

**Montana Board of Regents**  
**RESEARCH CENTER AND INSTITUTE PROPOSAL FORM**

**1. State the proposed Institute/Center's name and purpose.**

Montana State University proposes to establish the Institute for National Security Research and Education (INSRE) with the primary aim of addressing the nation's security needs and concerns through applied research, the development of operational technologies, and the training of the next generation of national security leaders. INSRE will serve as a central campus hub for communication, mentoring, networking and collaboration, and access to appropriate infrastructure to support both classified and controlled unclassified work in support of national security efforts, including National Industrial Security Program requirements, classified lab space, information technology, subject matter experts, fiscal management, and contracting specialists. It will support faculty research and relationship development and better connect MSU's national security efforts with undergraduate and graduate academic programming, student projects, and faculty scholarship.

**2. A comprehensive statement of the Institute/Center's mission and its relationship to the University mission.**

**A. State the Institute/Center's mission.**

INSRE will strengthen national security by delivering technologies, developing educators, and preparing leaders who will contribute to safeguarding the future of Montana and the nation.

**B. Identify the Institute/Center's goals and objectives.**

- 1) National Security Hub (NSH): Serve as a hub and intellectual home for collegial relationships, student opportunities, team building, mentoring, academic and professional exchanges, and ideation around national security challenges and solutions.
- 2) Operational Infrastructure: Provide operational infrastructure (information technology, training, contracts and agreements, and procurement) using existing systems, experience and strategy for researchers who conduct scholarship that supports national security.
- 3) Education, Workforce Development and Capacity Building: Provide training opportunities, mentorship, and hands-on research and development opportunities for undergraduate and graduate students to position them for seamless entry into national security careers.
- 4) External Partnership Development: Provide a central entity to encourage and organize potential external partners to invest in and work with MSU. Partnerships development will be streamlined and fostered through INSRE and its NSH. INSRE and its NSH will directly connect investors (ie external partners) with appropriate faculty, staff, and institutional resources. INSRE will enable efficiency in contacting with external partners through vehicles that are specialized to the national security sector.
- 5) Research and Analysis: Foster innovation and technological advancements to develop cutting-edge tools, systems, and strategies for enhancing national security, defense, cybersecurity, intelligence gathering, and response capabilities. Continuously evaluate the effectiveness of implemented strategies and adapt research and recommendations in response to evolving national security challenges.

**C. What specific need is being responded to in developing the proposed Institute/Center?**

INSRE will connect and better coordinate strong but disparate efforts at MSU currently addressing interests of national security with related research and high impact educational experiences for

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students. These efforts include but are not limited to: The Software Engineering and Cybersecurity Laboratory (SECL), TechLink, MilTech, the Office of Technology Translation Research (OTTR), and MSU's classified facility, the Applied Research Lab (ARL). Partnerships are ongoing with the Department of Defense (Air Force Research Lab, Army Research Lab etc.), Department of Energy (DOE Los Alamos National Lab, Pacific Northwest National Lab etc.), Veterans Affairs (VA), Department of Homeland Security Science and Technology (DHS S&T), and several industry partners.

Additionally, INSRE will provide the structure to conduct needed faculty and student recruitment, offer timely seminars and briefings, and build and strengthen relationships with external partners (DOD, DOE, DHS, NSIN, national laboratories, and related industry partners) across a wide swath of MSU research projects and academic areas.

The demand for a mission-ready workforce has never been greater. According to Cyberseek.org's interactive map, Montana has 848 cybersecurity job openings, with more than 4,000 job openings in the Northern Plains region ([Cybersecurity Supply And Demand Heat Map \(cyberseek.org\)](https://www.cyberseek.org/)). According to the Center for Security and Emerging Technology at Georgetown University, *The defense community is not replacing or expanding its tech workforce at the same rate as other industry sectors*. The US technical workforce has grown overall since the early 2000s, but the distribution of that workforce has changed significantly during that time. Most notably, the share of overall tech positions in big tech companies more than quadrupled over the past two decades while the share of positions in the defense agencies fell roughly 40 percent. The Department of Defense needs additional recruiting avenues and collaborative relationships with university academic programming to fill critical positions. See [The Race for U.S. Technical Talent: Can the DOD and DIB Compete? | RAND](https://www.rand.org/pubs/external_publications/EP70254.html) at [https://www.rand.org/pubs/external\\_publications/EP70254.html](https://www.rand.org/pubs/external_publications/EP70254.html). Through its direct commitment to technical workforce development, INSRE answers the DoD's call to provide a mission-ready workforce.

