



2026 NICE Conference and Expo

Cultivating the Next Generation of Cyber and National Security Leaders

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Presentation Outline

- ❖ Mission & Origin Story
- ❖ Core Components & Organization
- ❖ Talent Development Ecosystem
- ❖ Stakeholder Alignment
- ❖ Best Practices & Lessons Learned

The National Challenge

- ❖ Too few qualified U.S. citizens entering federal service, defense, and intelligence careers
- ❖ Growing mission demand across DoW and IC
 - ❖ >500,000 open cyber positions across industry and government according to NICCS
- ❖ A deliberate, sustained pipeline is needed, not ad hoc engagement

Our Mission

“The mission of the Ted and Karyn Hume Center for National Security and Technology is to cultivate the next generation of national security leaders by developing and executing research and experiential learning opportunities to engage students.”

- ❖ Founded in **2009** to address this national challenge
- ❖ Student centered with focus on **research** and **workforce development**
- ❖ Part of the VT National Security Institute (VT NSI)

Core Components of the VT National Security Institute

A one-of-a-kind university institute fully dedicated to strengthening the nation's safety

Rising to national prominence through 10-year growth of the Hume Center for National Security & Technology

VT NSI MISSION:

We meet the pressing needs of the defense and intelligence communities by developing their future workforce and advancing interdisciplinary research and technology.

