



**DEFENSE
INNOVATION UNIT**



**NATIONAL
SECURITY
INNOVATION
NETWORK**



Small Business Training
Week - Baltimore
June 2023

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Principal, NSIC

TECHNOLOGY DOMINANCE IS THE
NEW GLOBAL BATTLEGROUND

“[The United States] will be a **fast-follower** where market forces are driving the commercialization of militarily-relevant capabilities...and [DoD] will speed their delivery to the warfighter.”

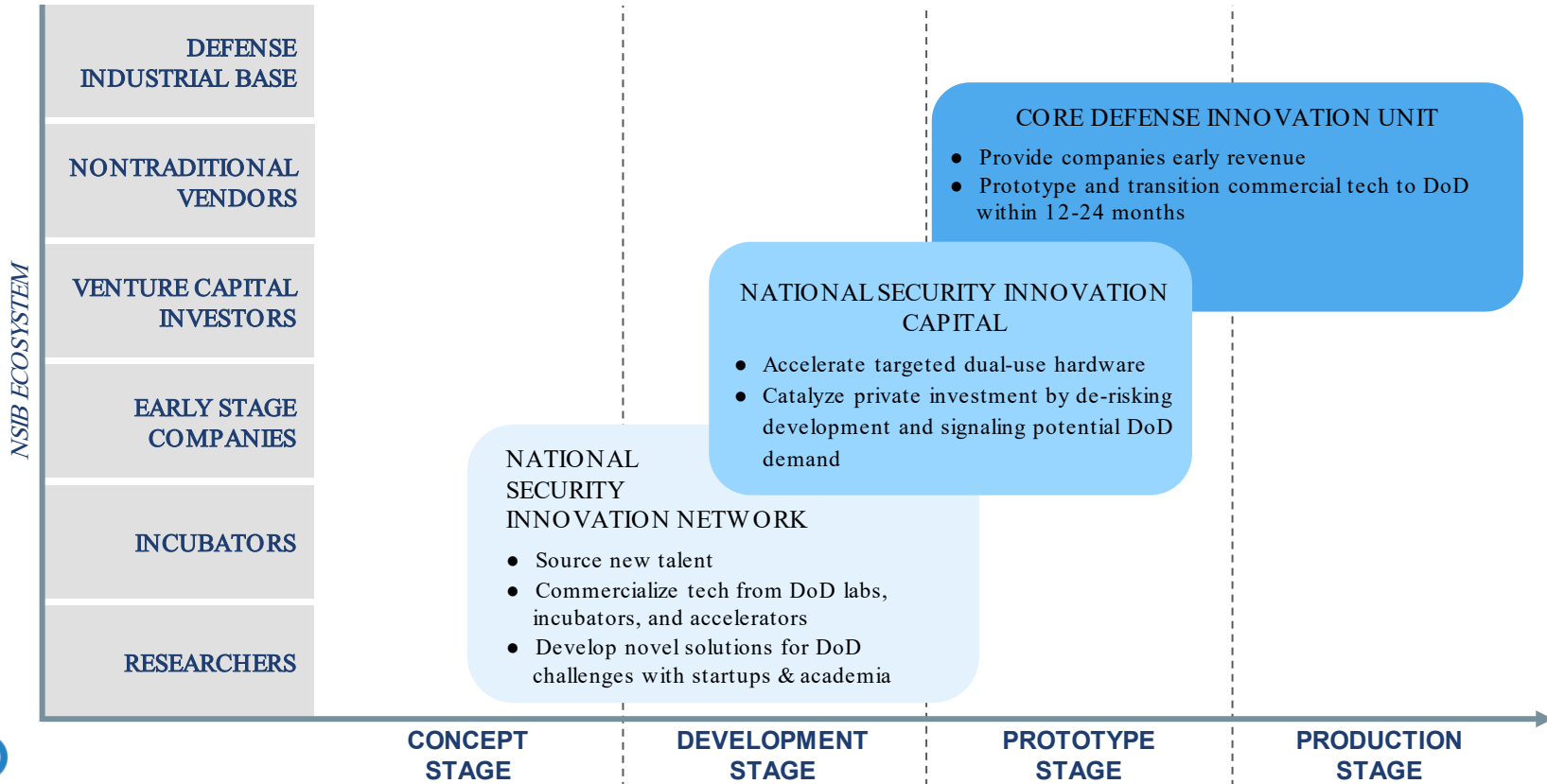
2022 National Defense Strategy



Photo credit: Rocket Lab

INCREASING ADOPTION OF COMMERCIAL TECH & GROWING THE NSIB

3 COMPONENTS OF DIU



DIU MISSION

DIU is a fast-moving, cross-DoD organization focused exclusively on commercial companies to solve national security problems.

