



NITRD News Brief

We are pleased to continue NITRD's News Brief that offers insight into the activities NITRD's member agencies are conducting to achieve the Nation's priorities through the lens of the public-facing news sources. These are divided into networking and information technology topics that have been identified as of great importance for improving Americans' daily lives.

For ease of access, under NITRD's logo, the title of each section is listed as a link to that section. The titles of the articles under the section's heading are links that provide immediate access to the news article listed. We hope you find this informative and helpful in your daily activities.

Do you know someone who would like to receive NITRD's weekly news brief? They can email NITRD's IT aficionados at nco@nitrd.gov and voilà they will receive the news brief with the cool technology articles each week!

Looking Back on 2023 & Forward to 2024

From Diamonds in Your Computer to Safer Medications, NIST Researchers Look at What's Next for 2024 and Beyond

...Thoughts and predictions on questions looking to 2024 and beyond ... NIST's postdoctoral researchers are using advanced mathematical techniques to measure small parts of the antibody, known as domains, so we can better understand antibodies. William "Drew" Borders is working on a project that demonstrates how you can train a computer chip to work like a neural network in the brain to improve computers' energy usage. As the U.S. works to improve domestic production of computer chips, Trey Diulus is learning more about alternative materials to silicon for semiconductor devices, such as the transistors inside of cars or the drills on oil rigs. The lab is currently researching ways to treat diamonds using standard lab equipment that most universities and research facilities can access, instead of the current standard of purchasing expensive treated diamond samples from companies...

Year in Review: A look back at the FBI's challenges and triumphs of 2023

...In 2023, the FBI faced a growing and evolving threat spectrum—from an uptick in violent and bias-motivated crimes to increasingly elaborate cyberattacks. The year opened with the FBI and international partners dismantling an advanced ransomware network that cost victims more than \$100 million and the Bureau's 38,000 agents, analysts, and professional staff remained fully focused on working with all our partner agencies. FBI-led operations dismantled 18 criminal cyber operations—and disrupted another 285—in the fiscal year that ended September 30. The FBI penetrated Hive's computer networks, captured its decryption keys, and offered them to victims worldwide, preventing victims from having to pay \$130 million in ransom. The FBI gained lawful access to Qakbot's infrastructure and identified over 700,000 infected computers worldwide and neutralized this far-reaching criminal supply chain. The FBI disrupted the dark web marketplace that offered access to data stolen from over 1.5 million compromised computers around the world, containing over 80 million account access credentials. The FBI neutralized a global peer-to-peer network of computers compromised by malware called Snake...
Federal Bureau of Investigation - Dec 22, 2023

Recapping a Phenomenal 2023 at the U.S. Census Bureau

...Here are some of the highlights of what the U.S. Census Bureau has accomplished in 2023. This year brought a host of new data (along with easy-to-use infographics and data visualizations) that enable communities to plan for hospitals and schools, advance economic development, improve emergency services, construct roads, inform businesses looking to add jobs and more. The 2023 National Population Projections, a comprehensive analysis of our nation's projected births, deaths and net international migration through the year 2100, was released. The Census Bureau announced several new ways to collect data that are more accurate, timely, relevant and meet the needs of the public. There are dozens of research projects underway that you can read about in the 2030 Census Research Project Explorer tool...
U.S. Census - Dec 28, 2023

2023 in review: Top 10 ORNL news stories

...A carbon-reducing engine simulated on the world's fastest supercomputer, a new center to lead research in artificial intelligence coming online and a power record set by the world's top producer of pulsed neutrons were among the topics featured in Oak Ridge National Laboratory's most popular news stories of 2023. The world's most powerful computer, Frontier, helped GE Aerospace develop more energy efficient engines that will consume 20% less fuel and emit 20% less CO2 than today's most efficient engines. ORNL scientists have developed OpeN-AM, a 3D printing platform that uses neutrons to see the additive manufacturing process at the atomic level, allowing scientists to measure strain in a material as it evolves and track how atoms move in response to stress. The ORNL's Center for Artificial Intelligence Security Research, or CAISER, expands ORNL's long-standing Artificial Intelligence for Science and National Security research initiative, which integrates the lab's unique expertise, infrastructure and data to accelerate scientific breakthroughs. ORNL collaborated with NASA to use additive manufacturing technology to 3D print the same kind of wheel as the design the space agency used for its robotic lunar rover. Using the Quantinuum H1-1 quantum computer, ORNL researchers observed the unique behavior of a single photon of light and determined the results could ultimately prove to be useful in developing more efficient solar panels. ... And more!
Oak Ridge National Laboratory - Dec 27, 2023