**D. Describe how the Institute/Center benefits the department, college, or institution.**

Creating benefits to the institution is the key motivation for developing this Institute. INSRE will provide advanced mechanisms for faculty to leverage in support of national security research and education projects, allowing faculty members to focus on research aims vs. building the specialized financial, IT, HR and other systems required for national security work. More specific information follows in many of the answers below.

**E. Describe the Institute/Center's relationship to the University mission.**

INSRE will contribute to several *Choosing Promise* goals: Intentional focus 1: The SECL, TechLink and MilTech currently employ many undergraduate and graduate students seeking to learn about national security technologies and Cybersecurity. These kinds of hands-on work and research experiences constitute high impact learning practices that contribute to student persistence and graduation. Additionally, INSRE partnerships with national DoD and DoE labs create opportunities for undergraduate and graduate capstone experiences, internships, and post-graduation employment.

Intentional focus 2: As we improve lives through scholarship, a stated Grand Challenge is "Securing the future of Montana"—and in particular, conducting research and education related to cybersecurity, photonics and optics, defense governance and public policy is central to the

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purpose of INSRE. Also central is research and education related to critical resources such as minerals, and food, water and fuel security.

Intentional focus 3: INSRE will support expanding mutually beneficial partnerships between the MUS and Industry. The growth of the optics and photonics industry is strong evidence of university-supported economic development in the Gallatin Valley and across Montana. INSRE-supported programs regularly engage with Montana companies as well as regional and national industries, academic institutions, non-profits and government organizations. For example, the Office of Technology Translation Research (OTTR) is leading a major project within the statewide Headwaters Technology & Innovation Hub proposal in collaboration with the MT Dept of Commerce, the MT Chamber, Industry groups, and other MUS institutions.

**3. Briefly describe the Institute/Center's anticipated activities.**

Five initial activities of the INSRE include the following:

1. While the SECL, TechLink, MilTech, and other MSU research laboratories have many existing federal and industry partners (see below), the INSRE will develop and advance *NEW* relationships with federal partners to provide opportunities for MSU researchers, practitioners, and students. Examples include but are not limited to the National Oceanic and Atmospheric Administration, various DoD Intelligence Agencies, and Veterans Health Administration.
2. The strength of the institute is grounded in the expertise of its participants. MSU already has pronounced depth and breadth of national security expertise from a wide range of research and technology sectors. INSRE will provide the scaffolding to expand this depth and breadth by fostering, promoting, and growing relationships with existing entities at MSU that contribute significant intellectual property to INSRE's mission.
3. Create the National Security HUB (NSH) (as mentioned above) for campus events, job boards, student and faculty research opportunities, communication, educational, and professional development opportunities. This will include a seminar speaker series featuring MSU expertise and that among government, NGO, and industry partners.
4. To support a pipeline of mission ready graduates, in collaboration with *MSU Career, Internship and Student Employment Services*, advising offices, and the Honors College, INSRE will launch an MSU Internship program, a mentorship program, and an exchange program with DoD and DoE National Labs. INSRE will support the preparation of students for career fairs, interviews and other interactions with potential employers. INSRE will create a database of students who are interested in opportunities associated with National Defense and/or classified research projects to connect budding talent with faculty experts.
5. In collaboration with the Office of Research Development, create a searchable database of faculty expertise and interests for matching with national security research and project needs.

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**A. Identify faculty expertise available for participation in the Institute/Center's activities.**

Faculty expertise includes but is not limited to, current talent and capabilities in Advanced Materials and Mechanics of Materials, Mechanical and Industrial Engineering, Engineered Living Materials, Cybersecurity and Computer Engineering, Geospatial Analysis, Data Science, Quantum Physics, Optics and Photonics, Civil Engineering and Transportation, and interdisciplinary work among Computer Science, Biomedical Engineering, Nursing, and Kinesiology.

**B. Which departments on campus will be involved and how will the Institute/Center contribute to the academic programs of the institution?**

**Research centers, organizations and labs currently involved:** Software Engineering and Cybersecurity Laboratory (SECL), MilTech, Office of Technology Translation Research, TechLink, Western Transportation Institute, Stretch-Broken Carbon Fiber Lab, Applied Quantum CORE, Center for Biofilm Engineering, Spectrum Lab, the Applied Research Lab (classified facility), and MSU Innovation Campus.