Elements of our Mission

Accelerate DoD adoption of commercial technology

Transform Military capacity and capabilities

Strengthen the national security innovation base

Key Differentiators

Unique project lifecycle from curation to transition

Joint force & mandate to scale value across DoD

Broad and deep **integration** into key tech ecosystems



TECHNOLOGY FOCUS AREAS

Where the commercial sector is in the lead



AI/ML



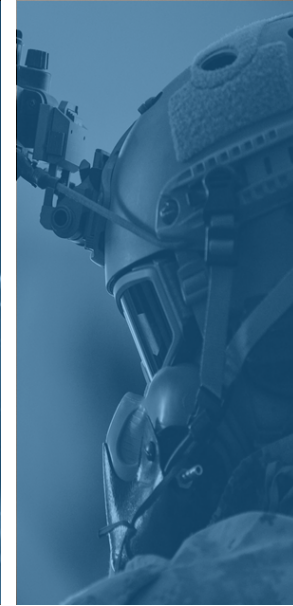
Autonomy



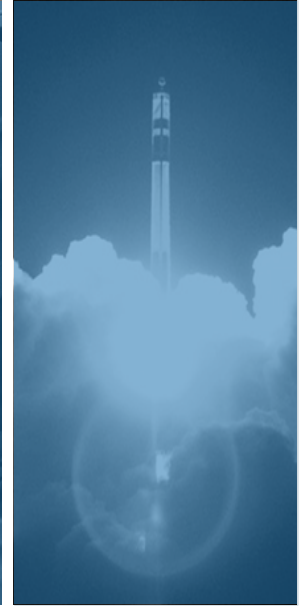
Cyber



Energy



Human Systems



Space



DIU GENERATING OUTSIZED IMPACT

Expanded Capacity: **110** ongoing + **66** completed projects

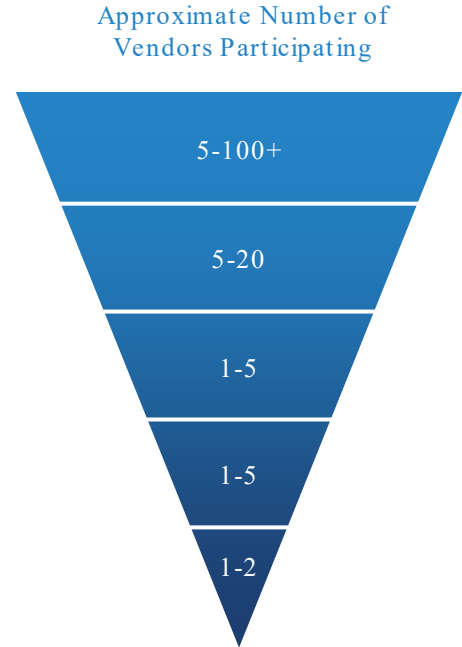


| | | |
|--|---|--|
| >\$30.7B In private investments leveraged since time of award; >\$90B to date | 60-90 days Goal: from closing solicitation to vendor(s) on contract | 6,200+ in vendor submissions |
| 129 First time DoD vendors | 47% Cumulative transition rate | 389 Prototype OT contracts awarded |
| 288 Non-traditional vendors | 23 New projects started in FY23 | \$1.3B DoD funds obligated |



UNIQUE PROJECT LIFECYCLE - FAST & COMPETITIVE

| | | |
|------------------------------------|--|-------------------------------------|
| Problem Curation & Diligence | <ul style="list-style-type: none"> ● Receive, understand, and evaluate DoD partner problem ● Confirm commercial market exists to address problem | No Requirements |
| Commercial Solutions Opening (CSO) | Phase 1 <ul style="list-style-type: none"> ● Solicit digital proposals in response to a problem statement | ~10 business days |
| | Phase 2 <ul style="list-style-type: none"> ● Evaluate proposals and invite a short list of bidders to pitch | 60-90 days to contract award (goal) |
| | Phase 3 <ul style="list-style-type: none"> ● Select contract awardee/s and negotiate agreement | |
| Prototyping | <ul style="list-style-type: none"> ● Execute prototype project | 12-24 months |
| Transition | <ul style="list-style-type: none"> ● Award non-competitive agreement to successful performers ● Deliver & scale solution to transition partner/s | No Re compete FAR Not Req'd |



DIFFERENTIATED CAPABILITY: COMMERCIAL ENGAGEMENT TEAM

Unlocking real value within non-traditional tech ecosystems

Lines of Effort

- BUILD DEEP ECOSYSTEM RELATIONSHIPS
- PROVIDE INDUSTRY EXPERTISE TO DIU
- VET COMPANIES, TECH & VENTURE FIRMS
- SUPPORT SMOOTHER PROCUREMENT EXPERIENCE
- GENERATE MORE PRODUCTION CONTRACT OPPORTUNITIES

6,200+ Companies Responded to DIU Solicitations

- 45 per AOI in FY22 (47% increase v. FY21)

388 Companies Received \$1.2B in Prototype Awards

- >\$30B in private investment leveraged since time of award;
>\$90B to date

50 Companies Received \$4.9B in Production Awards

- 13 unicorns - valuation of \$1B+
- Backed by 13 of top 58 global venture firms ([Forbes Midas List](#))

\$1.5B+ in Additional Follow-On Contracts (Non-DIU)