C2QA, a Year in Review

...The Co-design Center for Quantum Advantage (C2QA), led by the U.S. Department of Energy's (DOE) Brookhaven National Laboratory, spans over 27 different partner and affiliate institutions ranging from research and academia to industry. C2QA's primary focus is building the tools necessary to create scalable, distributed, and fault-tolerant quantum computer systems, and the center has been growing, building, and working hard every year to support that mission. Here are some highlights from 2023: * Scientists from the Center for Functional Nanomaterials (CFN) and the National Synchrotron Light Source II (NSLS-II) at Brookhaven Lab and C2QA partner Princeton University investigated the fundamental reasons that tantalum qubits perform better by decoding this material's chemical profile. * This past summer, C2QA hosted QIS 101, a virtual quantum computing summer school. * The C2QA-led Quantum Information Science Virtual Career Fair continues to grow in both attendees and offerings. * 2023 saw the launch of the Faculty Outreach for Quantum-Interested Universities (FOQUS) program. This collective program leveraged the resources and expertise of Brookhaven Lab, including the Office of Diversity, Equity and Inclusion and the Office of Educational Programs, C2QA, the DOE Office of Science's Office of Workforce Development for Teachers and Scientists, and the IBM-HBCU Quantum Center...
Brookhaven Lab - Dec 29, 2023

HPC

DOE/ONR/AFOSR-funded researchers develop all-optical switches that could lead to faster computer processors

...Conventional computer processors have pretty much maxed out their “clock speeds” — a measurement of how fast they can toggle on and off — due to limitations of electronic switching. Researchers at the U.S. Department of Energy’s (DOE) Argonne National Laboratory and Purdue University have recently created a new kind of all-optical switch. Argonne’s Soham Saha and his colleagues have made an optical switch out of two different materials, each with a different switching time. One material, aluminum-doped zinc oxide, has a switching time in the picosecond range, while the other material, plasmonic titanium nitride, has a switching time more than a hundred times slower, in the nanosecond range. Saha said, “The bimetallic nature of the switch means that it can be used for multiple purposes depending on the wavelength of the light that you use. When you want slower applications, like memory storage, you switch with one material; for faster applications, you switch with the other one. This capability is new.” This offers promise for the development of highly adaptable and efficient switches in fields like enhanced fiber optic communication, optical computing and ultrafast science. The research was funded by the DOE’s Office of Basic Energy Sciences, as well as the Office of Naval Research and the Air Force Office of Scientific Research...
Argonne National Laboratory - Dec 21, 2023

Artificial Intelligence / Machine Learning

What Happens in Vegas? Science and Technology.

...Technologies are evolving faster every day, which poses constant challenges and opportunities for enhancing our nation’s security. Increasingly, the Science and Technology Directorate’s (S&T) customers look to us to help identify, procure and implement new technologies that enhance security and improve our response to changing threat environments. And there’s no place better for us to connect with innovators from around the world and become energized by new ideas and cutting-edge technologies than the Consumer Electronics Show. The Department of Homeland Security is participating in CES to discuss the current state of S&T’s research and development efforts and demonstrate how the innovators that are converging upon CES can help advance our mission through exciting partnership opportunities. S&T seeks to embrace and harness commercial advances like artificial intelligence to reduce risk and allow homeland security operators, including first responders, to work more efficiently and effectively. Because CES brings together global startups, entrepreneurs, and leaders from business and government, S&T looks forward to conversations with new and existing international partners about common challenges and advancing mutual goals...
Homeland Security - Jan 2, 2024

Sea Change: NASA-Funded Oceanographer Contributes to Groundbreaking Ocean Dynamics Research Using Satellite Data and Machine Learning to Predict Vertical Motion in Earth's Oceans

