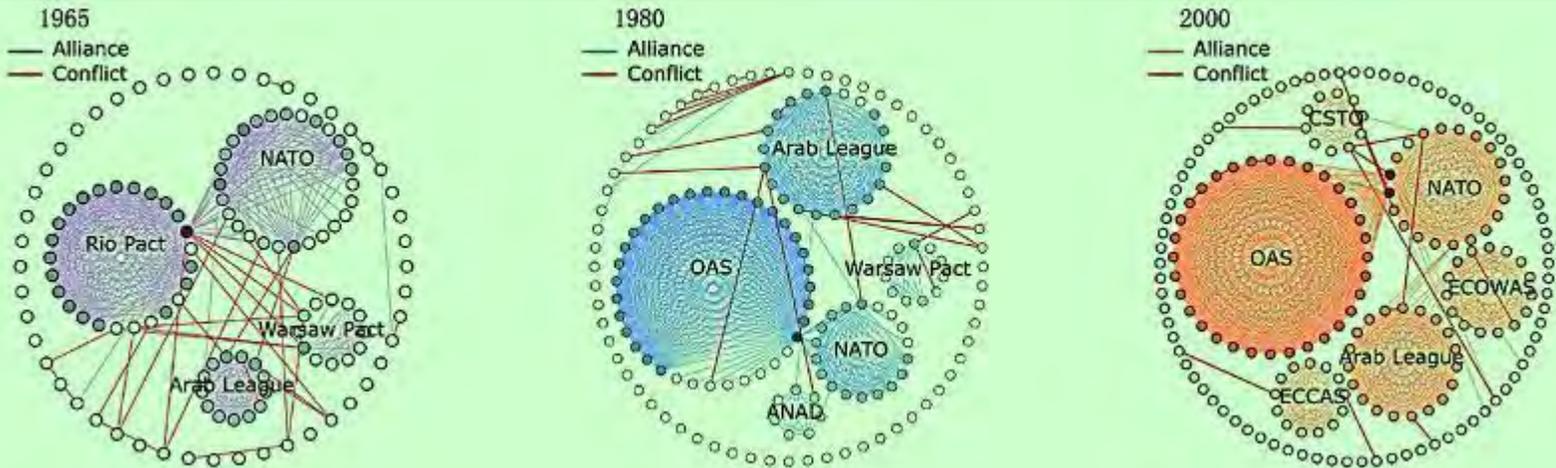


Defense Systems

NEWS DIGEST

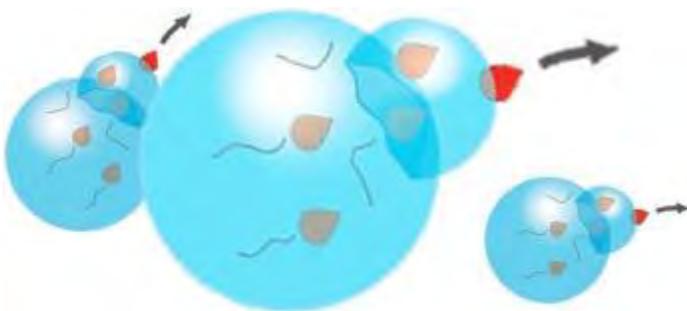
14 MARCH 2017 - THE LATEST IN DEFENSE SYSTEM NEWS



A Three-Degree Horizon of Peace in the Military Alliance Network

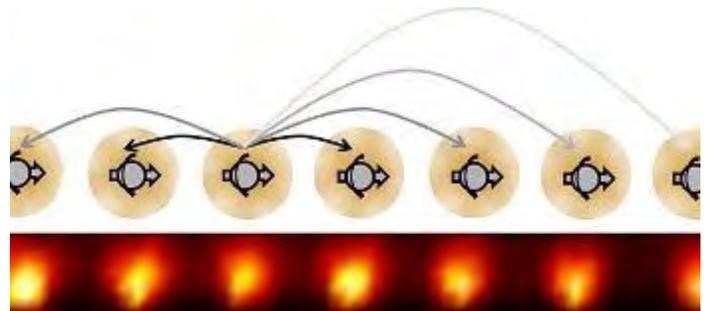
States form defensive military alliances to enhance their security in the face of potential or realized interstate conflict. The network of these international alliances is increasingly interconnected, now linking most of the states in a complex web of ties. These alliances can be used both as a tool for securing cooperation and to foster peace between direct partners. But, do indirect connections...

