Air Force Opens AFwerX Facility Near Las Vegas

The Air Force is taking a page out of Special Operations Command's rapid acquisition book to launch its own technology accelerator program, as it works to find cutting-edge and affordable solutions to various technology challenges. "We just set up our first AFwerX" between Nellis Air Force Base and the University of Nevada, Las Vegas, with plans to mimic SOCOM's SOFWERX facility …

Advanced Materials

Scientists Develop Computer-Guided Strategy to Accelerate Materials Discovery

Discovering new materials has been a slow and intensive process as there are millions of possible combinations of molecules and atoms. The challenge is to find those combinations that are stable and synthesizable from the millions that are created. Researchers have developed an algorithm that uses chemical understanding of the…

Chemists Perform Surgery on Nanoparticles

A team of chemists led by Carnegie Mellon has for the first time conducted site-specific surgery on a nanoparticle. The procedure, which allows for the precise tailoring of nanoparticles, stands to advance the field of nanotechnology. The surgical technique will allow researchers to enhance nanoparticles’ functional properties, such as catalytic activity and photoluminescence, increasing…
Autonomous Systems

SOCOM Leaning on ThunderDrone Initiative to Acquire Unmanned Systems Capabilities

Through a series of prototyping efforts — known collectively as ThunderDrone — U.S. Special Operations Command hopes to discover new unmanned capabilities that could benefit the warfighter, the command's acquisition director said. Industry, laboratory and academic partners, and individual citizens have completed the early rounds of SOFWERX's first ThunderDrone rapid prototyping...

NVIDIA Announces World's First AI Computer to Make Robotaxis a Reality

NVIDIA unveiled the first artificial intelligence computer designed to drive fully autonomous robotaxis. The new system, codenamed Pegasus, extends the NVIDIA DRIVE PX AI computing platform to handle Level 5 driverless vehicles. Delivering over 320 trillion operations per second, it makes possible a new class of fully autonomous vehicles without a driver, steering wheel, pedals...

Directed Energy

Laser Weapons to Help Defend Tactical Aircraft

Laser weapons experts at Lockheed Martin Corp. are helping the U.S. Air Force develop a compact, ruggedized, high-power laser to defend tactical aircraft flying from supersonic enemy aircraft and missiles. The program entitled Laser Advancements for Next-generation Compact Environments (LANCE) seeks to explore ways of reducing risk for laser weapons on aircraft...

Upgraded Lockheed Martin Laser Outguns Threat in Half the Time

In tests conducted with the U.S. Army's Space and Missile Defense Command, the 30-kilowatt class ATHENA (Advanced Test High Energy Asset) system brought down five 10.8' wingspan Outlaw unmanned aerial systems. ATHENA employed advanced beam control technology and an efficient fiber laser in the series of prototype system tests. The tests validated lethality models...
Hydrogen Fuel Cell Technology Could Bring Stealth to Army Vehicles

A Chevrolet Colorado floated over large cement blocks down a road at General Motors Proving Ground at a good clip. At first listen, it’s like the truck is part of a silent film. This is what it’s like to hear the ZH2 hydrogen cell-powered demonstrator at work that GM and the U.S. Army’s Tank Automotive Research Development and Engineering Center developed to inexpensively and …

Storing Hydrogen for Fuel-Cell Vehicles in Solid-State

Scientists at the Lawrence Livermore National Laboratory are exploring ways to use an inexpensive and layered superconductor compound to efficiently store hydrogen. They have already discovered the key mechanism used by magnesium diboride (MgB2) to absorb hydrogen and the reaction pathway that converts MgB2 to its highest hydrogen capacity form, magnesium borohydride…

Harnessing Commercially Available Geospatial Imagery for Defense Analysis

Currently, there are no straightforward ways for analysts to access and analyze the vast amount of available geospatial imagery. To help overcome these challenges, DARPA’s new Geospatial Cloud Analytics (GCA) program seeks to enable instant access to the most up-to-date images anywhere in the world. It would achieve this capability by virtually aggregating vast amounts of…

Low-Cost Wearables Manufactured by Hybrid 3D Printing

A new hybrid 3D printing technique developed by Harvard University and the Air Force Research Laboratory combines stretchable conductive inks and electronic components into flexible, durable wearable devices that move with the body and offer increased programmability. “With this technique, we can print the electronic sensor directly onto the material, digitally pick-and-place…”
Non-Lethal Weapons