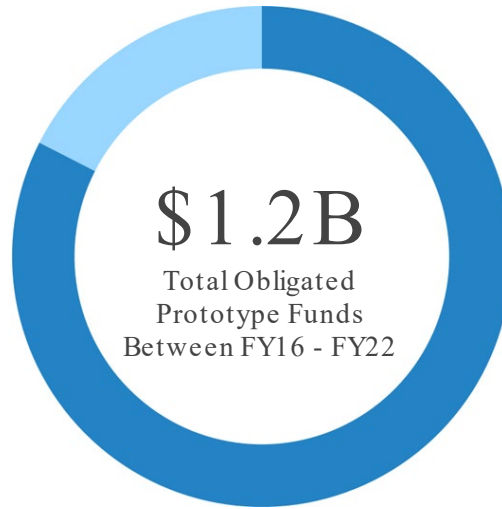


TRANSFORM MILITARY CAPABILITIES & CAPACITY

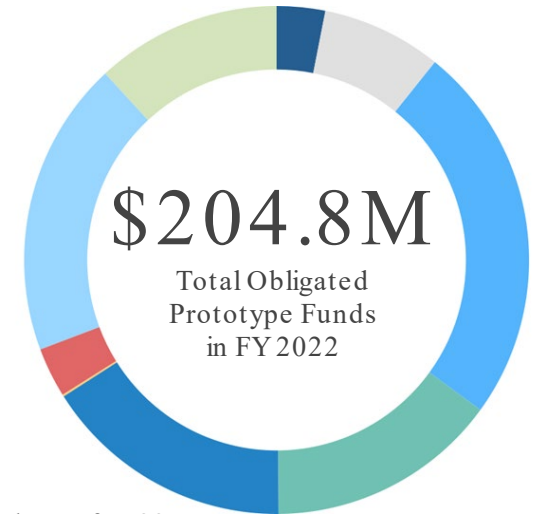
Joint Force & Mandate to Scale Value Across DoD

Defense Engagement Team

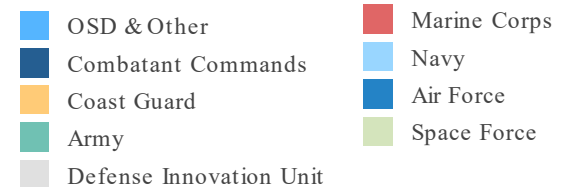
- ALIGNS DIU PRIORITIES WITH DOD LEADERSHIP
- SERVES AS BRIDGE BETWEEN DIU AND PROGRAM OFFICES
- COORDINATES TRANSITION PATHS
- IDENTIFIES JOINT-LEVEL PRIORITIES AND SCALING OPPORTUNITIES



