

# OADI

**OKLAHOMA AEROSPACE &  
DEFENSE INNOVATION INSTITUTE**



***Strategic Execution***

**2024-2026**

## Message from the Executive Director

As the Executive Director of the Oklahoma Aerospace and Defense Innovation Institute (OADII) at the University of Oklahoma, I am both excited and honored to lead our organization into its next phase of growth and impact. Since assuming this role in January 2024, my foremost priority has been to assess our current standing and chart a clear course for our future.



Recognizing the need for a comprehensive strategic approach, I tasked the OADII team with developing a new roadmap to guide our efforts and amplify our influence within Oklahoma and beyond. While our initial 3-year strategic plan laid a solid foundation upon our establishment in Fall 2020, it became evident that evolving dynamics within the aerospace and defense sectors demanded a more agile and focused approach.

Through an extensive SWOT analysis, we identified key areas for improvement and adaptation to the rapidly changing landscape. This led us to transition from a traditional multi-year strategic plan to a dynamic 2-year Execution Plan. Guided by our newly crafted mission statement, vision, and core values, as well as five strategic Goals, each supported by actionable Objectives, our plan is tailored to drive impactful outcomes within a condensed timeframe.

Central to our revised strategy is the imperative for OADII to serve as a Research Accelerator, facilitating the swift translation of academic research into tangible solutions, thereby outpacing our competitors. I am immensely proud of the collaborative efforts undertaken by the OADII team, alongside our external consulting partner, Thinkenomics, in developing this operational roadmap.

As we embark on the journey from July 2024 to June 2026, I am confident that the successful execution of our plan will not only elevate OADII's standing but also foster positive outcomes for the University of Oklahoma, the state of Oklahoma, and our nation at large. I eagerly anticipate the continued growth and impact of OADII in the months and years ahead.

A handwritten signature in black ink that reads "Robin Rand". The signature is fluid and cursive, with the first name "Robin" and last name "Rand" clearly distinguishable.

**Robin Rand, Gen USAF (Ret)**

Executive Director

Oklahoma Aerospace and Defense Innovation Institute





## INNOVATION THROUGH PARTNERSHIPS

Oklahoma's aerospace and defense sectors are experiencing significant growth, poised to make substantial contributions to national defense across a spectrum of critical areas. At the forefront of this advancement stands the Oklahoma Aerospace and Defense Innovation Institute (OADII), playing a pivotal role in expanding research opportunities for the University by aligning expertise with the pressing needs of both the U.S. Government and the aerospace and defense industry.

Driven by a commitment to vision and leadership, OADII acts as a catalyst for collaboration, uniting federal, state, and local governments, academia, and the defense industry to maximize impact and stimulate economic growth throughout Oklahoma. By integrating overarching strategic objectives with policy initiatives, OADII spearheads coherent technological development aimed at swiftly delivering capabilities that directly bolster U.S. national security requirements.

As a research accelerator, OADII is dedicated to swiftly translating research discoveries into actionable solutions that effectively address real-

world challenges, surpassing the pace of our adversaries. To do this, OADII operations focus on four strategic pillars - *Spectrum Dominance, Sustainment and Modernization Resiliency, Cyberspace and Information Dominance, and International Security Policy*. Within these vital aerospace and defense sectors, OADII collaborates closely with congressional delegations, state governments, and other research institutions to address critical gaps and proactively counter emerging threats.

The imperative for academia's commitment to defense research has never been more pronounced. Fully dedicated to pushing the boundaries of research, from foundational to solution-based, at unprecedented speeds, OU and OADII stand at the vanguard of innovation. Recognizing the significance of collaboration among governmental, academic, and industrial research entities, OADII remains steadfast in its commitment to lead this collective endeavor, ensuring the nation's security and prosperity in the face of evolving challenges.

# Spectrum Dominance

... achieving superiority across the range of electromagnetic frequencies, to gain strategic advantage

The electromagnetic spectrum (EMS) stands as a vital but finite resource crucial to our modern society's connectivity. Aerospace and defense systems rely heavily on the EMS to acquire, disseminate, and exploit information from a network of sensing modalities. Considering this, ensuring resilient access to the EMS becomes paramount for future defense operations. Yet, these systems face mounting challenges in navigating an increasingly congested spectrum landscape, exacerbated by shifting policy frameworks.

The commercial telecommunications sector, driven by soaring demand for data from a multitude of devices, continuously clamors for more spectrum. This surge in demand exacerbates spectral congestion, presenting formidable hurdles for aerospace and defense systems.

Addressing these challenges necessitates the advancement of a myriad of technologies. Aerospace and defense sensors already generate torrents of data, demanding rapid processing across timescales. Future systems-of-systems will rely on seamless data sharing and conversion into actionable intelligence for decision-makers and warfighters alike. Additionally, current RF systems fall short of meeting future networking and sensor requirements, underscoring the need for interdisciplinary research efforts.

