



From Concept to Breakthrough: How Nuream Is Transforming Sleep Technology Through North Carolina's Innovation Ecosystem

When **Nuream**, headquartered in Wilmington, NC, launched in 2023, the company had a bold vision: to fundamentally change how sleep is measured, understood, and improved. What it didn't yet have was a fully developed product, a validated market pathway, or the deep technical partnerships required to bring such an ambitious idea to life.

Through an early connection with NC State University Industry Extension Services (IES)—and specifically the Defense Initiatives team led by Michael Mullins—Nuream found the catalyst it needed.

That introduction would set off a chain reaction of opportunity.



Building Momentum Through the North Carolina Defense Manufacturing Community Support Program (NC DMCSPP) Ecosystem

Nuream became an early participant in a pre-accelerator program supported by the North Carolina Defense Manufacturing Community Support Program (NC DMCSPP) grant. Delivered through First Flight Venture Center's Propeller program, the initiative was designed to support entrepreneurs developing advanced textile technologies with potential defense applications.

For Nuream, the timing was critical.

"We had an idea and an early prototype, but we needed validation, direction, and connections," Rob Cooley, Nuream co-founder and CEO, shared. "The accelerator helped us determine whether we had a real business—or just a concept."

Through the program, Nuream gained access to customer discovery and validation frameworks that helped refine its go-to-market strategy, as well as critical technical connections at NC State University, including the Wilson College of Textiles. The company also secured partnership opportunities with organizations such as Advanced Functional Fabrics of America (AFFOA) and

benefited from mentorship by experienced entrepreneurs and industry leaders. In addition, the program offered valuable guidance on funding strategies, including both dilutive and non-dilutive capital, enabling Nuream to accelerate its technology and business development.

This ecosystem—enabled by NC DMCSF—allowed Nuream to rapidly mature from concept to credible innovator.

Advancing a New Category: Fabric-Based Sleep Intelligence

Nuream is tackling a massive and urgent challenge. More than 70 million Americans struggle with sleep, contributing to reduced productivity, increased accidents, and significant healthcare costs.

Existing solutions—such as wearable devices and sleep lab diagnostics—are often inaccurate, invasive, or impractical for long-term use.

Nuream's approach is fundamentally different.



The company is developing "fabric as a sensor" technology—embedding advanced sensing capabilities directly into textiles. Its flagship concept: a neurosensing pillowcase that captures brainwave and heart data without wires, wearables, or disruption to natural sleep.

Combined with machine learning and AI, the technology delivers not just data, but actionable insights and predictive health indicators.

"We're not just measuring sleep—we're creating an intelligence layer that helps people improve it," Cooley explained. "And over time, that data can help detect early signs of serious conditions like dementia, mental health disorders, and neurological disease."



From Prototype to Pilots—Faster

The connections made through the NC DMCSF-supported accelerator proved pivotal in accelerating development.

Through introductions facilitated by First Flight and IES, Nuream partnered with AFFOA to advance its technology from an initial prototype to a more sophisticated second-generation model. Today, the company is conducting pilot programs across multiple sectors, including:

- › Military and veteran populations
- › First responders
- › University research environments
- › Athletic performance programs
- › Enterprise health platforms

In just three years, Nuream has progressed to Technology Readiness Levels (TRL) 4–5—demonstrating capabilities many initially believed were not possible.

"We've built technology that people told us couldn't be done," Cooley said. "And we're accelerating quickly toward commercialization."

The Power of Connection

For Nuream, the most valuable outcome of engaging with IES and the NC DMCSF initiative wasn't just funding or programming—it was connectivity.

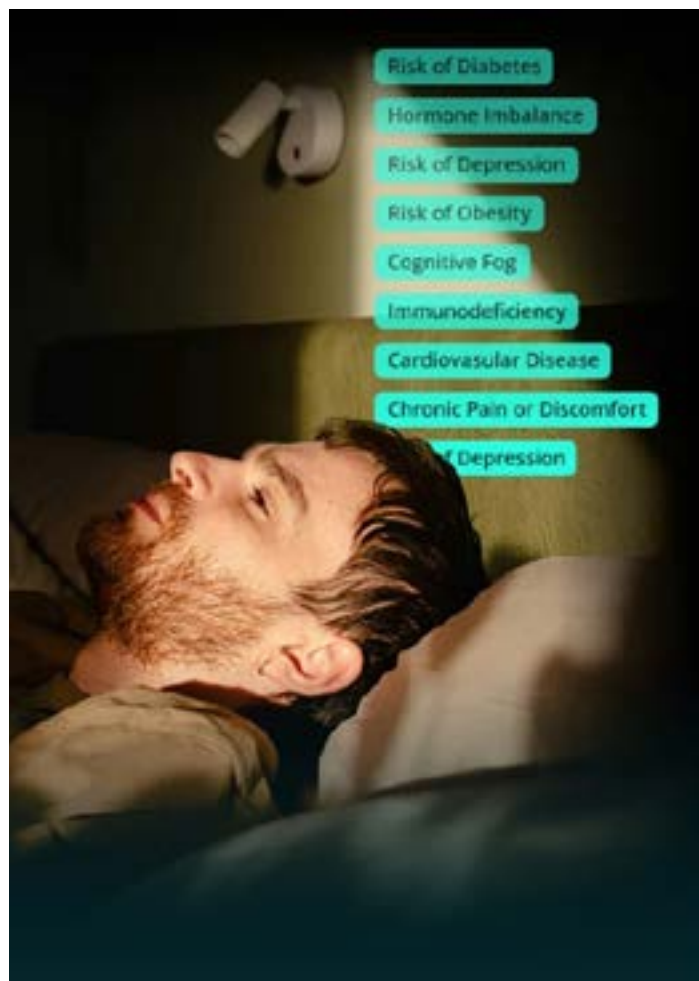
From the North Carolina Military Business Center to university research partners, accelerator networks, and defense-focused innovation programs, the early introductions created a ripple effect that continues to expand.