Advanced Materials



Nanoscale Factories Built to Order

Performing chemical reactions inside tiny droplets can help manufacturers develop greener processes for coating drugs. An A*STAR-led discovery could lead to improvements in the way drugs are delivered to the right parts of the body by uncovering the mechanisms that help oil, water, and free radicals mix in tiny droplets. Emulsion polymerization is an emerging technology...



Time Crystals: New Form of Matter Could Hold Solution to Perfect Memory

To most people, crystals mean diamond bling, semiprecious gems or perhaps the jagged amethyst or quartz crystals beloved by collectors. To Norman Yao, these inert crystals are the tip of the iceberg. If crystals have an atomic structure that repeats in space, like the carbon lattice of a diamond, why can't crystals also have a...

Autonomous Systems



Wall-Jumping Robot is Most Vertically Agile Ever Built

Roboticians at UC Berkeley have designed a small robot that can leap into the air and then spring off a wall, or perform multiple vertical jumps in a row, resulting in the highest robotic vertical jumping agility ever recorded. The agility of the robot opens new pathways of locomotion that were not previously attainable. The researchers hope that one day this robot and other vertically agile robots...



POSYDON: DARPA Working to Develop Robust Undersea Navigation System

The Pentagon's research entity and BAE Systems are working together to develop a next-generation undersea drone communications technology to help identify mines, find enemy submarines and surveil many items relevant to combat missions. Using underwater acoustic signals, a surface buoy, beacon or "node," and GPS signals in a coordinated fashion, the Positioning System for Deep...

Directed Energy



Tuning Into More Compact Laser Designs

A*STAR scientists have developed a unique fast-pulsing fiber laser that has the widest wavelength output to date. This type of laser could replace several fixed-wavelength lasers and form the basis of compact devices useful for a range of medical and military applications. The team developed an all-fiber laser, constructed similarly to a fiber-optic cable. The key component is a glass tube, whose core is doped with atoms that act as a gain medium...



China Shows Off Silent Hunter 33kW Laser, Drones and Tanks

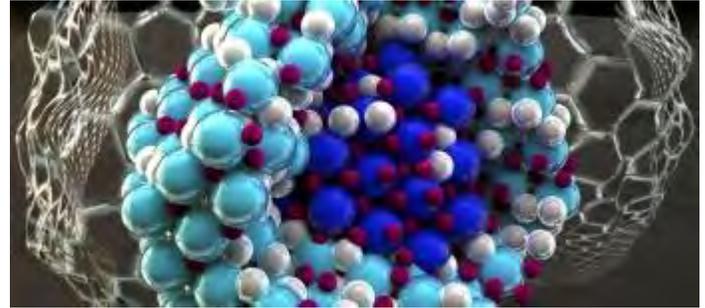
At the International Defense Exhibition and Conference, one of the world's largest arms fairs, weapons-makers from around the world show off their latest. At this year's show in Dubai, China flaunted a range of high-tech weaponry spread across 16,000 square feet of floor space. Included: S-20 attack submarines, FC-31 stealth fighter jets, and updates to laser and drone weaponry...

Energetics



NASA Distributed Propulsion and Energy Harvesting Hummingbird Engine

A new engine concept from NASA's Glenn Research Center allows for truly distributed propulsion. The concept enables airframe and system modularity by allowing parts to be swapped or repaired easily. Design changes can be applied to individual components and not the entire propulsion system. The NASA innovation eliminates heavy shafts and disks, and allows for airplane modularity...



Nano-Sized Hydrogen Storage System Increases Efficiency

Lawrence Livermore scientists have collaborated with an interdisciplinary team of researchers including colleagues from Sandia National Laboratories to develop an efficient hydrogen storage system that could be a boon for hydrogen powered vehicles. Hydrogen is an excellent energy carrier, but the development of lightweight solid-state materials for compact, low-pressure storage is a huge...

Military Sensing



Periscope-Hunting Anti-Submarine Radar Keeping the Enemy's Head Down

U.S. Navy surface warfare experts have invested a substantial amount of time and money over the past decade developing sensitive surface-search radar able to detect, pinpoint, and classify objects on the surface as small as a submarine periscope. With these advancements in systems such as the shipboard AN/SPQ-9B horizon search radar and the helicopter-based AN/APS-153 radar...