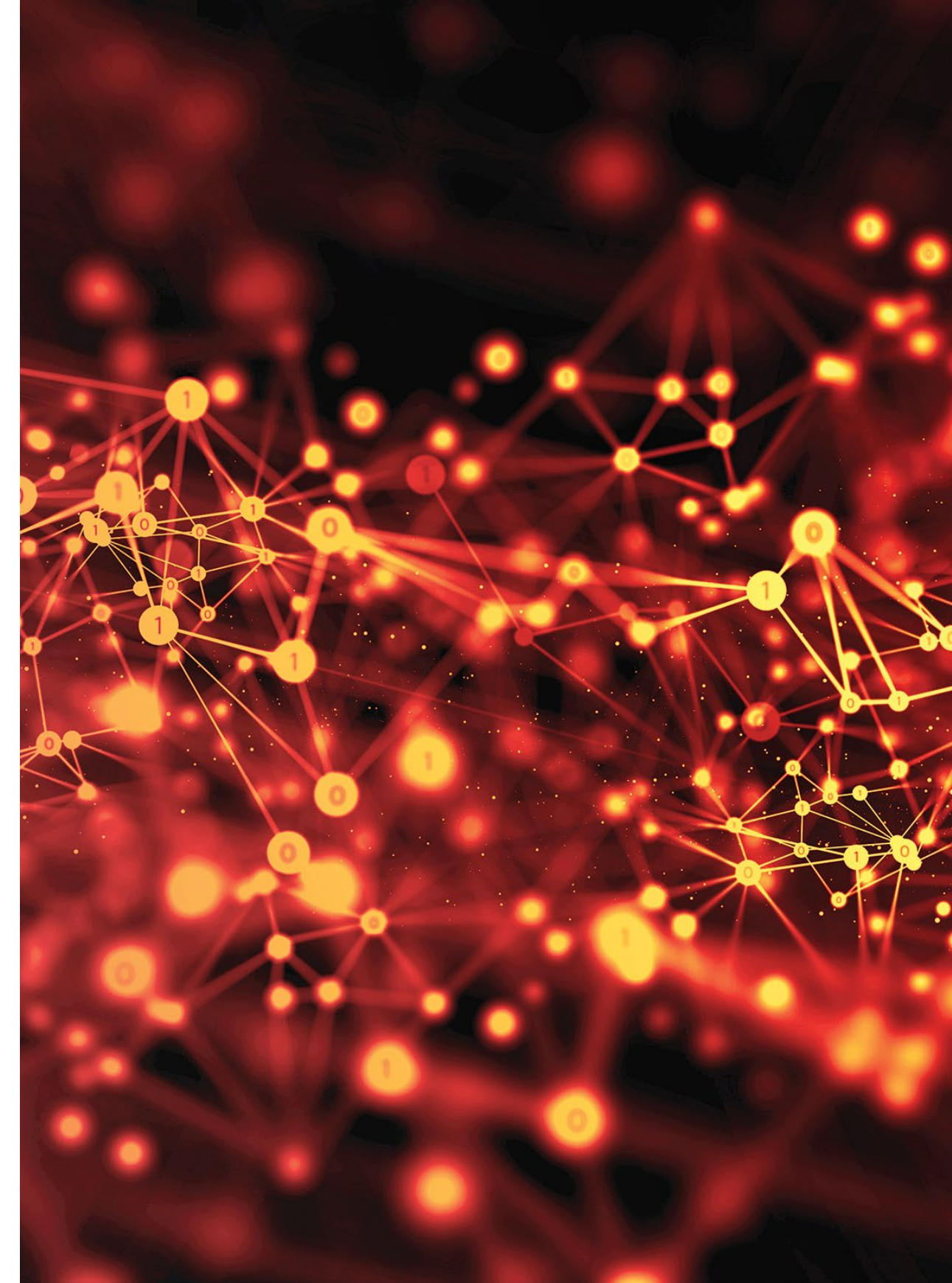




INTELLIGENT SYSTEMS

INTELLIGENT SYSTEMS DIVISION

- Fundamentally changing how we interact with and learn from data
- New technologies like 5G and edge computing are reshaping the global communications landscape. Rigorous testing will ensure embedded algorithms stay safe, reliable, and effective as they take on more autonomous tasks.
- TECHNOLOGICAL THRUST AREAS
 - Data science, machine learning, and AI
 - Cybersecurity and complex systems engineering
 - Complex system validation and test and evaluation



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SPECTRUM DOMINANCE

SPECTRUM DOMINANCE DIVISION

- Establishing ownership of the radio frequency spectrum
- Without control of the airwaves, we lose reliable links and key advantages. Our researchers perform state-of-the-art research in robust communication systems and partner with government and industry to provide next-gen talent with vital experiential learning.
- CORE RESEARCH AREAS
 - Spectrum dominance
 - Communication systems
 - Embedded systems
 - Quantum computing
 - Electromagnetic systems and structures



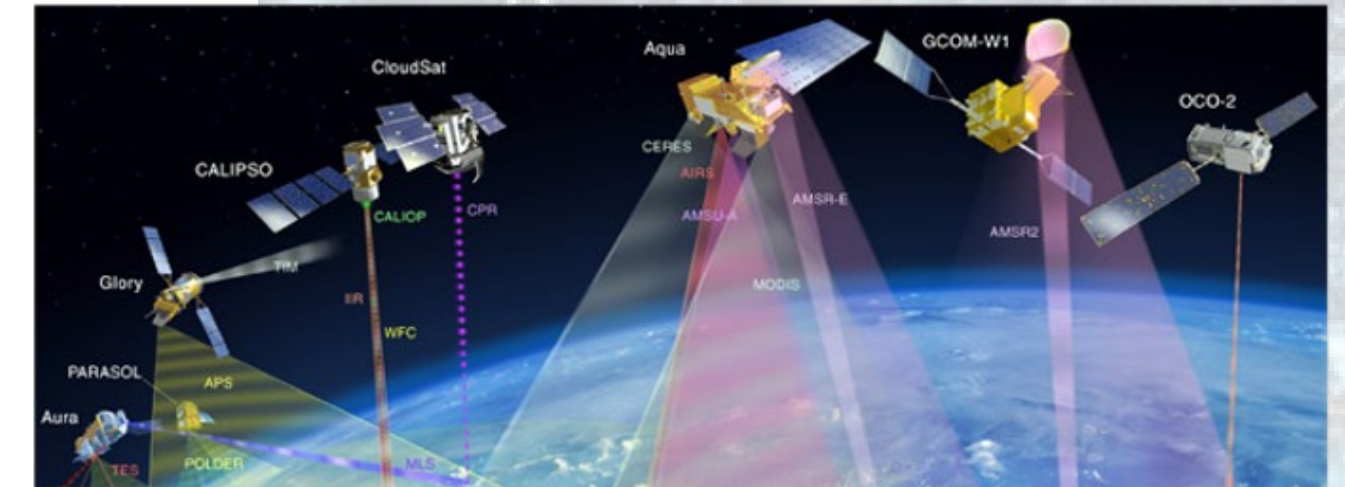
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MISSION SYSTEMS

MISSION SYSTEMS DIVISION

- Advancing intelligent and resilient platforms
- As threats evolve, the U.S. needs flexible, autonomous platforms with the ability to locally process sensor data and make tactical decisions. To meet demand, we're leveraging the latest technological capabilities for airborne and spaceborne systems, from machine learning to computational mechanics.
- MAJOR RESEARCH AREAS
 - Space situational awareness
 - Autonomy and resilience
 - Maritime remote sensing
 - Cubesats and small satellites