...Scientists are developing a clearer picture of ocean dynamics, thanks to an innovative method for translating satellite data on sea surface heights that is providing valuable insights on currents, heat distribution and, notably, climate change implications. Dr. Spencer Jones is part of a research team that is using machine learning to predict vertical motion based on data collected by the Surface Water and Ocean Topography (SWOT) satellite. The research was made possible through the support of the National Aeronautics and Space Administration (NASA). Jones trained the machine learning model to discern vertical motions near the ocean surface using images of sea surface height. The model’s success stems from its ability to overlook the waves on the sea surface — a factor that Jones says typically poses challenges when studying changes in sea-surface heights. The team is hopeful its research will help future scientists estimate the extent to which the ocean can absorb carbon dioxide and whether or not the dissolved carbon dioxide will remain in the ocean. Jones notes this is crucial because some proposed strategies for mitigating global warming involve dissolving carbon dioxide in the ocean to remove it from the atmosphere...
Texas A&M Today - Dec 29, 2023

Robotics / Autonomous Vehicles

Berkeley Lab Researchers Publish Pioneering Book on Autonomous Experimentation

...The emerging field of Autonomous Experimentation is poised to take these scientific experiments to the next level. Autonomous Experimentation describes what are essentially research robots, self-driving labs, or other systems that plan, execute, and evaluate experiments toward research objectives supplied by human researchers. Because the field is still in its infancy, with new methods, algorithms, and frameworks being developed and deployed continuously, there is no one correct definition for the term ‘Autonomous Experimentation. Marcus Noack and Berkeley Lab Scientist Daniela Ushizima teamed up to co-edit Methods and Applications of Autonomous Experimentation, the first-ever book dedicated to the topic of Autonomous Experimentation. By combining insights from leading theorists, machine learning engineers, and applied scientists working in the field of Autonomous Experimentation, they aimed to lay the foundation for future research by translating the challenges in the various applied sciences into mathematical and computational problems without losing scientific meaning and interpretability. As members of Berkeley Lab’s Center for Advanced Mathematics for Energy Research Applications

(CAMERA), they formed the Community for Autonomous Scientific Experimentation (CASE), which seeks to facilitate collaborations and information exchange to accelerate the adoption of autonomous methods and aid scientific discovery...

Berkeley Lab - Jan 2, 2024

Quantum

NIST, QuICS & MIT Researchers Help Design a Prototype Quantum Computer

...Researchers, from the Joint Center for Quantum Information and Computer Science (QuICS), the National Institute of Standards and Technology (NIST), the Massachusetts Institute of Technology and QuEra Computing Inc., have created a prototype quantum computer with a record number of qubits. To minimize errors, the researchers used the principle of quantum entanglement, in which many physical qubits are linked together to form a "logical qubit" in which information is distributed among numerous qubits rather than stored in a single, potentially faulty one. In the team's study, two closely spaced energy levels in single atoms of rubidium served as the physical qubits, which were moved around by laser light to associate with other qubits. The algorithm provides a possible way to determine whether a particular operation performed on a quantum computer truly offers an advantage over an ordinary computer...

UMIACS - Dec 21, 2023

Cybersecurity / Privacy

Cybersecurity Maturity Model Certification Program Proposed Rule Published

...The Cybersecurity Maturity Model Certification (CMMC) program is designed to ensure that defense contractors and subcontractors are compliant with existing information protection requirements for federal contract information (FCI) and controlled unclassified information (CUI) and are protecting that sensitive unclassified information at a level commensurate with the risk from cybersecurity threats. In the proposed rule, CMMC requires cybersecurity assessment at only three levels, starting with basic safeguarding of FCI at CMMC Level 1. General protection of CUI will require assessment at CMMC Level 2, and a higher level of protection against risk from advanced persistent threats will require assessment at CMMC Level 3. This rule also adds flexibility by allowing for limited use of Plans of Action and Milestones and a government waiver request process. CMMC aligns directly with the cybersecurity requirements described in National Institute of Standards and Technology (NIST) Special Publications 800-171 and 800-172...