Share of Cumulative
Prototype Funding

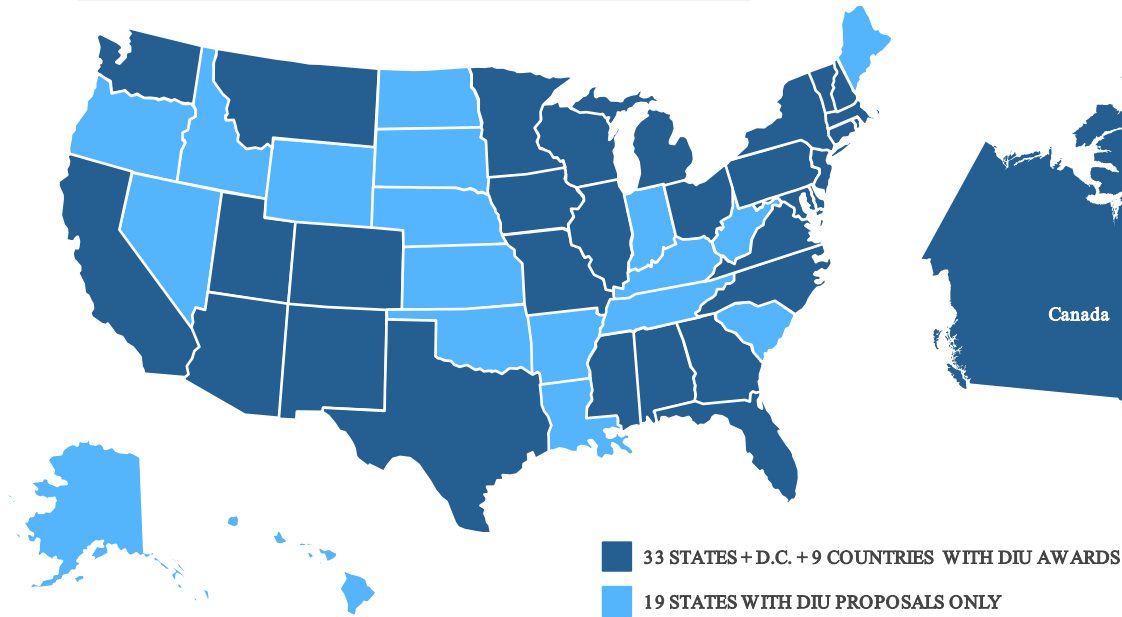


Share of FY22
Prototype Funding



STRENGTHEN THE NATIONAL SECURITY INNOVATION BASE

United States Awards by Company Location



International Awards by Company Location



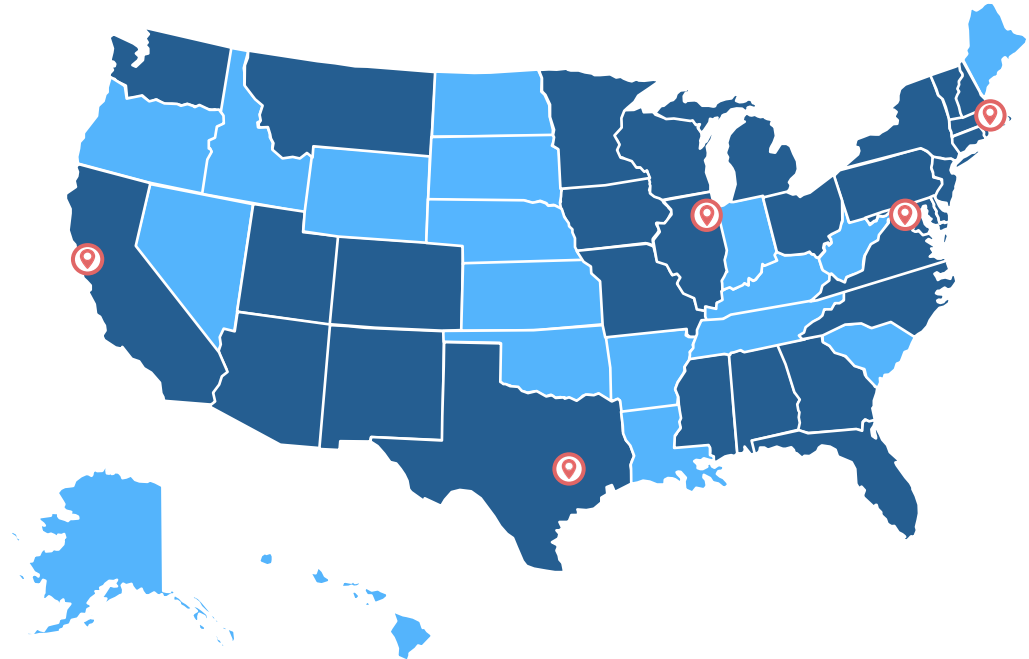
CORE DIU: STRENGTHENING THE NATIONAL SECURITY INNOVATION BASE

6,200+ companies in 50 states & DC
have competed for DIU contracts

338 unique companies
awarded DIU contracts

- 129 to first-time DoD vendors
- 288 to nontraditional vendors
- 232 to small businesses

 DIU Locations



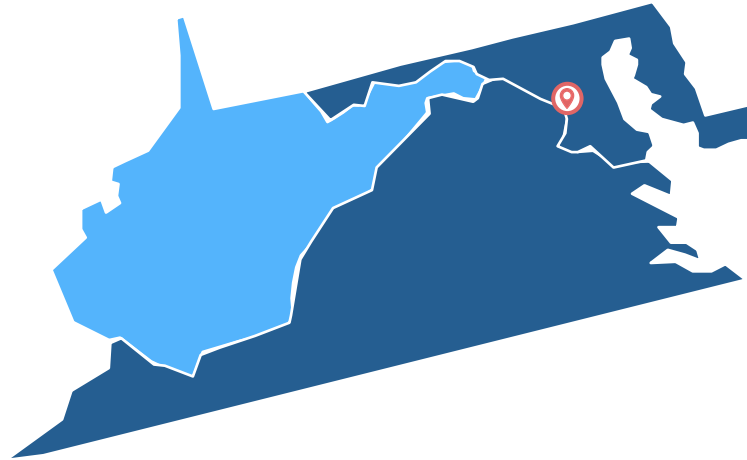
EXPANDING THE NSIB IN THE NCR

\$217.2M in Prototype Awards
to DC, MD, VA, WV companies
supporting 49 DIU projects

58 Unique Companies
awarded DIU contracts

- **9** to first-time DoD vendors
- **42** to nontraditional vendors
- **35** to small businesses

 **DIU Locations**





NSIN

National Security Innovation Network (NSIN)

Venture Portfolio & Transition Cell

20 June 2023

Who



Office of the
Secretary of
Defense



Defense
Innovation
Unit (DIU)



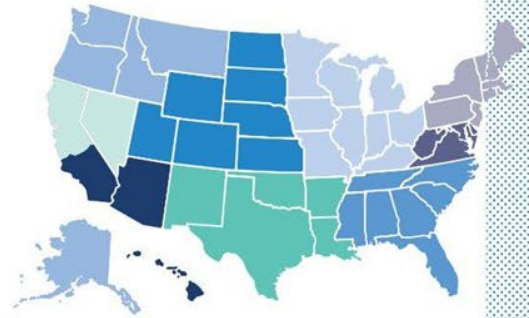
National
Security
Innovation
Network
(NSIN)

What



- › Competitive and Diverse Talent
- › Partnerships
 - › Universities
 - › Venture Community
 - › DoD/Warfighters
- › Dual-Use Solutions
- › Expand the National Security Innovation Base

Where



- › HQ in Arlington, VA
- › 37 regional positions across 26 states
- › Mission Acceleration Centers - collaboration space for defense innovators



A New Model for National Security Innovation

NSIN delivers on its mission through three lines of effort.