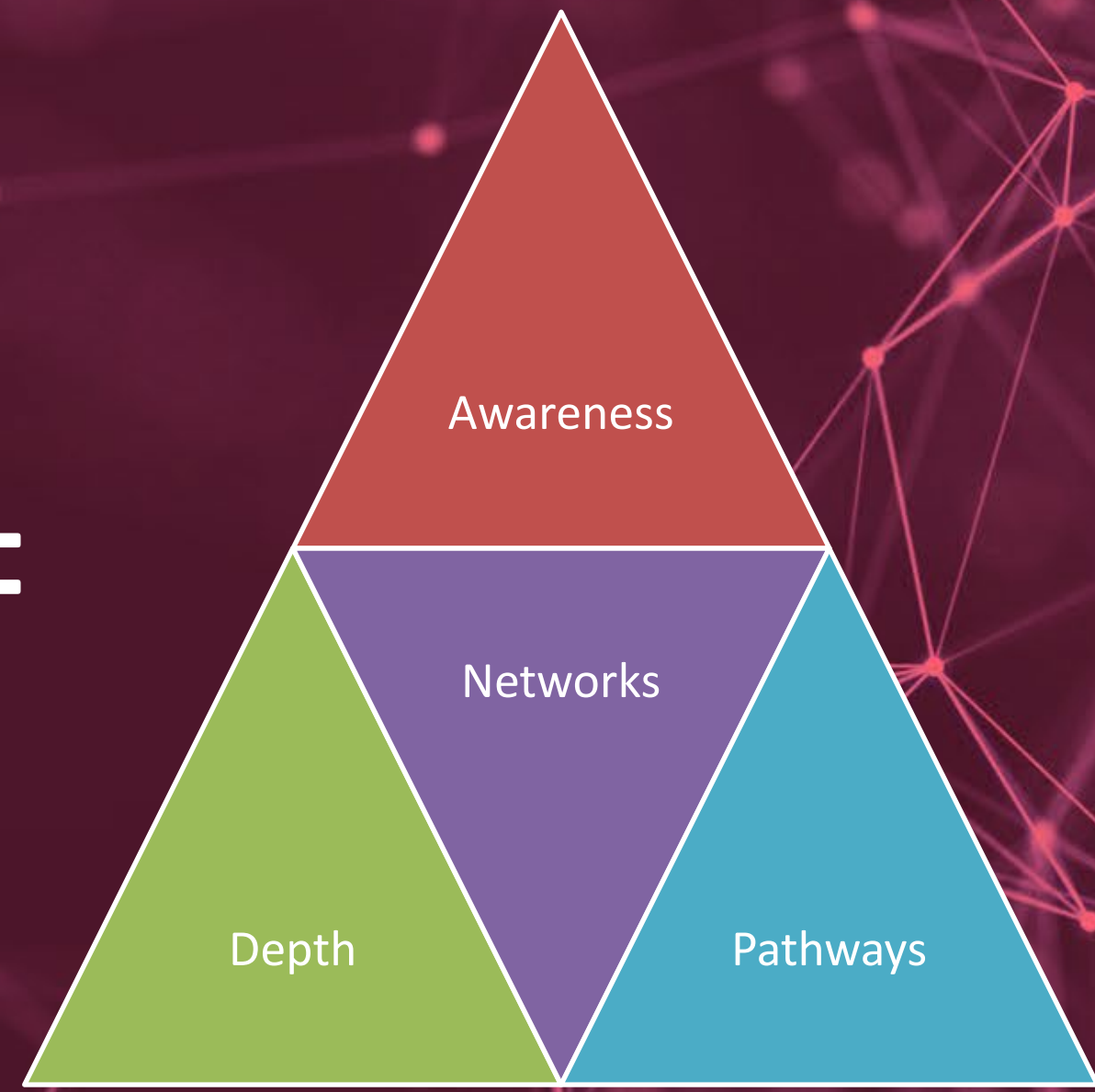
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The Hume Center: Creation of a Talent Development Ecosystem

Hume Center Objectives



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Outcomes for Students



Allows us to create a scalable, interdisciplinary, applied, & mission-aligned program that engages ~1000 students annually

- ❖ Awareness: seminars, workshops, career fairs → drive early national and cybersecurity interest
- ❖ Depth: research and experiential learning → build technical skill
- ❖ Pathways: internships and workforce development programs → transition to careers
- ❖ Partnerships: Internal & External



Student Recruitment & Engagement

Recruitment via weekly newsletters, social media, academic departments, NSI faculty, and affiliates, with a focus on: **U.S. Citizens, clearable/cleared**