U.S. Department of Defense - Dec 26, 2023

The CESER-NARUC CPET Training: Cybersecurity Knowledge for State Utility Regulators

...CESER and the National Association of Regulatory Utility Commissioners (NARUC) have partnered to develop an online training module for state regulators. The Cybersecurity Preparedness Evaluation Tool (CPET) Training will provide strategies, tools, and expertise to engage in discussions about cybersecurity preparedness, response, and recovery planning, policies, and practices. The CPET provides a structured approach for PUCs to use in assessing the maturity of a utility's cybersecurity risk management program and gauging capability improvements over time. The CPET is designed to be used with the Questions for Utilities on an iterative basis to help PUCs identify cybersecurity gaps, spur utilities' adoption of additional mitigation strategies, and inform cybersecurity investment decisions...

Department of Energy - Dec 22, 2023

Chief Digital, Artificial Intelligence Office to host hackathon in Hawaii

...The Office of the Secretary of Defense Chief Digital and AI Office, Defense Innovation Unit, U.S. Indo-Pacific Command, U.S. Army Pacific Command and the U.S. Air Force will host a multi-classification hackathon open to all U.S. citizens, Feb. 5-9, 2024. The BRAVO 11 Bits2Effects hackathon will occur at one of the DOD AI Battle Labs on the island of Oahu, Hawaii. Starting in 2021, the U.S. Air Force began organizing multi-service prototyping events, known as BRAVO hackathons, to expedite learning and capability development from classified and protected operational data. This year's BRAVO 11 Bits2Effects, the fourth BRAVO hackathon and first-held inside a combatant command, is seeking to produce solutions to combatant command challenges utilizing Indo-Pacific operational theater data. Applicants looking to participate may do so in one of three roles: the "Hacker" role, the "Hacker Subject Matter Expert" role, and the "Supporter" role...

Department of the Navy Chief Information Officer - Dec 26, 2023

5G, Wireless Spectrum, Networking & Communications

Auld Lang 'Time': One of the Country's Timekeepers Makes Sure We Ring in 2024 at Just the Right Second

...In the NIST Time and Frequency Division, to produce the official time of day, we begin by defining the duration of the second. We are always working on better and better atomic clocks for future definitions of the second, but we also have our primary standard clocks for the current definition. These are cesium fountain clocks that measure the second by tuning themselves to the precise frequency of microwaves that are absorbed by cesium-133 atoms. We use the primary standard clocks to calibrate many commercially available atomic clocks. By measuring and comparing all these atomic clocks, we create a clock ensemble. Our customers are institutions that need very accurate time, such as the aerospace, power grid, communication and financial industries, along with research institutions. Time is so crucial to these customers that they need accurate timing from microseconds. We have the Internet Time Service (ITS), where people can synchronize computers and other equipment/devices to our internet servers. This is built into most computer operating systems. Your computer accesses this information automatically. Time.gov lets you see the official U.S. time in multiple time zones at once. It actually uses your computer clock to measure the round-trip delay of the request to the NIST server, so that it can display the correct time on your screen...

National Institute of Standards and Technology - Dec 28, 2023

Warming in the Bering Sea Impacts Phytoplankton Bloom Type

...New research suggests that warming of the Bering Sea Shelf affects algae blooms and the food web that relies on it. Understanding the impacts of the timing of the bloom and its association with sea ice is essential to predicting ecosystem responses to climate change. "We can't be everywhere at once, so we need tools to monitor what we need," said Robert Foy, director of NOAA's Alaska Fisheries Science Center. New tools fill data gaps and increase efficiency in data collection that aids scientists in their research. Scientists estimated spring blooms with a combination of data from moorings on the eastern shelf and satellite ocean color data from 1998 to 2022, which can provide more variables that help with the big picture. Satellites provide great spatial and temporal coverage but are restricted to measuring the surface of the ocean, and have missing data due to clouds and ice cover. Combining with long-term mooring data, improves phytoplankton bloom estimates. Satellite models can be developed to calculate phytoplankton size, whether big or small...