Intel Gets Serious About Neuromorphic, Cognitive Computing Future

Like all hardware device makers eager to meet the newest market opportunity, Intel is placing multiple bets on the future of machine learning hardware. The chipmaker has already cast its Xeon Phi and future integrated Nervana Systems chips into the deep learning pool while touting regular Xeons to do the heavy lifting on the inference side. However, a recent conversation we had with

Non-Lethal Weapons



Air Force Says Offensive Cyber Still in Infancy

Within the multi-domain environment the military is moving toward, the barriers between the domains of warfare should be broken and integrated in a seamless fashion. However, according to an Air Force official, offensive cyber operations from the perspective of organic service capabilities are still nascent outside of Cyber Command and the National Security Agency. Offensive cyber...



Australia Cuts Deal with U.S. Navy for Next Generation Jammer

Australian Defence Minister Marise Payne announced Tuesday that Australia has entered into an agreement with the U.S. Navy to develop the Next Generation Jammer for the Boeing EA-18G Growler, an airborne electronic attack aircraft. Payne announced the AUD \$250 million (U.S. \$192 million) investment during the opening day of the 2017 Australian International Airshow at...

RMQSI



Military Science Panel Urges Research on Low-Yield Nuclear Weapons

A US Department of Defense scientific advisory board has called on the Trump administration to rebuild the country's nuclear weapons infrastructure and modernize its nuclear arsenal. The recommendations, detailed in a December report, include the development of new, low-yield warheads to give the military the option of a limited nuclear strike. The report warns that Russia and China...



Protecting Engineering Materials from Water Impact

Erosion caused by the impact of water droplets on component surfaces can lead to failures in key technological applications. For example, in steam generating plants, the leading edge of turbine blades suffer major erosion damage from the steam driving the turbines, requiring costly maintenance and repair with consequent loss of generating capacity. Similarly, erosion caused by the...

Survivability & Vulnerability



NASA CHIEFS Lightweight, Flexible Material Resists Heat, Fire and Hot Gasses

CHIEFS (Convective Heating Improvement for Emergency Fire Shelters) is being developed by NASA's Langley Research Center to potentially improve emergency fire shelter performance for wildland firefighters. The CHIEFS system is capable of withstanding temperatures up to 3000 °F, and includes flame and hot gas barrier layers. NASA is working closely with the USDA Forest Service...

Marine Veteran Out to Make World's Strongest Body Armor

Blake Waldrop is working to build a superior version of body armor that will save the lives of law enforcement officers and soldiers. And if he needs to shoot up a few dozen samples to make sure it can do the job, so be it. Waldrop's interest stems from personal experience: A comrade in his company died wearing Marine-issued body armor during a 2005 IED attack in Iraq. One of his designs has been tested to withstand six rounds of armor-piercing rifle ammunition - a feat he says is unmatched...

Weapon Systems



Viper Attack Helicopters Give Marines New Weapon for Pacific Arsenal

The next time Marines hit a Pacific beach, they will have the most advanced attack helicopter in the world at their backs. Eight AH-1Z Vipers began arriving at Marine Corps Air Station Futenma in late November to permanently replace the service's aging fleet of AH-1W Super Cobras, Marine officials said, and more are on the way. Though they have made sporadic appearances in the...

BAE Systems Boosts Railgun Efforts with Acquisition of IAP Research

In an effort to accelerate progress on the electromagnetic railgun development, BAE Systems announced the acquisition of Ohio-based IAP Research. Prior to the acquisition, IAP Research was a major BAE Systems subcontractor on the U.S. Navy-led development of an electromagnetic (EM) railgun. The Dayton team, which is part of BAE's weapons systems business, has more than 35...

Announcements & Events



2017 Aircraft Survivability Short Course

An overview of the aircraft combat survivability discipline for those working in fields such as survivability modeling and simulation, ballistic and vulnerability testing, susceptibility and vulnerability reduction, and systems engineering. The course will also benefit personnel working program management and acquisition of DoD aircraft.

DATE: April 4-6, 2017



WCX17

WCX17 is a full-sensory event experience that immerses you in the forefront of the automotive and mobility industries. The event emphasizes active learning and increased collaboration through interaction and dynamic new event elements. In a setting of education and relationship building, these elements foster knowledge-sharing and review of the evolving industry.

Date: April 4-6, 2017



SPIE Defense + Commercial Sensing 2017

The leading global technical conferences, courses, and exhibition on sensing, imaging, and photonics technologies for defense, security, health care, and the environment. Hear the latest technical advancements in sensors, infrared technology, laser systems, spectral imaging, radar, LIDAR, and more.

DATE: April 9-13, 2017

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