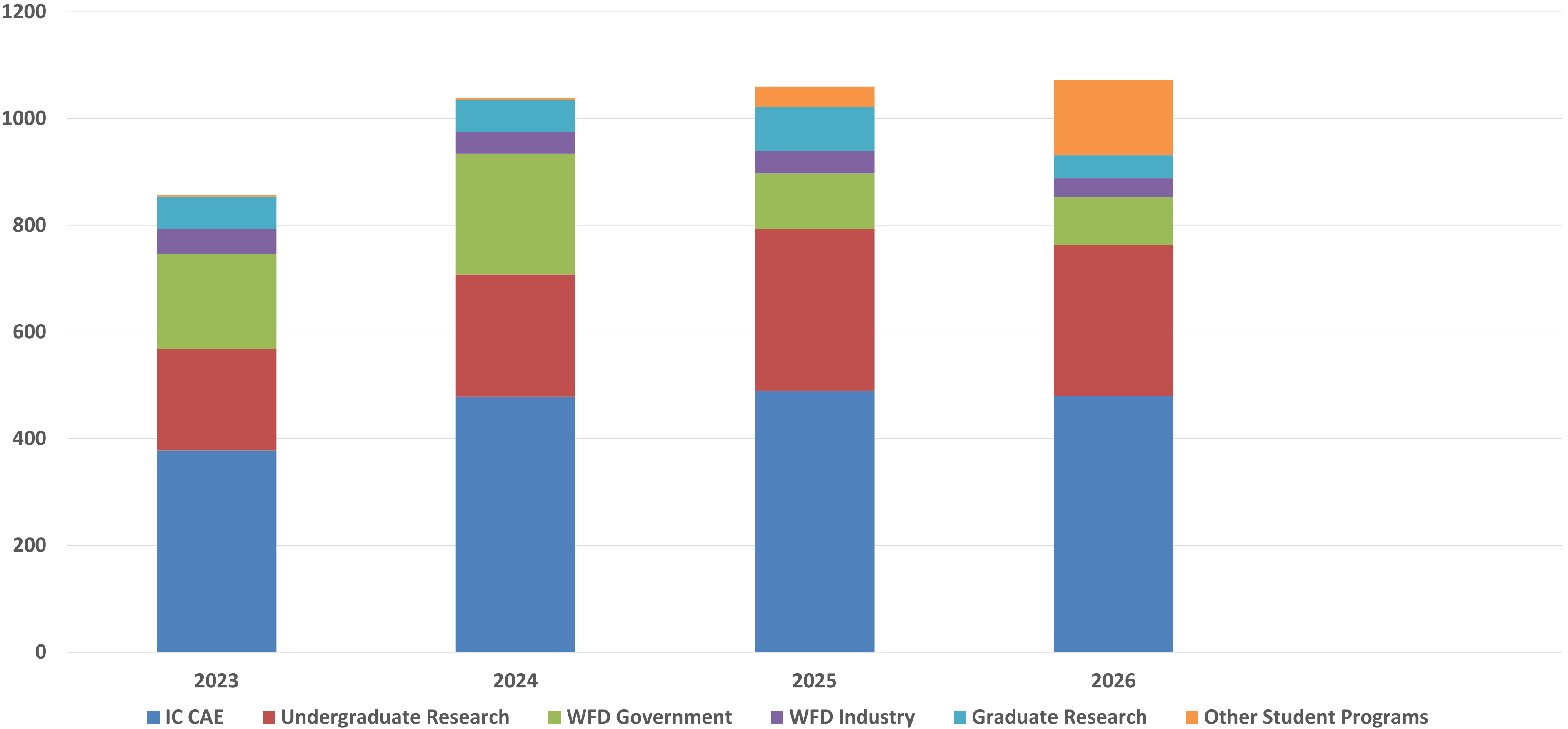
- Open House -> 950 Student RSVPs (~700 in person)
- ADI Career Fair -> 900 Student Registrations
- GobblerFest -> 200 Students
- Network of >6000 students receive weekly newsletter
 - ~1000+ students added since Aug. 2025

Engagement Opportunities

Total Opportunities	163
Internships	24
Workforce Development	7
Jobs	17
Scholarships	7
Events	46
Curriculum/Competitions	12
Research/Exp. Learning	50
Internal Opportunities	100
External Opportunities	63



Hume Center Student Engagement



Preparing Students – Core Research Areas



Intelligent Systems Division



Mission Systems Division



Spectrum Dominance Division



Other Academic Departments & Partners

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- Intelligent and Complex Systems
- Cybersecurity
- Mission Engineering
- Validation, Test & Evaluation
- Data science, ML, AI, AI Assurance

- **Space and Undersea Systems**
- Resilient, autonomous missions
- Remote & in-situ sensing
- Data fusion and sensemaking
- Advanced C4ISR and counter-C4ISR

- Assured and secure communications, Next G wireless
- Antennas, scattering & propagation
- RF machine learning
- Open Gen wireless innovation
- Quantum and heterogeneous computing

- State Department diplomacy lab topics
- Impacts of technology on humanity
- Global intelligence education
- Open Source Intelligence



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Undergraduate Education

Undergraduate Research & Experiential Learning

- **250 students per AY**
- Hands on experiences working w/**NSI Divisions & Affiliated Faculty**
- Examples:
 - Hypersonic Alternate Navigation
 - Design and Simulation of an RF Feed
 - Use & Abuse of Personal Information

Workforce Development

- **150 students per AY**
- Government and Industry sponsored programs focusing on developing the future cleared workforce
- Examples:
 - Defense Civilian Training Corps (OUSD A&S)
 - RTX Cyber Fellowship Program (Raytheon and Collins Aerospace)
 - Cyber Scholarship Academy (DoW CIO)