Noaa Fisheries - Dec 22, 2023

Landsat 2030 International Partnership Initiative will enhance ability to sustainably manage land, surface water and resource use

...Landsat – a partnership between the U.S. Geological Survey (USGS) and National Aeronautics and Space Administration (NASA) – is the only U.S. satellite system designed and operated to collect essential data on Earth's geologic formations, natural habitats, farmlands, cities, lakes, glaciers, coastlines and other surface features. Landsat provides imagery at landscape-scale resolution that can be used to support the Department's efforts to improve environmental sustainability, climate change resiliency, and economic growth – all while expanding an unparalleled record of Earth's changing landscapes. The Department of the Interior announced the Landsat 2030 International Partnership Initiative, which will enhance U.S. and partner governments' ability to sustainably manage their land, surface water and resource use. The 2030 Initiative focuses on the U.S. Landsat Next Earth observation satellite mission and will build on Landsat's 52-year data record enabling users to record, study, understand and better manage landscape change at local, regional and global scales. The Landsat Next mission will provide a new and improved capability for the next generation of users, with higher spatial resolution, twice the current number of spectral bands and improved local revisit time...

USGS - Dec 21, 2023

How Public Input Helped Shape NTIA's Approach to the Uniform Guidance in the BEAD Program

...The National Telecommunications Information Administration (NTIA) released a Policy Notice providing guidance on the application of the Uniform Guidance in the \$42.45 billion Broadband Equity, Access and Deployment (BEAD) Program. BEAD is a grants program like no other—differing from prior federal broadband funding programs in a number of material ways. Most notably, it is the first program to require that awardees (i.e., states and territories) ensure universal availability of high-speed Internet access, including to those locations that have not been addressed by prior programs. NTIA issued a Request for Comment (RFC) to provide an opportunity for all stakeholders to comment on the application of the Uniform Guidance in the BEAD Program. NTIA received more than 60 comments and this public input helped inform NTIA's approach to the exceptions and adjustments it is applying in the BEAD Program...

National Telecommunications and Information Administration - Dec 26, 2023

Advanced Manufacturing

What You Should Know About the Supply Chain Optimization and Intelligence Network

...The 51 Manufacturing Extension Partnership (MEP) Centers that make up the MEP National Network™ work to enhance the competitiveness of small and medium-sized manufacturers (SMMs) within the United States. Although each MEP Center operates independently and caters to the needs of its local manufacturing community, they share a common mission: assisting manufacturers to improve and succeed in today's dynamic business environment. The Supply Chain Optimization and Intelligence Network (SCOIN) expands the MEP National Network's scope from working primarily with individual companies to include taking a more comprehensive approach to manufacturing supply chains. SCOIN has three key tenets for every MEP Center that will help them provide expanded services to local manufacturers. With this initiative, each Center is required to engage with large manufacturers to gain more understanding of their needs and expectations, from components to certifications and Environmental, Social, and Governance (ESG) goals...

National Institute of Standards and Technology - Dec 21, 2023

Climate Change / Green Energy & IT

Clean Energy Upgrades for Your New Year's Resolutions

...Here's how making energy efficiency part of your 2024 New Year's Resolutions could help you lower your energy costs and save our planet. Thanks to the Department of Energy's Savings Hub, you can easily help determine what clean energy and energy efficiency incentives for home upgrades and appliances are best for you. A smart thermostat could save you 10 percent in annual energy costs. Tax credits for solar panels and other products can reduce purchase costs by upwards of 30% while also saving on monthly energy bills. Clean energy improvements reduce your carbon footprint. Do your part to make Earth cleaner and reach President Biden's goal of a 100% clean energy economy by 2050 by switching to clean energy. Reducing our emissions is a crucial step towards lessening the severity of climate change...

Department of Energy - Dec 29, 2023

As the Arctic Warms, Its Waters Are Emitting Carbon

...When it comes to influencing climate change, the world's smallest ocean punches above its weight. Since the 1970s, the Arctic has warmed at least three times faster than anywhere else on Earth. Some of these changes promote more CO2 outgassing in the region, while others lead to more CO2 being absorbed. It's been estimated that the cold waters of the Arctic absorb as much as 180 million metric tons of carbon per year. Recent findings show that thawing permafrost and carbon-rich runoff from Canada's Mackenzie River trigger part of the Arctic Ocean to release more carbon dioxide (CO2) than it absorbs. Scientists are using state-of-the-art computer modeling to study rivers that flow into a region of the Arctic Ocean. Scientists have thought of the southeastern Beaufort Sea as a weak-to-moderate CO2 sink. The team adapted a global ocean biogeochemical model called ECCO-Darwin, which was developed at NASA's Jet Propulsion Laboratory. The model assimilates nearly all available ocean observations collected for more than two decades by sea- and satellite-based instruments. The scientists used the model to simulate the discharge of fresh water and the elements and compounds it carries from 2000 to 2019. Scientists are tracking large and seemingly small changes in the Arctic and beyond because our ocean waters remain a critical buffer against a changing climate...