To this end, the Spectrum Dominance Focus Area emerges as a central hub, fostering collaboration among faculty to develop the technologies essential for ensuring future spectral access and exploitation by aerospace and defense systems. Key technical areas include real-time edge processing of vast data

streams, signal processing, artificial intelligence/machine learning (AI/ML) techniques for data interpretation, robust high-throughput networking, and innovative sensor and component development.

Advancements in spectrum access technology will reverberate throughout spectrum management, regulation, and competition spheres, necessitating policy research to inform future national and global regulatory frameworks.



The University of Oklahoma boasts a rich heritage in developing technologies supporting the Spectrum Dominance Focus Area and OADII will continue to stimulate cross-disciplinary research endeavors, positioning OU at the forefront of delivering vital EMS capabilities.



# Sustainment and Modernization Resiliency

... continuous maintenance and upgrading of defense systems to ensure operational effectiveness while adapting to evolving technological and strategic demands

In the realm of national security, the twin pillars of sustainment and modernization stand as stalwart guardians of the United States' ongoing capability, readiness, and technological superiority in the face of evolving threats. As the nation's safeguard, effective sustainment of military assets is paramount, ensuring operational readiness while prolonging equipment lifespan and minimizing downtime. Meanwhile, modernization initiatives drive the infusion of cutting-edge technologies into existing systems, bolstering their effectiveness and maintaining strategic superiority.



Guided by the visionary leadership of OADII, we embark on pioneering research in advanced manufacturing, essential for sustaining critical parts and components within the U.S. defense sector. Our mission transcends conventional maintenance; we are dedicated to fortifying supply chain resilience and efficiency, thereby cementing our pivotal role in national security and technological supremacy. Our endeavors not only revolutionize traditional

manufacturing paradigms but also mitigate risks stemming from supply chain vulnerabilities, particularly poignant during disruptions threatening national security.

Our research has expanded into areas including advanced materials and coatings, improved airworthiness certification processes, and sophisticated corrosion detection and non-destructive inspection techniques. These advancements are vital in transforming traditional sustainment and modernization approaches from reactive to proactive strategies, emphasizing continuous engineering and development cycles.

At the University of Oklahoma, our educational initiatives are meticulously designed to cultivate skilled workforces for pivotal roles in advancing manufacturing technologies and optimizing supply chain strategies within the defense sector. By fostering a nuanced understanding of both technological advancements and strategic imperatives in advanced manufacturing and supply chain management, we empower our students to lead in a complex global landscape.

Through the fusion of interdisciplinary research, strategic alliances, and forward-thinking educational programs, OADII is uniquely positioned to confront the dual challenges of sustainment and modernization, thereby fortifying national security. Our unwavering commitment to delivering solutions that address both immediate exigencies and future requisites ensures the enduring leadership and security of the United States.

# Cyberspace and Information Dominance

...control and influence over digital networks and data to achieve strategic advantage and security

In the ever-evolving landscape of cyberspace and information dominance, OADII emerges as a beacon of cutting-edge research and innovation. With the relentless march of technology and the deepening interconnectivity of our digital domain, harnessing the power of cyberspace has become not just advantageous, but imperative. OADII's dedication to pushing boundaries and fostering interdisciplinary collaboration positions it as a pivotal force in this dynamic realm.

The importance of securing our networks and safeguarding our data cannot be overstated. Recent cyber breaches have wreaked havoc, compromising personal information, disrupting vital operations, and shaking the foundations of global commerce. Misinformation campaigns and the rise of deepfakes further muddy the waters, challenging our perceptions and eroding trust. Meanwhile, the emergence of quantum computing and other digital innovations introduces new fronts in the battle for cybersecurity, necessitating a delicate balance between fortifying our defenses and modernizing our digital infrastructure.

At OADII, experts from across OU collaborate to confront the multifaceted challenges of cyberspace. Through strategic partnerships with governmental agencies, industry leaders, and academic peers, researchers are at the vanguard of developing cutting-edge encryption methods, sophisticated threat detection algorithms, and robust cyber defense mechanisms. Recognizing the urgency of the task at hand, OADII accelerates the pace of cyberspace research, driving towards tangible solutions that bolster national security in real-time.

With an unwavering commitment to innovation, ethical inquiry, and technological excellence, OADII charts a course towards a safer, more resilient cyberspace. As the digital frontier continues to evolve, OADII remains steadfast in its mission to lead the charge towards a future where cyberspace is not just secure, but thriving, fostering prosperity and security for all.



## ... guidelines and strategies developed to address the security challenges and implications arising from emerging technologies.