Career Development, Internships, & Seminars

- **600+ students per AY**
- Opportunities for students to hear from leaders in the DoW, IC, and Industry
- National security **career fair, internship, and career opportunities**
- **5000** students received a newsletter each week on current opportunities

Specialized Courses

- Introduction to Restricted Research (**ITAR level course**)
- Hacking 4 Defense
- Async BLUF Course

Graduate Education

Fellowships

- **Julian Chin** PhD Fellowship in Cybersecurity
- Leidos GRA Fellowship in **Emerging Technologies**
- DoW Cyber Service Academy – Most students will receive a masters or PhD (10 students)

Graduate Research & Teaching Assistantships

- **>70 GRAs/GTAs last AY**
- ~30 NSI and Affiliated Faculty serving as advisors
- GTAs support workforce development and experiential learning programs
- Graduate students primarily in **CoE and CoS**

National Talent Accelerator

Reinventing Graduate Education at the Virginia Tech National Security Institute

- Transformational learning experiences
- Career-ready portfolios
- Clear pathways to employment
- Lifelong advantage

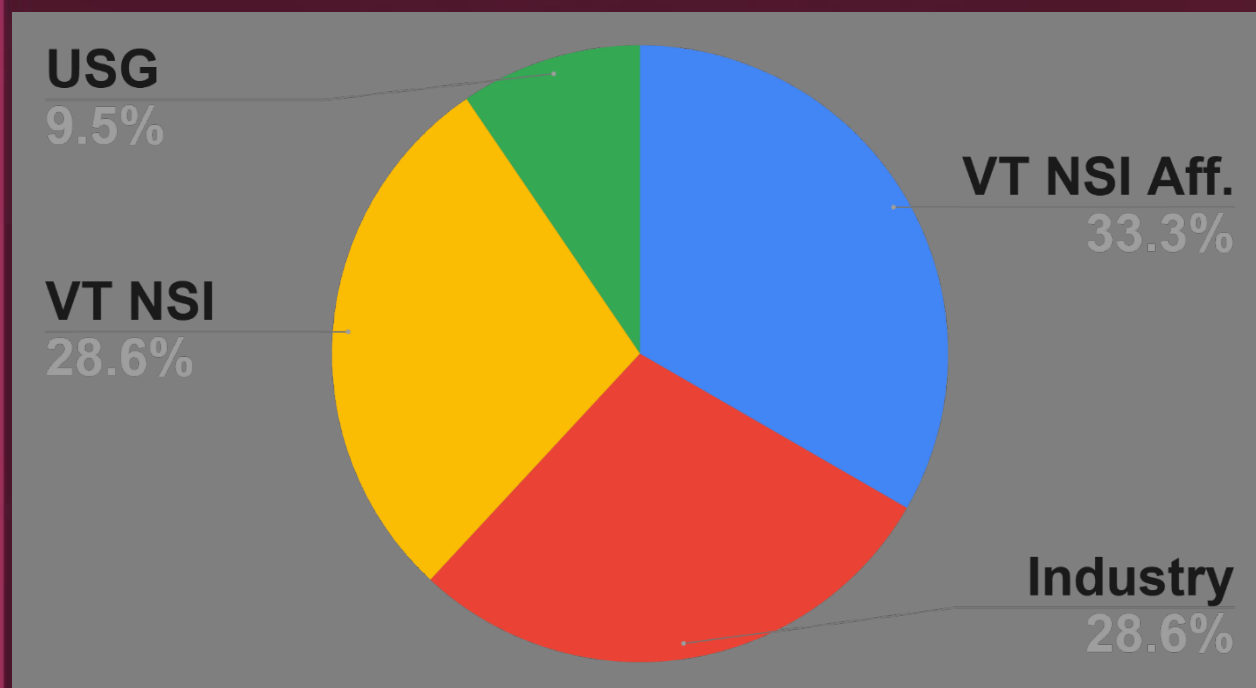


Hume Center Research Fellowships

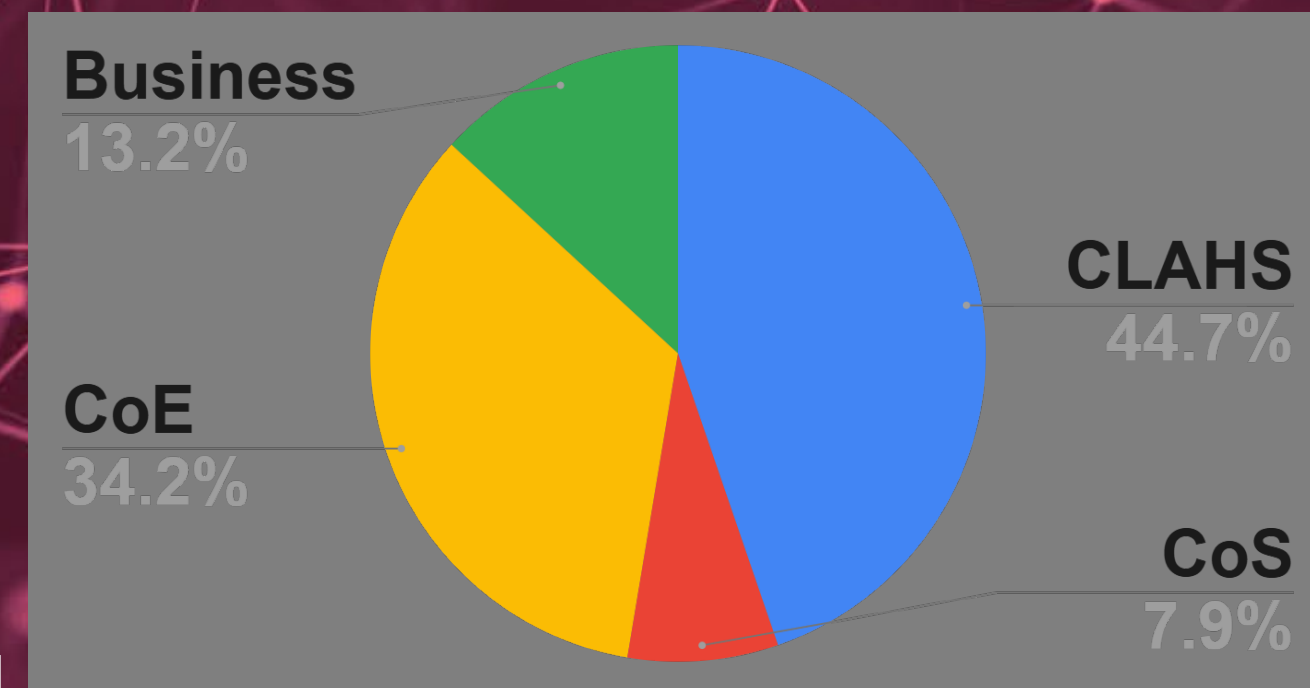
**\$6K Fellowship for
42 Students \ 16 Projects**

- **Research Topics Include:**

- China's Pacific Push and how to Counter It
- Arctic Security and Diplomacy Dynamics
- Data Encodings for Geospatial Fusion
- Modeling Drone Attacks and Countermeasures
- Hypersonic Trajectory Modeling



Fellowship Mentors



Fellowship Colleges



Hume Seminar Series

Defending Critical Infrastructure
- DHS

SF-86 Workshop
- Rutgers University

(dis)Information: A symposium on
truth, fiction, and the in-between
- VT History Dept.

Threats to the US, the importance of
the Electromagnetic Spectrum
- CACI

Hume Center Workforce Development Programs

Internships | Security Clearances | Careers



Industry
Active
Students

41

Government
Active
Students

113



WFD continues to be a driver for student research and experiential learning opportunities
4 DoW programs & 3 industry programs, providing \$7.4Mil in FY26 Awards
(funding includes student and faculty support)

“ Being a part of this program has given me a sense of security and confidence that I feel I wouldn't have had at this point in my college experience without the program. I not only know what I want to do, but also how I will be able to achieve my goals. ”



“ I'm definitely more excited about graduating and working. Now that I have some real world experience under my belt and part of my future set in stone, I feel like I am so much more prepared to transition into working full-time. ”