National Aeronautics and Space Administration - Dec 21, 2023

Digital Health

Better prosthetics: NIH \$3M grant to develop more natural robotic leg control

...A smoother experience for robotic prosthetic leg users is the aim of a University of Michigan project. The National Institutes of Health has renewed support with a grant of \$3 million that will also enable the implementation of the researchers' improved control program on a commercially available robotic prosthetic leg. The human body shifts among activities almost thoughtlessly but these transitions are hard for robots, and robotic prosthetic legs have the additional challenge of not being hooked into the human user's central nervous system to stay synchronized with their body. Principal investigator Robert Gregg saw early success controlling the position of the knee and ankle joints through a model that continuously represents all stages of the gait cycle. With the initial NIH grant, Gregg's team extended the walking control model to cover other important scenarios: inclines, stairs, sit-to-stand and stand-to-walk. Gregg's team is now looking at controlling joint position indirectly—mimicking biomechanical impedance instead—using their continuous modeling framework...

University of Michigan News Service - Dec 21, 2023

UT Health San Antonio hosts inaugural ARPA-H Customer Experience Hub information session

...A leading consortium of San Antonio research institutions joined with colleagues from across Texas and the region for an information session of the Advanced Research Projects Agency for Health (ARPA-H) Customer Experience Hub (CX Hub). Participants received additional details about the role of ARPA-H program managers, “spoke” membership and an overview of the ARPA-H Advancing Clinical Trial Readiness (ACTR) initiative. An agency of the U.S. Department of Health and Human Services, ARPA-H aims to accelerate breakthrough technologies and platforms in an effort to transform medicine and health and improve health outcomes for patients. The CX Hub launched the ACTR initiative, which is aimed at identifying, integrating and advancing new solutions for clinical trials to encourage more diverse participation and better, faster outcomes. The initiative began with a community survey to determine what the participants have identified as critical challenges with clinical trials. The ARPA-H program managers are tasked with finding truly unique approaches to solving our nation’s health care crisis and some of those solutions require being embedded in the community...

UT Health San Antonio - Dec 21, 2023

Other IT Related

OMB Releases Digital Accessibility Guidance to Ensure All Americans Have Ability to Access Critical Government Resources

...The Biden-Harris Administration has taken significant steps to achieve a more inclusive country for people with disabilities. The Office of Management and Budget is releasing updated guidance that requires Federal agencies to put accessibility at the center of the Federal Government digital experience – so government can truly deliver for all Americans. The Federal Government will deliver a more universally accessible digital experience to the public by: * Delivering Accessible Digital Experiences * Establishing Digital Accessibility Programs and Policies * Procuring Accessible Products and Services * Monitoring and Remediating Problem * Cultivating a Positive Culture of Digital Accessibility. This new guidance establishes the required leadership, goals, and renewed focus to improve digital accessibility across the Federal Government...

The White House - Dec 21, 2023

NSF announces IT revitalization through consolidation in support of the 'CHIPS and Science Act of 2022'

...The U.S. National Science Foundation announced a comprehensive reorganization of its information technology functions, marked by the establishment of a new independent and consolidated Office of the Chief Information Officer (OCIO). This strategic initiative is designed to optimize operational efficiency, foster innovation and ensure that NSF remains at the forefront of scientific discoveries and technological advancements. Fueled by the "CHIPS and Science Act of 2022," this transformative initiative aligns seamlessly with ongoing efforts to adapt to evolving industry best practices and leading-edge technologies. The establishment of this office signifies a major step forward, arming NSF with the tools, resources and expertise necessary to accommodate anticipated growth in the years ahead...