“It’s like throwing a pebble in a pond—the ripple effects are enormous,” said Cooley. “Those early connections opened doors to partnerships, pilots, funding opportunities, and long-term support.”

A Model for Dual-Use Innovation

Nuream’s technology is a prime example of dual-use innovation—serving both commercial and defense applications.

While its initial focus is on consumer wellness and sleep improvement, the implications of Nuream’s technology extend far beyond that. The company is already exploring applications with the United States Department of Defense, including enhancing warfighter performance and



readiness, supporting synthetic training environments, and enabling biosurveillance and early detection systems.

This alignment with defense priorities underscores the importance of programs like NC DMCSF in bridging commercial innovation with national security needs.

Giving Back to the Ecosystem

As Nuream continues its rapid growth, the company remains committed to supporting the same ecosystem that helped launch it.

“We don’t want to be a one-way beneficiary,” Cooley emphasized. “We want to be a net contributor—mentoring others, participating in programs, and helping the next generation of startups succeed.”

Accelerating What’s Next

With ongoing pilot programs, new funding opportunities, and continued collaboration with NC State and ecosystem partners, Nuream is approaching a critical inflection point.

The company is preparing for expanded prototype development and testing, pursuing additional non-dilutive funding through state and innovation grants, advancing commercial product launch pathways, and securing scaled investment to support rapid growth.

A Blueprint for Innovation in North Carolina

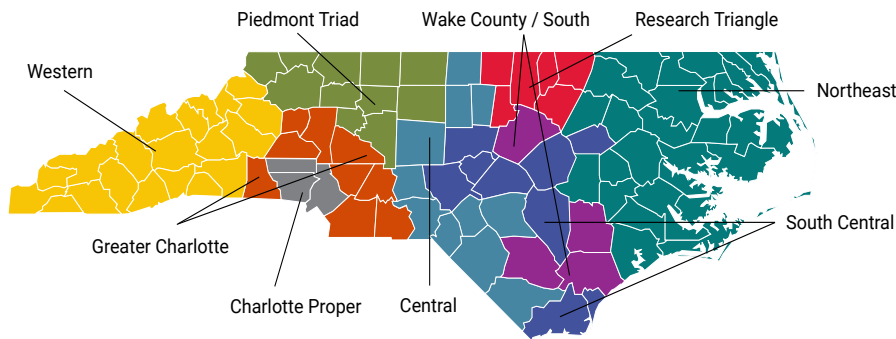
Nuream’s journey illustrates the power of a connected innovation ecosystem—where universities, government programs, accelerators, and industry partners work together to move ideas to impact.

Through the NC DMCSF grant and the leadership of NC State IES, companies like Nuream are not only advancing breakthrough technologies—they are strengthening North Carolina’s position as a leader in defense innovation and advanced manufacturing.

And in Nuream’s case, they are doing something even more profound:

Transforming how we understand—and improve—human health, one night of sleep at a time.

NC State University Industry Expansion Solutions Regional Managers Serve All 100 Counties in North Carolina.



Western
Chris McGraw
828.329.3119
chris_mcgraw@ncsu.edu

Research Triangle
Mitch Poteat
919.607.0684
mitch_poteat@ncsu.edu

Piedmont Triad
Kami Baggett
919.830.7292
kameron_baggett@ncsu.edu

Wake County
Robert Crew
919.830.2941
robert_crew@ncsu.edu

Charlotte Proper
Jennifer Fielder
704.380.0063
jennifer_fielder@ncsu.edu

Northeast
Lori Benn
919.988.7475
lori_benn@ncsu.edu

Greater Charlotte
Tamara Mack
980.281.0939
tamara_mack@ncsu.edu

Central
Mary Tillery
910.622.5849
mary_tillery@ncsu.edu

South Central
Anna Mangum
919.210.6050
anna_mangum@ncsu.edu



Contact the IES Regional
Manager in your area.
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