**Academic departments with current involvement:** Gianforte School of Computing, Mechanical and Industrial Engineering, Civil Engineering, Electrical and Computer Engineering, Physics, and Gallatin College (IT Cybersecurity and Information Assurance AAS Program and Certificate of Technical Studies in IT Cybersecurity). INSRE can enhance the ability of departments to obtain funding for academic programming and research activities. Involvement is not limited to the listed units and might in the future include Earth Sciences, Microbiology, Chemical and Biological Engineering among others.

**Contribution to academic programs:** INSRE will connect MSU to a network of universities, industry partners, and national security agencies interested in curriculum development and expansion related to technology assessment and translation. In collaboration with relevant departments, faculty and academic programs, the INSRE network will provide resources and connections to provide guest speakers for existing coursework, capstone projects, independent studies, classified research opportunities, and other hands-on problem-based learning. INSRE can support student organizations, (i.e. HackerCats), with co-curricular and extra-curricular opportunities for professional development.

**4. Identify the organizational structure of the Institute/Center within the institution.**

INSRE will be led by an executive director (the current director of MilTech will assume this role, as MilTech will become an associate of the Institute). Additional associates will include the Office of Technology Translation Research (OTTR), The Mentor Protégé program, and the Applied Research Lab (ARL). Collaborating MSU Programs (not reporting) will include TechLink, Quantum CORE, The Software Engineering and Cybersecurity Laboratory (SECL), Spectrum Lab, Center for Biofilm Engineering, and other centers and projects that serve national security interests.

Other major units of INSRE will include Operational Support (budgeting, reporting, project management, and fiscal management), Technical Support (for classified research, controlled unclassified work, and University IT partnerships), Research Support (technology viability assessments, design and prototyping, software development), Outreach & Engagement (military

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liaisons, corporate engagement, and INSRE HUB support), and additional services such as technical writing, content creation, graphic design, branding, and marketing.

The Executive Director of INSRE will report to the Vice President for Research and Economic Development and be accountable to an MSU Executive Committee. Program leads for the above units will report to the Executive Director (these are existing positions and currently part of the MilTech organizational structure). New positions will include a part-time director of corporate engagement and community relations and a program lead for the INSRE HUB described above in #3.

**A. Identify all agencies, organizations and/or institutions that will be involved.**

Department of Commerce, National Institute of Standards and Technology (DOC NIST)

Department of Energy, various labs (DOE), Los Alamos National Labs (LANL), Sandia National Labs (SNL), Pacific Northwest National Labs (PNNL), Idaho National Lab (INL), etc.

Department of Defense units:

- US Cyber Command
- Defense Innovation Unit (DIU)
- Marine Corps Warfighting Lab (MCWL)
- AFRL Rome Labs
- DOD Federally Funded Research and Development Centers (FFRDCs)
- DOD University Affiliated Research Centers (UARCs)
- DOD Labs: Naval Research Lab (NRL), Office of Naval Research (ONR), Army Research Lab (ARL), Air Force Research Lab (AFRL)
- Veteran's Affairs

Multiple other DOD program include SYSCOMs, Sustainment Centers, Air Force Office of Scientific Research (AFOSR), PEOs (Program Executive Offices), etc.

Various DOD and DOE Prime Contractors: RTX, Boeing, Lockheed, Sikorski, L3, General Atomics, etc.

Various commercial industry partners: Resilient Computing, Blackthorne Consulting, etc.

NATO and Five Eyes Ministry Of Defense (MODs)

University of South Florida's Institute of Applied Engineering Academic Consortium

**B. Identify advisory council information.**

The advisory council will be determined thoughtfully and strategically by the INSRE Executive Committee in collaboration with the MSU Alumni Foundation, and both local and national industry partners. We are interested in a council made up of MSU alums who are active or retired from national security agencies and organizations or experienced in government agencies; as well as academic professionals with expertise in national security research and education, but who also

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understand the land-grant mission. In addition to an external advisory council, INSRE will maintain a team of military liaisons (already established and existing as part of MilTech) that will continue to advise on relationships, opportunities, and communications.

**5. Identify first year and continuing finances necessary to support the Center/Institute, including the sources of funding.**

The entities that would comprise the proposed Institute currently generate needed resources through existing grants, awards, and contracts. In FY24 the DoD, DoE and DHS S&T constituted 40% of federally sponsored research expenditures. National security research programs at MSU generated more than \$60M in research expenditures, and this is expected to grow by approximately 20-30% in FY25. Investment of a portion of F&As generated by national security research is sufficient to support the goals and activities of INSRE.