Network Building

Innovation ambassadors engage academic and venture communities to build a network of DoD problem-solvers.



Programs

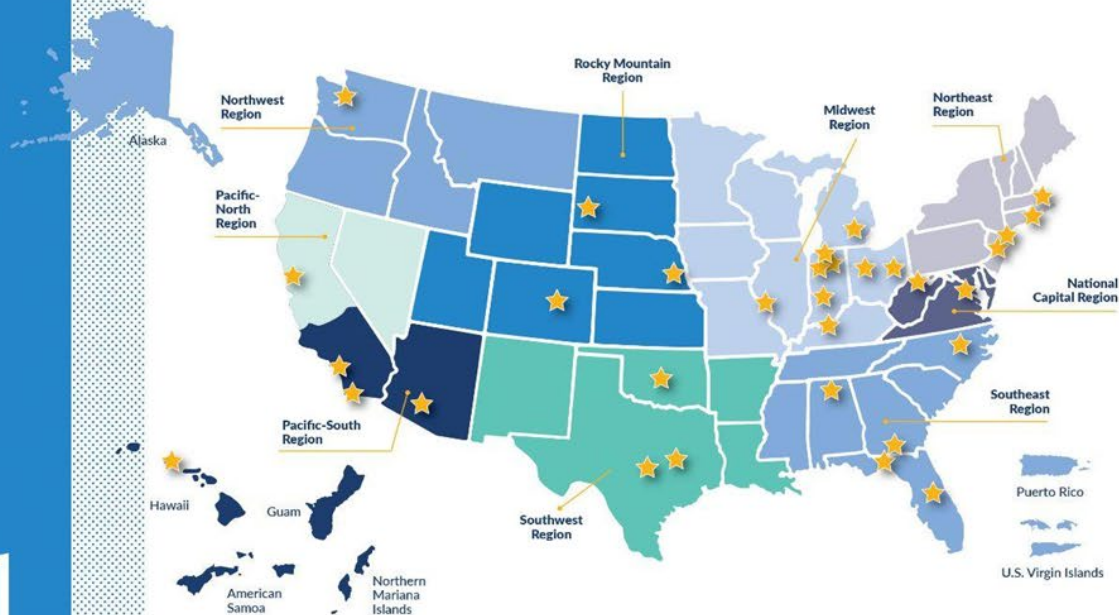
Talent and Venture programming activates the Network to develop innovative solutions.



Transition

Supports mission partners and program participants to navigate the valley of death.

Programs of Record Support the National Network



TALENT PORTFOLIO

BOOTCAMP

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

CAPSTONE

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

FOUNDRY

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

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.

VENTURE PORTFOLIO

CHALLENGES

Bring collaborators from the defense, academic, and venture communities together to work on the most challenging technical problems in national security.

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.

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.



NSIN

NSIN BY THE NUMBERS

FY 2019-2022

NSIN FUNDING



NSIN HELPED

983

DoD organizations
SOLVE



1,511

PROBLEMS
by generating

1,786

unique solutions.



ENGAGED

8,419

NEW PEOPLE
in the National Security
Innovation Base.

SUPPORTED

1,326

NEW COMPANIES
to enter the National
Security Innovation
Base and spun out
48 of DoD-funded
technologies.



Since 2016, companies in
NSIN programs RAISED

\$9.6B

IN PRIVATE CAPITAL
FUNDING

and

\$2.9B

IN DoD FUNDING.



Venture

Driving access to early-stage ventures to address national security problems.

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



Sponsor: PEO Digital

Project: Human-Machine Teaming

Solution: A wearable device intended to assist Parkinson's patients and also serve 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: nsin.mil/propel

Challenges

NSIN Challenges bring collaborators from the defense, academic, and venture communities to work on the most challenging technical problems in national security.

- Solving complex problems requires a combination of diverse technologies and talent.
- Work on problem sets from the DoD that are sources of opportunity for non-traditional problem-solvers.
- Participate in innovation challenges that help DoD problem owners confront obstacles that affect their readiness and resilience.
- Collaborate and learn from other innovators tackling the DoD's problems.

In Action



Sponsor: Air Force Research Laboratory

Grand Challenges:

- *Metallic Scrap and Waste Powders* - Demonstrate production of powder from scrap materials and rejuvenation of used or out-of-spec titanium powder for additive manufacturing.
- *Quantum Networks* - Develop high-rate entangled-photon sources to enable global quantum networks, networked quantum sensors, and distributed quantum computing.
- *AI Planners for Optimization* - Identify and build a machine learning-artificial intelligence system that can efficiently help researchers find appropriate conditions for optimization and discovery of new synthetic compounds using multi-system approaches.
- *Quantum Information* - Extraction of images beyond the Rayleigh limit pitched high-resolution space imaging solutions.