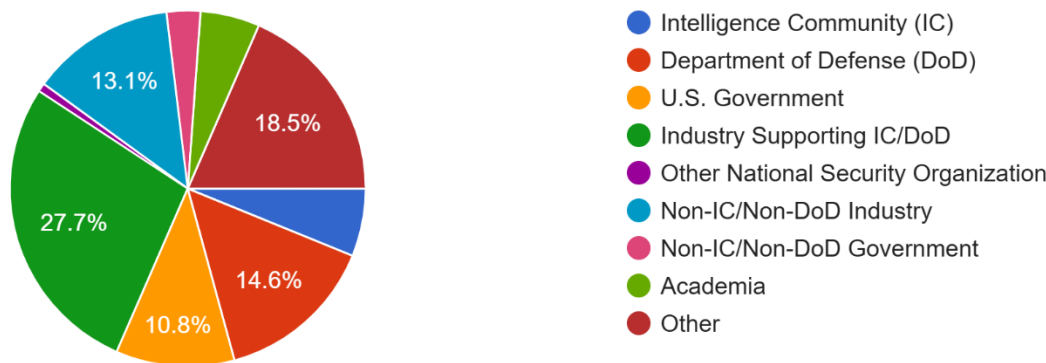
Preliminary Survey Results & Outcomes

Full report on Spring survey in June 2026

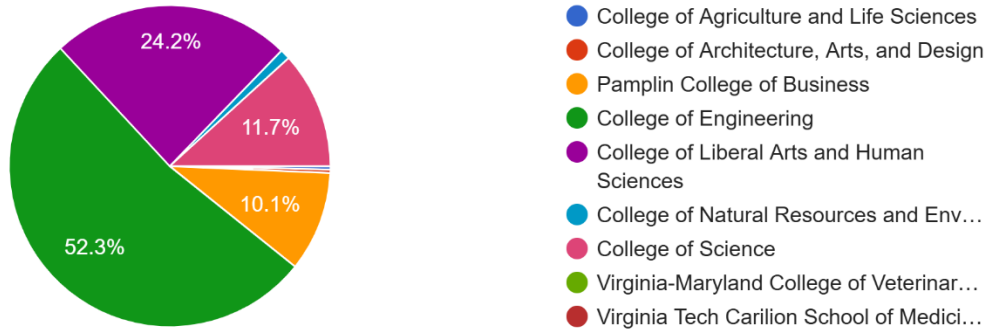
- 85% of our students want to work in the IC, DoW, or with Industry supporting those organizations
- 25% of respondents have a clearance
- >65% have internships in national security roles this summer

Who is your internship/co-op with? If you cannot disclose the government agency for security reasons, please state "U.S. Government"

