimization, and Data visualization solutions.

Learn More about Starts: **www.nsin.mil/starts**

Vector

For NSIN-program alumni to scale their solution concepts into viable dual-use businesses.

- Open to NSIN alumni teams from H4D, Hacks, Maker, Capstone, Foundry and X-Force.
  - The 8-week program teaches business fundamentals of dual-use venture creation.
  - Concludes with pitch competition and a $25k prize.
  - Must show evidence of DoD sponsor support for consideration.
- Current DoD sponsors commit two hours/week to help teams and facilitate meeting for product validation with other DoD entities.

Sponsor:	U.S. Army Combat Capabilities Development Command, Armaments Center
Company:	Distributed Spectrum
Project:	Radio frequency (RF) Threat Detection System
Solution:	Identifies enemy transmissions designed to disrupt vehicle operations, while also determining if the threat could disrupt a vehicle's safety.
	• NSIN Mad Hacks Fury Code May 2021 winner. • NSIN Vector inaugural cohort winner of $25k prize. • Coaches other defense innovators and senior DoD officials at events such as Fed Supernova. • National Science Foundation SBIR Phase I of $230k

Learn More about Vector: **www.nsin.mil/vector**

UNUM

NSIN's Online Problem-Solving Platform