

Jorge Domecq, Chief Executive of the European Defence Agency
Investment boost for the home of the UK's new cutting-edge aircraft
X-Ship leads the way in advancing innovative naval concepts
European Reassurance Initiative implementation plan
Integration of cyberspace capabilities into tactical units
Rangers conduct close air support mission with F-35A
Versatile Vikings' upgrade completed



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NATIONAL STRATEGIC
RESEARCH INSTITUTE
at the University of Nebraska

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Main Image: Ajax Vehicle - courtesy of Ministry of Defence

HH60G Pave Hawk - courtesy of Sikorsky

M1A2 Abrams Tanks - courtesy of U.S. Army

HMS Ramsey - Courtesy of Royal Navy

Dragoons assigned to 1st Squadron, 2d Cavalry Regiment - courtesy of U.S. Army

Barclay Media Limited
12th Floor
Suite 203, The Edge
Clowes Street
Manchester, M3 5NF

CEO
Roger Barclay

Managing Director
Sarah Barclay

editor@barclaymedia.uk.com
subscriptions@barclaymedia.uk.com

Tel: +44 (0) 161 839 2115

www.barclaymedia.uk.com

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National Strategic Research Institute (NSRI) at the University of Nebraska

“Leadership in Combating Weapons of Mass Destruction (CWMD) by delivering relevant, mission-essential research and development solutions to the warfighter, Department of Defense (DoD) and other national security agencies.”

In 2012, United States Strategic Command (USSTRATCOM) selected the National Strategic Research Institute (NSRI) at the University of Nebraska (NU) as a trusted partner in mission-essential research and development due to its unique expertise and established record of excellence in defense research. This partnership designates NSRI as the newest of 13 University Affiliated Research Centers (UARCs). A UARC status provides an advantageous relationship with Department of Defense agencies.

The NSRI research portfolio is structured into the five research competencies listed below, and examples are provided.

1. Medical Passive Defense against WMD

Developing medical innovations and countermeasures from discovery and design to manufacturing, biocontainment and clinical treatment.

2. Nuclear Detection and Forensics

Advancing rapid, accurate and field-deployable nuclear detection and forensics technology.

3. Detection of Chemical and Biological Weapons

Integrating tools and methods for genomics, proteomics, bioinformatics and nanotechnology for accurate and rapid detection of new and emerging agents.

4. Consequence Management

Innovating consequence management solutions to protect, respond and restore infrastructure from a chemical, biological, radiological or nuclear incident.

5. Space, Cyber and Telecommunications Law

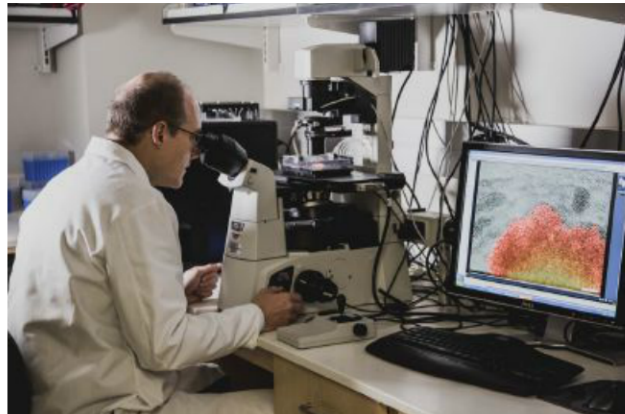
Providing research and legal expertise to generate judicious, scholarly solutions for evolving questions in space and cyber regulation.

With over 350 researchers in diverse disciplines and the state-of-the-art facilities that collaboratively generate innovative, “real-world” solutions, the NSRI community has developed a portfolio that specifically addresses

the research needs and advances the mission of USSTRATCOM. These 47 NSRI-affiliated projects, called “task orders,” being performed at the University of Nebraska capitalize on the expertise of some of NU’s outstanding faculty.

These projects include:

- Development of new, more effective vaccines for anthrax and ricin.
- Improved information systems that allow national leaders to make better and faster decisions during security crises or natural disasters.
- Stronger assessment tools to allow for timely, thorough responses to outbreaks of foodborne illnesses.
- Innovative tools that allow decision makers to better assess responses to the release of chemical, biological, radioactive, nuclear or explosive devices.



The University of Nebraska Medical Center (UNMC) facilities are ideally suited for research in finding cures for diseases, vaccine development and development of antidotes that will directly benefit individuals exposed to biological and chemical agents. UNMC has the secure laboratory space needed to handle such agents, as well as the necessary expertise and experience needed to counter these weapons. The NSRI Medical Passive Defense against Weapons of Mass Destruction and Detection of Chemical and Biological Weapons core competency research projects are already advancing many solutions for protecting warfighters.

Overall, faculty from across the University of Nebraska have attracted more than \$26M in contract funding to pursue projects related to the chief mission of the National Strategic Research Institute, which is to support research for combating weapons of mass destruction.