Learn more about Challenges: nsin.mil/portfolios/venture

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 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.



In Action

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.



City of Phoenix

Learn more about EmERGE: nsin.mil/emerge

Other FY23 Activities

Forge/T2 Pilot

DoD labs and FFRDC tech relevant to DoD tech vertical problems

Bring to market via early-stage ventures.



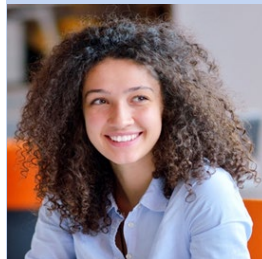
Fulcrum

Works with early stage companies developing tech relevant to national security to accelerate development via access to infrastructure.



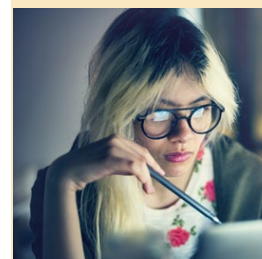
Dual-Use Fundamentals

Curriculum for early stage ventures to accelerate business maturity.



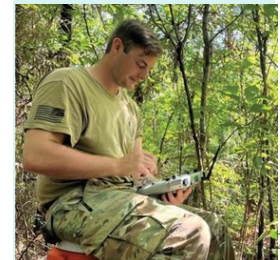
Scout

DoD mission partners engage with NSIN alumni network for market research purposes.



Adaptive Threat Force

Tests and evaluates defense innovation prototypes in a challenging environment.



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: nsin.mil/transition-cell

NSIN Wins

SLINGSHOT AEROSPACE

Space Domain Awareness



Mission Partners:
Space Force and JAIC

NSIN's Role:
Held Prize Challenge

- Impact:**
- Secured \$81M in DoD contracts since Prize Challenge win
 - Acquired another NSIN alumni company with H4D origins

PISON *Haptic Machine Controls*



Mission Partner:
SOCOM

NSIN's Role:
Held Propel startup accelerator program with MassChallenge

- Impact:**
- Secured ~\$3 million in DoD awards
 - Raised over \$11 million in private capital

ICON3D *3D Printed Buildings*



Mission Partners:
AFWERX and Texas National Guard

NSIN's Role:
Connected company to relevant DoD stakeholders

- Impact:**
- SBIR PH III
 - ~\$9M in SBIR awards
 - \$57M NASA contract

RELATIVITY SPACE *3D Printed Rocket Engines*



Mission Partners:
SSC and NASA

NSIN's Role:
Connected company to relevant DoD stakeholders for testing purposes

- Impact:**
- Saved company \$2M in testing fees
 - Received 4 USG contracts totaling over \$3M
 - Raised over \$1.3B in private capital



NSIN

Transition Cell Examples

Company: **Krtrl**, provides high-reliability embedded hardware and software solutions for 'hard' real-time robotics, sensing, and space applications



NSIN's Role:

- Provided subject matter expertise on DoD contracting
- Specially advised on how to activate an "award enhancement" an existing Phase II SBIR

Impact:

Unlocked an extra \$250K in non-dilutive capital from the awarding DoD

Company: **Nebula Compute**, developer of an open source cloud computing platform for scalable computing and storage



NSIN's Role:

- Provided subject matter expertise on dual-use ventures
- Consulted on a simultaneous seed round raise and the conclusion of contract talks with the Space Force
- Reviewed pitch and related materials
- Created a curated list of investors to fill out their seed round

Company: **Space Kinetic**, a very early stage venture that builds resilient in-space supply lines



NSIN's Role:

- Assisted in identifying DoD programmatic fits to their technology
- Identified a SBIR opportunity
- Provided critical feedback on their submission package, deck and pitch for the Los Alamos Embedded Entrepreneurship Program

Impact:

Accepted to Los Alamos Embedded Entrepreneurship Program
Secured \$400K in non-dilutive capital

Organization: **U.S. Air Force**

NSIN's Role:

- Provided guidance and support to inject new solutions
- Developed options for procuring a software system developed by J3D Labs Inc (fka Flip)

Impact: Mission partner is implementing one of the proposed acquisition options and strategy at a larger scale with FY 2023 funds



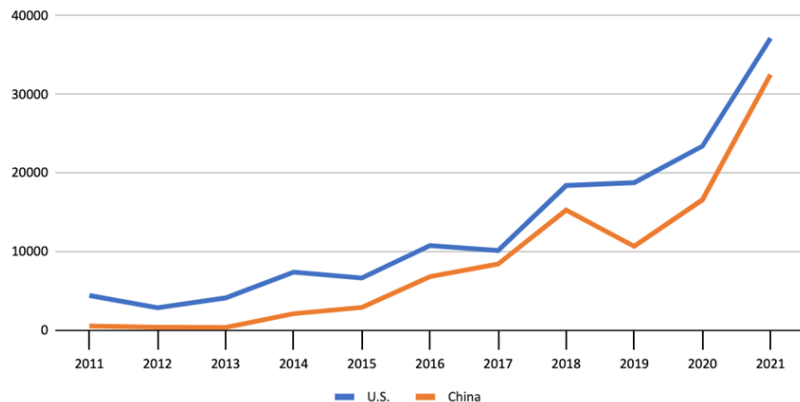


National Security Innovation
Capital (NSIC)