National Science Foundation - Jan 3, 2024

AFRL, National Science Foundation, academia converge in Miami Valley to accelerate materials discovery to deployment

...The Air Force Research Laboratory, the National Science Foundation, and representatives from some of the nation’s leading academic institutions joined forces for the NSF’s Designing Materials to Revolutionize our Future (DMREF) Kickoff. Twenty-two multidisciplinary materials research teams attended the event, representing multiple principal investigators from a wide range of multi-university projects. Of the 37 new four-year projects funded in the 2023 DMREF awards cycle, seven are directly tied to AFRL directorates. Roughly a third of the NSF’s DMREF current portfolio, comprised of materials research grants awarded in 2021 and 2023, involve collaborative projects with AFRL’s Materials and Manufacturing, Munitions and Sensors directorates. NSF established the DMREF program in 2012 as a response to the federal government’s Materials Genome Initiative, or MGI, of 2011. Its goals were to unify the materials innovation infrastructure, harness the power of materials data, and educate, train and connect the materials research and development workforce. NSF made a \$72.5 million investment in the DMREF program to drive the design, discovery and development of advanced materials needed to address major societal challenges, including growing threats to the nation’s defense, resulting from peer adversary competition. Currently, DMREF’s mission to accelerate the translation of materials from design to deployment is guided by the MGI 2021 Strategic Plan, and DMREF solicits materials research project proposals from multidisciplinary teams across the country that align with its goals...

Air Force Link - Dec 22, 2023

The Role of Science and Technology in Preparing for Future Change

...At the Science and Technology Directorate (S&T), our job is to push new thinking and ask what we could do that is more responsive to challenges the Department of Homeland Security (DHS) will face in a changing world. Drawing science and technology into this conversation enables us to see impacts differently and better understand what tools and approaches can help relieve the burden on the workforce, who face expansive demands. Recognizing there are no single point solutions to safeguarding the nation, S&T is excited to release a new series of in-depth analysis on preparedness. This Preparedness Series is designed to raise awareness of our unpredictable future and open a new lane for understanding the role science and technology plays in creating new options for reducing operational risk, enhancing decision-making, and boosting mission effectiveness. Sharpening our understanding of how people will exploit technologies will help us prioritize against potential unknowns, blind spots and myriad of threat possibilities and identify new pathways for enhancing preparedness and adaptability to changing threat environments. At the same time, there is a suite of scientific and

technological advances that will help security operators manage and anticipate the impacts of future change. Discrete types of data and disparate levels of information, including patterns of life, result in actionable decisions and can help security operators measure what is actionable and what is not...

Homeland Security - Dec 21, 2023

DARPA Moves Forward on X-65 Technology Demonstrator

...DARPA has selected Aurora Flight Sciences to build a full-scale X-plane to demonstrate the viability of using active flow control (AFC) actuators for primary flight control. The award is Phase 3 of the Control of Revolutionary Aircraft with Novel Effectors (CRANE) program. The X-65 will be built with two sets of control actuators – traditional flaps and rudders as well as AFC effectors embedded across all the lifting surfaces. This will both minimize risk and maximize the program's insight into control effectiveness. The plane's performance with traditional control surfaces will serve as a baseline; successive tests will selectively lock down moving surfaces, using AFC effectors instead. "The X-65 conventional surfaces are like training wheels to help us understand how AFC can be used in place of traditional flaps and rudders," said Dr. Richard Wlezien, DARPA's program manager for CRANE. "We'll have sensors in place to monitor how the AFC effectors' performance compares with traditional control mechanisms, and these data will help us better understand how AFC could revolutionize both military and commercial craft in the future." ...

DARPA - Jan 3, 2024

STEM / Workforce & IT

UNM launches innovative quantum photonics graduate program with \$3 million NSF grant

...The University of New Mexico recently announced its new Quantum Photonics and Quantum Technology (QPAQT) graduate program, made possible by a \$3 million grant from the National Science Foundation (NSF). The NRT-QL: Quantum Photonics Interdisciplinary Training to Advance Quantum Technologies initiative marks a significant step forward in quantum science and technology education. QPAQT is a dynamic graduate program situated at the intersection of physics, chemistry, and engineering. The NRT-QL grant serves as a catalyst for UNM's commitment to advancing quantum research and education. Through QPAQT, students will receive comprehensive academic preparation, enabling them to emerge as adept generalists in quantum technology in addition to generating and disseminating new knowledge in their focus research area. The program's curriculum and innovative training methods promise to shape the next generation of leaders in the rapidly evolving landscape of Quantum Science & Technology...