In navigating the complex landscape of global security challenges, OADII recognizes the imperative of cohesive strategies bolstered by actionable policy recommendations. With the resurgence of near-peer geopolitical rivalries, the disruptive influence of emerging technologies, the specter of climate change, and the ongoing threat of pandemics, the world faces pressing issues demanding innovative approaches grounded in rigorous research. In this context, fostering a stable, rules-based international order and reaffirming American global leadership are paramount objectives.

At OADII, we bridge the gap between technological prowess and international security policy expertise to produce cutting-edge research of global significance. Our interdisciplinary approach ensures that advancements in technology are seamlessly integrated into policy frameworks, equipping decision-makers with the foresight and agility to navigate rapidly evolving threats and opportunities. By fostering collaboration across disciplines, we facilitate the development of resilient systems capable of addressing the multifaceted challenges of the modern world.

As a catalyst for innovation, OADII propels American national security strategy forward by cultivating agility and outpacing peer competitors through a network of strategic partnerships spanning government, industry, and civil society. We extend our expertise to support state and local governments in fulfilling their crucial role in maintaining a safe and prosperous environment.

Additionally, we facilitate dialogue between Oklahoma-based companies and national policy stakeholders, empowering them to capitalize on opportunities within the defense and security sector.



By leveraging the collective talent and resources of our university and our extensive network of partners, OADII stands at the forefront of 21st-century policy development. Together, we are committed to delivering forward-thinking solutions that address the nation's most pressing security challenges while remaining responsive to the needs and concerns of our ever-evolving world.





### ***Our Mission:***

As a research accelerator, *we turn discoveries into solutions* by bridging the gap between innovations and real-world challenges.

### ***Our Vision:***

To be a transformative national leader in collaborative research by connecting strategic stakeholders with innovative and relevant aerospace and defense solutions.

### ***Our Guiding Values:***

**Excellence:** We are dedicated to continuously improving our performance in search of the best possible outcomes.

**Innovation:** We are passionate about learning and seek to constantly advance new ideas and solutions.

**Service:** We are committed to making our nation and the world a better place for all.





## Goal 1

### Organizational Construct

Establish an efficient organizational construct by optimizing current capabilities and expected growth that sustains ongoing commitments, scales operations, and creates professional growth opportunities for all personnel.

- Obj 1.1 **Hire** a Business Development professional.
- Obj 1.2 **Hire** a contract expert for both internal and external project adoption.
- Obj 1.3 **Publish** Guidelines for handling classified processes for personnel, materials, and data.
- Obj 1.4 **Complete** construction for a functioning SCIF with both meeting room and storage capabilities.
- Obj 1.5 **Establish** an effective communication and knowledge management system.
- Obj 1.6 **Provide** four professional development opportunities for all OADII personnel.
- Obj 1.7 **Finalize** OADII configuration of and establish residency in The Convergence Tower in OKC.
- Obj 1.8 **Publish** roles and responsibilities for all OADII positions, including fellows and affiliates.



## Goal 2

### Finance

Develop a sustainable funding model by balancing justified internal OU support with external sources that supports current operations and enables organizational growth.

- Obj 2.1 **Develop** a tracking system of all OADII services and projects to be used for justifying continued OU financial support.
- Obj 2.2 **Secure** targeted congressional plus ups, as available, above the working budget.
- Obj 2.3 **Secure** industry financial support for shared aerospace and defense interests.
- Obj 2.4 **Create** a decision matrix for allocating resources between pursuing new opportunities and sustaining existing efforts.
- Obj 2.5 **Develop** cost-share/credit-share model for work with other institutes and academic departments.







## Goal 4

### OU Engagement

Increase OU personnel involvement by generating research opportunities and incentives that maximize success in aerospace and defense projects.

- Obj 4.1 **Develop and market** incentives that encourage and draw participation from across OU.
- Obj 4.2 **Publish** (semi-annually) a schedule of OADII led education and training opportunities.
- Obj 4.3 **Publish** and maintain a list of OADII research opportunities open to OU personnel.
- Obj 4.4 **Conduct** an OU AD led “survey” to capture ideas on how we might best support academic and professional needs.





## Goal 5

### OU Outreach

Establish structured relationships with key external stakeholders and formalize a collaborative Industry Consortium to foster partnerships between government, industry, and academia.

- Obj 5.1 **Create and maintain** a database of all external stakeholders.
- Obj 5.2 **Assess** stakeholder potential and **determine** an “initial partner” list from identified candidates.
- Obj 5.3 **Formalize** a consortium charter describing member roles and responsibilities, research priorities, and operational expectations.
- Obj 5.4 **Draft and publish** Governance and Legal documents founding the consortium.
- Obj 5.5 **Identify** required resources (financial, human, and infrastructure) to support consortium activities.