**Why Law Enforcement Officers Shoot to Kill**

There are about 1,000 fatal shootings by police officers each year in the United States, according to a Bowling Green State University report from April. Is lethal force always necessary? How do situations escalate so quickly? Why do officers shoot to kill? And how else can police defuse a potentially dangerous situation? Officers are instructed to aim for the center mass of a person’s chest, because it is the target they are most certain to hit and is most likely to take the suspect down. If a suspect has a…

**South Korea Considering Graphite 'Blackout Bombs' to Paralyze North's Electrical Grid**

South Korea is actively looking to increase its defensive capabilities against the North and has been keen to develop graphite bombs, because they are not lethal to civilians. The weapons have been developed by South Korea’s Agency for Defence Development as one element of the Kill Chain pre-emptive strike program. All technologies for the development have been secured…

RMQSI

**Attacking Unplanned Downtime Through Predictive Maintenance**

The non-profit Industrial Internet Consortium (IIC) and it’s testbed programs aim to tackle the inefficiency of scheduled preventative maintenance with predictive maintenance. With the real-time data flow of IIoT-enabled machines and components, this could make preventative maintenance obsolete. Their testbed program enables real-world manufacturers to test, research and tinker…

**Army Looks Toward Realistic, Interoperable Test Beds**

As the Army moves away from a fragmented approach to development, leaders want to bring multiple systems together. In a perfect world, everything would be interoperable, but to get there, engineers need to start with an interoperable development environment. The Army does well in fielding programs on a case-by-case basis, but as it moves toward a system-of-systems construction, it…
Survivability & Vulnerability

Electronic Camouflage - the New War Paint

Traditional visual camouflage will no longer be adequate in future operating environments against more capable U.S. adversaries, one intelligence official believes. “The Marine Corps really has to get better at keeping our activities, our movements and our presence masked in the current electromagnetic environment where it is incredibly easy for adversaries … to identify and locate people, capabilities and forces,” said Phil Chudoba, assistant director of intelligence for Marine Corps Intelligence Activity.

Smart Bandage Could Promote Better, Faster Healing

Researchers have designed a smart bandage that could eventually heal chronic wounds or battlefield injuries with every fiber of its being. The bandage consists of electrically conductive fibers coated in a gel that can be individually loaded with infection-fighting antibiotics, tissue-regenerating growth factors, painkillers or other medications. A microcontroller no larger than a postage stamp…

Weapon Systems

Future Combat Systems Didn’t Truly Die

Eight years after its cancellation, some say the Army still has not recovered from the $18 billion spent on a program that went nowhere. Shortly afterwards, the Army went into a procurement trough. Sequestration and the Budget Control Act necessitated tradeoffs and readiness was prioritized over modernization. But did Future Combat Systems truly go nowhere? A look at current Army research, development and acquisition priorities suggests they will end up with most of the core FCS elements…

Army Kills Contract for XM-25 Counter Defilade Target Engagement System

The U.S. Army has ended an agreement with Orbital ATK Inc. that spanned two decades over the XM-25 Counter-Defilade Target Engagement System, a move that could put the troubled weapon system’s future into jeopardy. The XM-25 CDTE System is a semi-automatic, shoulder-fired weapon that fires 25mm high-explosive, air-bursting ammunition. Nicknamed “the Punisher” and designed…
Announcements & Events

**Aircraft Survivability Equipment Symposium**

Since 1983, the Annual AAAA Aircraft Survivability Equipment event has brought the community together to develop solutions for the Aviation Soldier. From Avionics and Survivability Equipment Repairers to Aviation Mission Survivability Officers to the project offices and policy makers, the results in training, materiel and doctrine have literally saved lives.

DATE: November 13-14, 2017

**Combined Light Armor Survivability Panel**

CLASP is a “working-level” meeting for engineers and technical personnel from both the Science and Technology development as well as systems engineers from the Program Management arena to exchange information. This creates an ideal opportunity for the technology developers to get direct feedback from the platform system engineer.

DATE: November 14-15, 2017

**54th AOC International Symposium & Convention**

The 54th Annual AOC International Symposium and Convention will focus specifically on electronic warfare (EW) system adaptability and flexibility along with innovative technologies and tactics to provide Industry, Government, and Militaries a world-class forum to address how we should change and innovate as an EW community.

DATE: November 28-30, 2017

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