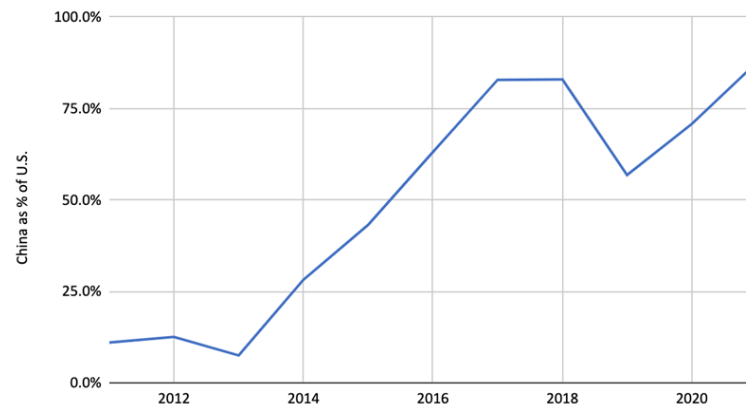
China is Catching Up with the U.S.

China VC invests almost as much in its HW startups as U.S. VC invests in U.S. HW startups

U.S. vs China HW Funding



China as % of U.S.

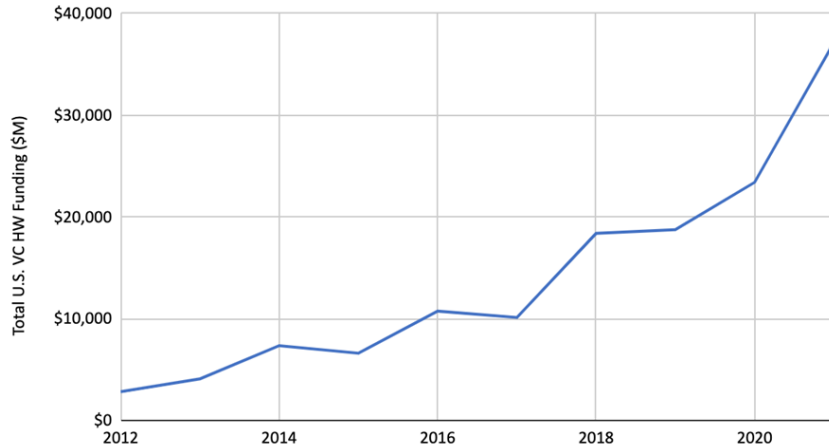


NSIC Analysis of Pitchbook Data

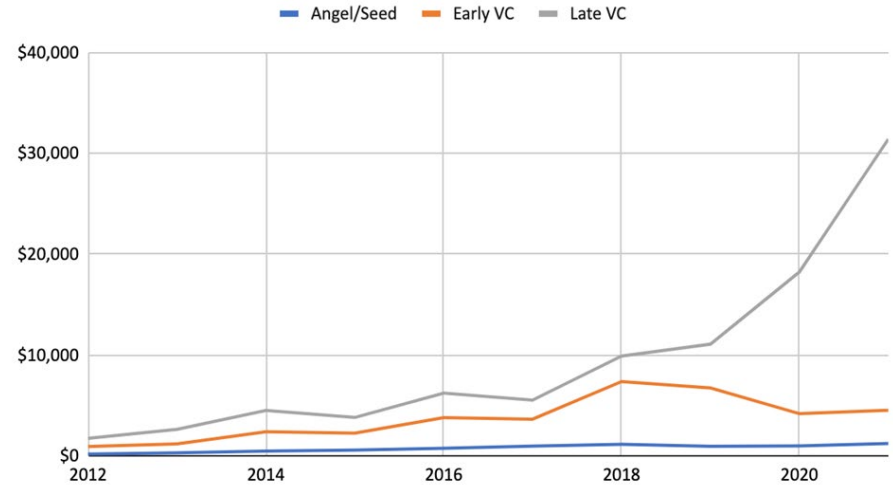
U.S. VC funding of U.S. hardware startups growing rapidly

But most of that growth is going to later stage companies

Total U.S. VC HW Funding (\$M)



HW Funding By Stage (\$M)