UNM Newsroom - Dec 27, 2023

STEM / Workforce Resources & Opportunities

R&D WORKFORCE TRAINING: FEDERAL AGENCIES' STEM INTERNSHIPS, SCHOLARSHIPS, AND TRAINING OPPORTUNITIES

...Increasing the availability of STEM opportunities is a priority in the Biden Harris Administration. To help facilitate this, the team at NITRD developed a STEM Portal that allows anyone to search for internships and other training opportunities at Federal agencies. The NITRD STEM PORTAL is a searchable database that includes a description, link, and contact information for each program listing. Government sponsored internships and training programs are competitive, but there are many Federal opportunities and the NITRD STEM Portal is here to help.

The Networking and Information Technology Research and Development (NITRD) Program - Jan 1, 2024

FEDERAL HIGH END COMPUTING INFORMATION PORTAL

...Networking and Information Technology Research and Development (NITRD) has a portal that provides information about U.S. Federal government high performance computing activities, including available computing resources; relevant publications; fellowship and training opportunities; and technology transfer, licensing, and industry engagement opportunities. The High End Computing (HEC) Interagency Working Group (IWG) agencies provide the information contained in this portal. HEC IWG agencies are involved in various Federal activities in the HEC area including R&D and providing infrastructure and application. Take a look at it!

Networking and Information Technology Research and Development - Dec 19, 2023

Federal Register: Request for Information (RFI)

Request for Information on “Shifting the Balance of Cybersecurity Risk: Principles and Approaches for Secure by Design Software”

...CISA requests input from all interested parties on the white paper “Shifting the Balance of Cybersecurity Risk: Principles and Approaches for Secure by Design Software.” The white paper identifies three core principles to guide software manufacturers in building software security into their design processes prior to developing, configuring, and shipping their products to customers: 1. Take Ownership of Customer Security Outcomes: Software manufacturers should take ownership of their customers' security outcomes and evolve their products accordingly. 2. Embrace Radical Transparency and Accountability: Software manufacturers should pride themselves in delivering safe and secure products. 3. Lead From the Top: Build organizational structure and leadership to achieve these goals. The “Shifting the Balance of Cybersecurity Risk: Principles and Approaches for Secure by Design Software” white paper identifies a path forward for implementing security by design and security by default into the SDLC, placing the burden of cybersecurity on manufacturers instead of customers. The white paper explores the benefits and challenges of applying the three secure by design principles. Written comments are requested on or before February 20, 2024...

Federal Register - Dec 20, 2023

Request for Information (RFI) Related to NIST's Assignments Under Sections 4.1, 4.5 and 11 of the Executive Order Concerning Artificial Intelligence

...The National Institute of Standards and Technology (NIST) is seeking information to assist in carrying out several of its responsibilities under the Executive order on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence issued on October 30, 2023. Among other things, the E.O. directs NIST to undertake an initiative for evaluating and auditing capabilities relating to Artificial Intelligence (AI) technologies and to develop a variety of guidelines, including for conducting AI red-teaming tests to enable deployment of safe, secure, and trustworthy systems. NIST is responsible for contributing to several deliverables assigned to the Secretary of Commerce. Among those is a report identifying existing standards, tools, methods, and practices, as well as the potential development of further science-backed and non-proprietary standards and techniques, related to synthetic content, including potentially harmful content, such as child sexual abuse material and non-consensual intimate imagery of actual adults. NIST will also assist the Secretary of Commerce to establish a plan for global engagement to promote and develop AI standards. Comments containing information in response to this notice must be received on or before February 2, 2024...

Federal Register - Dec 21, 2023

Note: Any mention in the text of commercial, non-profit, academic partners, or their products, or references is for information only; it does not imply endorsement or recommendation by any U.S. Government agency.

Innovation Through NITRD Coordination

Networking and Information Technology Research and Development - National Coordination Office, Washington, DC USA

To unsubscribe from this newsletter reply to news-brief@nitrd.gov with the subject unsubscribe