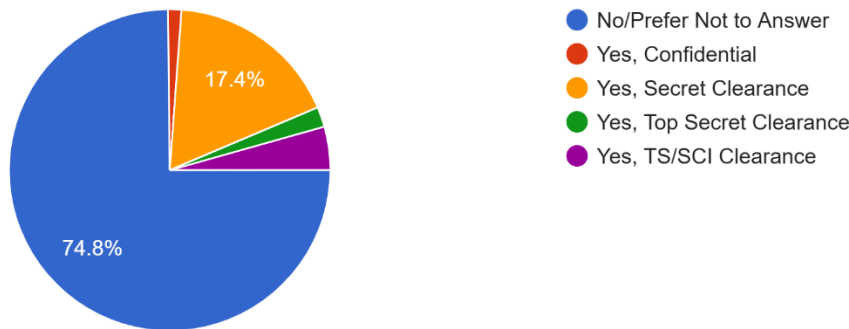
130 responses



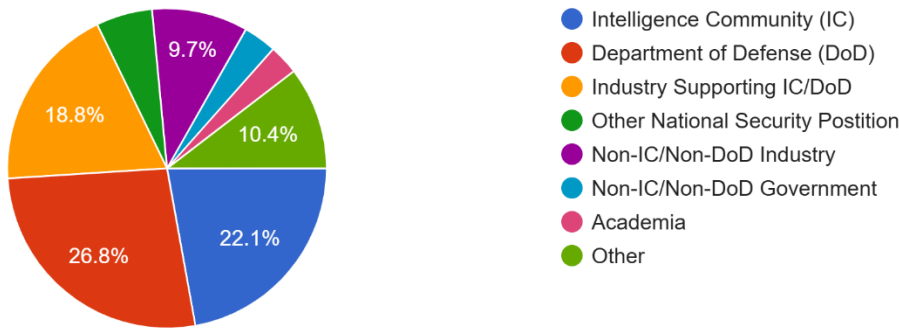
Home College
298 responses



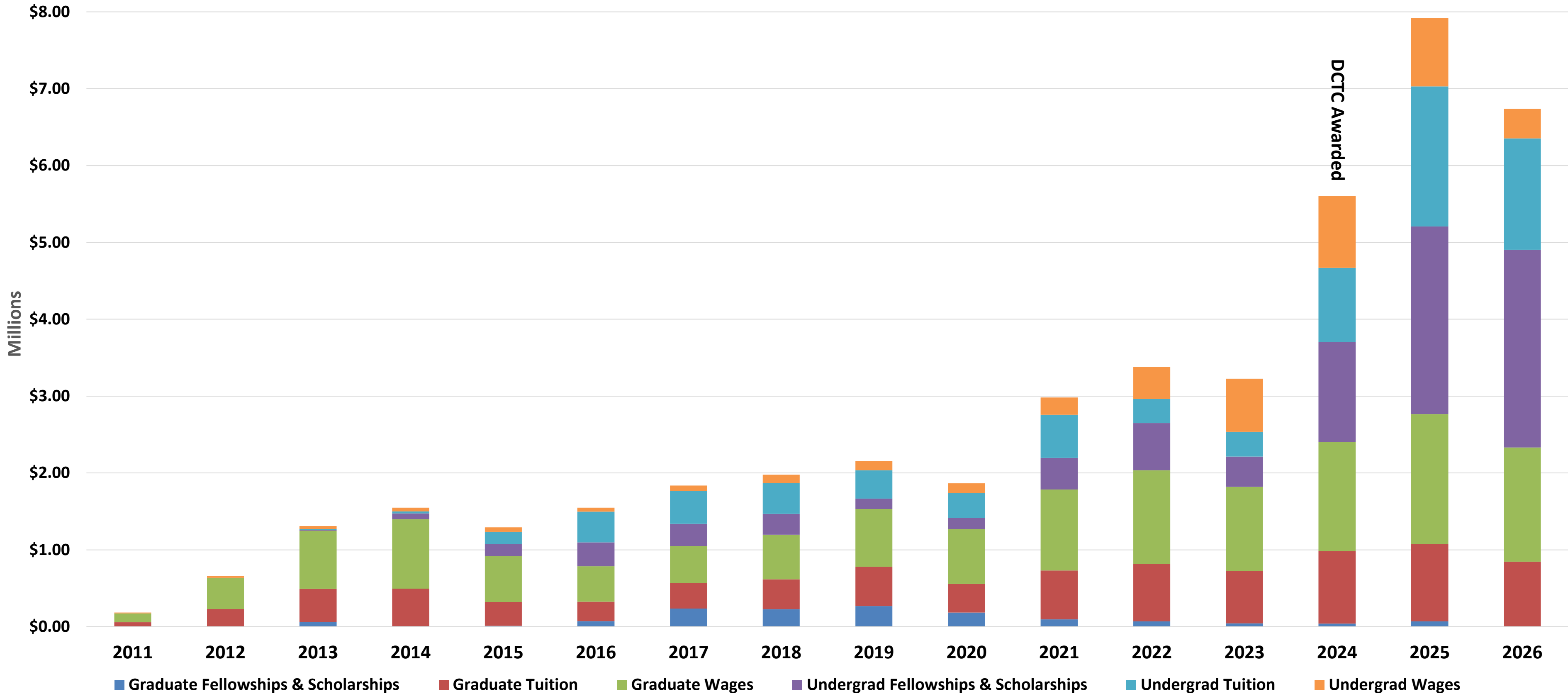
Do you have or have you ever had a security clearance?
298 responses



What is your preferred employer after graduation?
298 responses



Hume Center Student Funding Support



\$200K -> \$8Mil per year in 15 years

Best Practices



Sustaining Growth Through Partnerships

- Partner co-investment in students and research
 - Industry and Government
- Long-term relationships vs. transactional engagements
 - Ensuring students end up in national security careers (SFS model)
- Find the right partners that want to work with undergraduates and graduate students



Launching a Student-Focused Research Center

- We started small, a couple faculty, 1 grant, small endowment
- Clear student-centered mission from day one
- Funding through industry and government
 - Including intentional funding for students in proposal budgets
 - Volunteer students are ok too...



Building a Recruitment-to-Career Pipeline

- Layering of awareness, depth, and pathway activities for students
 - Clearances for students when possible (diploma and adjudication)
- Repeatable structures students can re-enter year over year
 - Annual research open house



Aligning Programs to Stakeholder Requirements

- Continuous dialogue with senior leadership in industry, DoW, and the IC
- Research portfolios shaped by real mission needs
- Opportunities for stakeholders to engage with students (Colloquium)



Partnership\Funding Examples

Academic Affiliates Program w/Industry

- **13 Current Members**
 - ~\$300K per year
 - Student <-> Industry Engagement

NSI Research Divisions FY 2025:

>\$40Mil in Awards