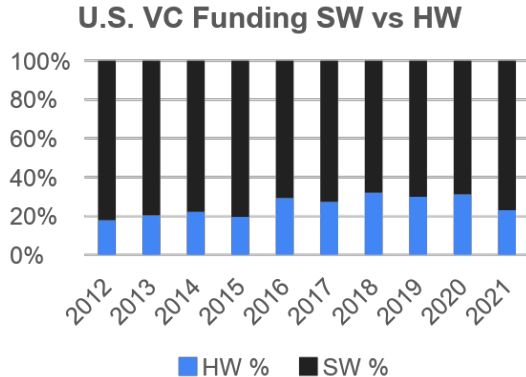


NSIC Analysis of Pitchbook Data

U.S. VC Under Invests in Early-stage Hardware Companies

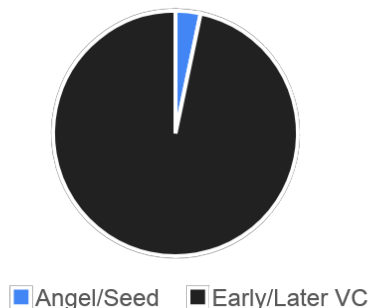
Limiting the number of U.S. suppliers and creating openings for adversaries.

U.S. VCs invest <30% of total capital in hardware



And < 4% of those funds go into the earliest stage, highest risk companies

2021 HW Funding by Stage



U.S. Venture funding of domestic hardware startups
NSIC Analysis of Pitchbook Data

NSIC - Accelerating Hardware Product Development

DoD effort that enables early-stage, dual-use hardware startups to advance key milestones in their product development by addressing the shortfall of private investment from trusted sources



FOCUSED ON:

- Accelerating critical and emerging hardware
- Driving commercial & defense applications (dual-use)
- Stimulating private VC investment through timely funding, which
 - Reduces technology risk & accelerates development
 - Signals potential future DoD demand
 - Provides due diligence base
- Blocking adversarial investment

COMPLEMENTARY TO:

- SBIRs
- R&E Capability Prototyping
- Other DoD innovation programs
- OSC



Accelerating the Development of Dual-use Hardware

Technology Focus Areas

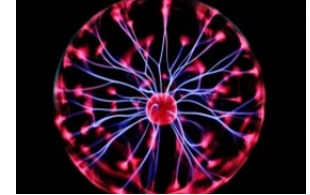
Technologies at the edge, have mobility, and work across domains (land, sea, air, and space):



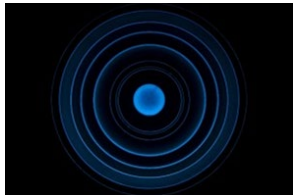
AUTONOMY



COMMUNICATIONS



POWER



SENSORS



SPACE

Accelerating Technology Development

After 30 months of operation, NSIC has funded 17 companies totaling ~\$35M

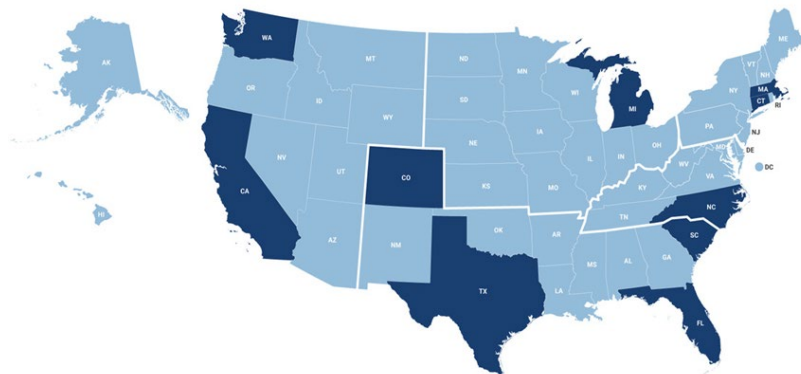
Topic of Interest Distribution: Multiple companies relevant to more than one ToI

Project Performance: 3 companies completed work, others on track. (As of end of Q2 FY23)

Adversarial Capital Identified: 3 resolved; vetting all for subsequent private rounds

Private Capital: 3+ companies raised new private funding at up to 3.4X prior valuation.

Geo Distribution
Ten states across the country



NSIC SUPPORT TO THE DEFENSE INNOVATION BASE

Capitalizing on NSIC's innovation ecosystem

\$35M

Funding to Date

5

Topics of Interest

\$35M

Funding awarded to vendors

17

Contracts awarded



DOD NEEDS TO UNLOCK MEANINGFUL DEMAND TO ACCELERATE MARKETS

MINDSET CHANGES

- ⇒ Capabilities not requirements
- ⇒ Fast Follower: more buy, less build

ACQUISITION CHANGES

- ⇒ Broader use of “new” tools (OTA)
- ⇒ Incentives, training and rewards

PPBE CHANGES

- ⇒ Capability Program Executive Offices (PEOs)
- ⇒ Fewer Program Elements (PEs)
- ⇒ Reprogramming flexibility

INNOVATION ORG CHANGES

- ⇒ DoD capital applied at the right time



HOW CAN WE SUPPORT YOU?

www.diu.mil

www.nsin.mil

www.nsic.mil

Open Solicitations: diu.mil/work-with-us/open-solicitations

CONTACT US

www.diu.mil/contact-DIU

FOLLOW US



Questions?