**A. Will additional faculty and other resources be required to implement this Center/Institute? If yes, please describe the need and indicate the plan for meeting this need.**

Institutional support is needed only through F&A investment to support more advanced campus infrastructure such as information technology resources, fiscal management, and contract services. These resources are already needed to support the growth of current entities but could be better organized under the umbrella of INSRE as proposed. New positions needed include the Executive Director, a part-time corporate engagement and community relations lead, and a program lead for the National Security HUB (NSH) (outreach, education, and communications). Much of the organizational structure for INSRE already exists in the current organization of MilTech. We will be expanding units as appropriate and justified, reducing duplication, and filling gaps. For example, improved resources are needed to handle the communication of Controlled Unclassified Information (CUI), and this is needed and planned without regard for this Institute proposal.

**B. Are other, additional resources required to ensure the success of the proposed Center/Institute? If yes, please describe the need and indicate the plan for meeting this need.**

Current resources (external funds and invested F&As generated by national security projects) are sufficient to cover the needs of INSRE. Current space allocations are also sufficient to launch INSRE. Additional space will be requested as INSRE demonstrates growth.

**6. Describe other similar Centers/Institutes or research capacities in the state and surrounding region.**

While an institute like the one we are proposing does not exist in the immediate region, INSRE can for and grow connections with the following:

In Montana:

- Fort Harrison & Montana National Guard Cold Regions Laboratory
- Malmstrom Air Force Base Innovation Lab (AFWERX)

In other states:

- Air Force Academy Institute for National Security Studies (policy-based)
- The University of Arizona Applied Research Corporation

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- NDSU’s “Coatings and Polymeric Materials Program” <https://www.ndsu.edu/cpm/>
- UND and North Dakota’s “Norther Plains UAS Test Site”,  
<https://www.commerce.nd.gov/economic-development-finance/autonomous-systems/northern-plains-uas-test-site>
- UND’s “Unmanned Aircraft Systems Operations” <https://und.edu/programs/unmanned-aircraft-system-operations-bs-aero/index.html>
- University of Wyoming Center for Economic Geology Research:  
<https://www.uwyo.edu/cegr/index.html>

**A. Describe the relationship between the proposed Center/Institute and any similar Centers/Institutes, programs, or research capacities within the Montana University System.**

While there are no similar Centers/ Institutes in the MUS, we desire partnerships with MUS programs including but not limited to the Critical Resource Summit (launched in 2023, continued in 2024, and planned for 2025). This was a partnership among University of Montana, Montana Tech, and Montana State University, along with industry and government agency partners. Future partnerships would be desired with:

- Montana Tech’s Mining Engineering Program
- University of Montana’s School of Integrative Physiology and Athletic Training
- Missoula College’s Cybersecurity Center (Missoula College)

**B. In cases of substantial duplication, explain the rationale for the proposed Center/Institute.**

There is no substantial duplication.

**7. Assessment: How will the success of the center/institute be measured?**

The INSRE, like other MSU centers/institutes will be evaluated on an annual basis in March prior to any decisions related to budget allocations for the next fiscal year. INSRE will be required to report key accomplishments and significant challenges based on previous year’s goals, goals for the following fiscal year and long-term goals, a listing of external grants and contracts, estimated research expenditures and F&As generated, MSU faculty engaged in INSRE, students and academic programs served; new industry, NGO, and government partnerships; other indicators of impact, and a detailed budget and hiring plan for the next fiscal year. The Executive Director will also have a performance review annually, conducted by the Vice President for Research and Economic Development and following guidance from MSU Human Resources.

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**8. State the internal campus review and approval process which has occurred prior to submission to the Commissioner's Office. Indicate, where appropriate, involvement by faculty, students, community members, professional constituencies, etc.**

The development of this proposal represents a significant collaboration among existing entities currently conducting national security-related research and education. INSRE will increase opportunities for collaboration among MilTech, TechLink, SECL, OTTR, the ARL, as well as other researchers and academic programs in the Norm Asbjornson College of Engineering. Faculty and research staff have been meeting since October 2023 to envision an Institute for National Security Research and Education (mission, purpose, activities, structure, governance, and opportunities). A Request to Plan was sent to appropriate department heads and the dean of the Norm Asbjornson College of Engineering for initial review in March 2024, and subsequently to the MSU Provost's office in April 2024. The request was reviewed and approved by Academic Council and the President's Executive Team. The MUS Board of Regents approved the Request to Plan in September 2024. The full proposal has been developed by the same core team of faculty and research staff and has been reviewed by additional faculty who will likely be involved with INSRE.