University of Nebraska Research Centers & Facilities Bioimaging Facilities

Combined bioimaging facilities include state-of-the-art instrumentation including MRI, MRS, SPECT, PET, CT, SPECT/CT, MEG, MSI, DTI, tDCS, sMRI, fMRI, fNIRS, EEG, ECoG and automated visualization for 2D and 3D imaging.

Biological Production Development Facilities (BPDFs)

From pilot studies to phase I clinical trial manufacturing, the BPDFs are a combined 26,000 square feet class 10,000 to 100 clean room areas, compliant with both GMP and GTP regulations facilities. NSRI/NU also has a nano-GMP production facility.

Biosafety Level Three (BSL-3) Facilities

Highly-trained researchers and staff work with select agents to advance technology in detection and medical countermeasures against potential biological warfare agents or other high-risk pathogens.

Center for Biosecurity, Biopreparedness & Emerging Infectious Diseases (CBBEID)

Conducts research on biodefense and biosecurity-related problems in animal and human health; biosurveillance and detection of bioterrorism agents; epidemiological studies; and antibiotic resistance.

Center for Brain, Biology and Behavior (CB3)

This highly interdisciplinary center's diverse research ranges from brain injuries to the heritability of social attitudes and the neurological basis of decision-making. Concussion research is a cornerstone of CB3 work.

Center for Drug Delivery and Nanomedicine (CDDN)

World-class interdisciplinary drug delivery and nanomedicine program integrating established expertise in drug delivery, gene therapy, neuroscience, pathology, immunology, pharmacology, vaccine therapy, cancer biology, polymer science and nanotechnology.

Commerce and Applied Behavior Lab (CAB Lab)

A unique facility designed to capture and analyze rich neurophysiological drives and to research violent-extremist organizations, cognitive strategic management, and cognitive biases in decision-making, among other topics.

Extreme Light Laboratory

NSRI is in the forefront of high field physics and laser research. NSRI/NU researchers study nuclear detection and chemical interactions. DIOCLES, a ultra-high-intensity laser-system, studies the interactions of light with matter at the highest attainable field strengths of any laser in the United States, 100 TW at 10 Hz.

Global Center for Advanced Interprofessional Learning

A state-of-the-art modeling and simulation facility that serves as headquarters for a transformative program, iEXCEL, designed to advance human performance and effectiveness in healthcare. The Global Center will house the widest range of simulation technologies available in replicated healthcare environments - incorporating 3D/Virtual Immersive Reality (VIR), and medical and surgical simulation technologies. The Global Center will focus on team training, including the transfer of care. Engaging disciplines beyond healthcare, such as engineering, graphic arts and instructional design, the iEXCEL program fosters innovation through academic, clinical, industry and military partnerships for the purpose of training and research and the development and testing of new processes, products and/or devices.

Midwest Roadside Safety Facility (MWRSF)

University researchers, industry leaders and government entities collaborate on transportation research, specifically highway design and safety.

Nebraska Biocontainment Unit

Designed to provide the first line of treatment for people affected by bioterrorism or extremely infectious naturally occurring diseases. It is the largest facility of its kind in the United States.

Nebraska Center for Materials and Nanoscience (NCMN)

Nationally recognized center of excellence investigating atomic manipulation, nanoscale dimensions, self-assembly, ordered nanoarrays, quantum dots, quantum computing, nanomechanics, nano-optics, nanoelectromechanical systems and molecular design.

Peter Kiewit Institute (PKI)

Peter Kiewit Institute (PKI) is a cutting edge educational and research institute of the University of Nebraska that promotes collaboration and solution development in engineering and information technology. Current research focuses on the intersection between data analytics and civil infrastructure, cybersecurity, automated decision support, architectural engineering and biomedical informatics. The IT Innovation program housed at PKI finds IT solutions to real world problems and moves these solutions to the marketplace.

Robotics and Mechatronics Lab

From creating robotic safety markers for highways and tiny surgical instruments to sophisticated mechanisms for future planetary exploration, the lab's researchers, in partner with NASA and other agencies, are on the cutting edge of the robotics field.

Contracting with NSRI

NSRI primarily receives funding via task orders using a non-competitive, Indefinite Delivery/Indefinite Quantity (IDIQ) contract with a maximum ceiling of \$84 million and a period of performance through September 20, 2017. IDIQ contracts provide for an indefinite quantity of services for a fixed time, which streamlines the contract process and speeds service delivery. NSRI also receives funding via grants and other direct contract vehicles. Operations & Maintenance (O&M), Research Development Test & Evaluation (RDT&E) and procurement funding may be used as appropriate.

NSRI's UARC status and Integrated Team Process (ITP) allows for a unique, collaborative process with potential sponsors that significantly reduces the timeline of the traditional contracting process.

Authors/Contributors:

- Robert C. Hinson, Lt Gen, USAF (Ret), Executive Director, NSRI
- Tessa Bowen, MPA, PR/Communication's Manager, NSRI
- Pamela J. Boyers, PhD, Associate Vice Chancellor for Clinical Simulation (iEXCEL), UNMC



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For further information visit: <https://nsri.nebraska.edu>