~20% of which covered:

- Wage & GRA appointments
- Scholarships (tuition & stipends)
- Covers 400-500 students per AY (directly or indirectly)

**Applied problems drawn from
real mission needs**

Political Science Dept.

~20 students annually through
Tech4Humanity and Diplomacy
Lab

Corps of Cadets

65-70 students involved annually

- AWS GenAI Certificate
- DCTC
- Cyber Clubs
- Undergraduate Research

Lessons Learned & Pitfalls

Find the right partners

- Find the faculty that want to work with undergraduates and graduate students
- Find the right sponsors, industry and government, that are ready to invest in their future workforce

Balancing research productivity with student development

- At VT NSI we still need to produce relevant research
 - Mentoring 50 undergraduates can be a challenge
- VT NSI is not a UARC, needs multiple long-term contract vehicles to support students and faculty
- As a university we can't charge a fee (no profit), soft funded
- More student demand at VT than opportunities

Startup Phase

- Start small and buildup
- We were in a "Start Up" phase for many years
- Leverage existing faculty and partnerships to start, then grow

Discussion & Call to Action

**What component
would you start with?**

- Faculty?
- Students?
- Research Programs?
- Academic Affiliates Program?

**How would you
measure
success?**

- For the Hume Center it is two-fold:
 - # of students in national security roles
 - Increasing the number of our students who come back mid-career and want to team with us

When should you start?

- Now! We have built up to this over 16 years
- We are looking to build new partnerships and consortiums to expand this model nationwide

Questions?



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