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Related Categories: Cybersecurity and Cyberwarfare; International Economics and Trade; Military Innovation; Missile Defense; Israel

THE FUTURE OF WINGBOT SQUADRONS

The idea of combined human and drone aerial fighter squadrons is not new, but defense contractor BAE Systems is bringing militaries one step closer to that reality with a prototype drone name "Taranis." The new British fighter plane is capable of being controlled remotely by a pilot on the ground or in the air, and by utilizing artificial intelligence software the craft is capable of autonomous take-offs and landings, as well as the selection and strikes on targets while in flight. Moreover, some of the technology necessary to synchronize manned and unmanned "Taranis" operations already exists in the Lockheed Martin F-35. Nations such as China and Japan are currently working to develop their own models of unmanned aircraft, ushering in a new wave of aerial technology that could have a significant impact on future military operations. Japanese officials believe the drones can be used to divert incoming missiles from a manned squadron leader using advanced maneuvering with G-forces unsustainable to humans. (*The Economist*, July 5, 2018)

GENETICALLY ALTERED BIO-WEAPONS ON THE HORIZON

CRISPR, the acclaimed genetic modification technique with major promise for fighting disease, also has the potential to develop devastating bio-weapons, a new report from the National Academy of Sciences has warned. CRISPR provides researchers with an efficient way to alter genes to halt diseases in human embryos and even slow cancer growth in adults, the study argues. However, a nefarious actor can also use the technique to engineer pathogens from DNA sequences found in publicly available databases. Newly-created bio weapons, in turn, pose a significant threat because the gene modification could result in reduced immunity, making the human body more susceptible to harmful pathogens. As the technology becomes more mature in this field, these risks - and the imperative to develop countermeasures - become more urgent. (*ThePrint*, July 8, 2018)

THE RACE FOR QUANTUM DOMINANCE

The race to harness the power of quantum computing is on, and China may be ahead of the U.S. The PRC already has satellites with hack proof communications arrays that utilize quantum technology (see *Defense Technology Monitor* No. 21). The Pentagon is now heavily focused on harnessing quantum technology and quantum science for military applications, and military leaders like Michael Hadyuk, the U.S. Air Force's chief of computing and communications, term it "very disruptive technology." According to Hadyuk, a particularly important application of quantum technology lies in its ability to provide an alternative to GPS based navigation and guidance on a contested battlefield. In such a scenario, quantum computing technologies and internal navigation systems would allow weapon systems to synchronize and function effectively despite GPS degradation. But in order to better compete in the quantum race, the U.S. must produce and retain quantum physicists, quantum engineers, and develop a domestic supply chain for the production of quantum technology. (*Space News*, July 15, 2018)

DAVID'S SLING COMES OF AGE

Israel's Iron Dome missile defense system has been heralded for its sterling performance in thwarting barrages of short-range rockets launched by the Hamas terrorist group from the Gaza Strip over the past couple of years. However, Israeli defenses are in the process of being augmented by a lesser known (and previously unproven) anti-missile system known as David's Sling. David's Sling has just passed its first unscripted test, intercepting two SS-21 missiles launched toward Israel from Syria as a result of fighting there. The ballistic missiles, carrying half-ton warheads, were successfully diverted away from the Sea of Galilee without causing injuries or damage. The joint U.S.-Israeli system was developed to protect Israel from large caliber rockets or short range ballistic missiles fired from adversaries located near Israel's borders. (UPI, July 23, 2018)

SOLVING THE PROBLEM OF SEA MINES

The process of searching and destroying sea mines just became significantly easier through the development of a helicopter-mounted laser detection system. In combat zones, sea mines can be crippling to vessels, and current methods of sea mine discovery are arduous. However, the recent "Rim of the Pacific" (RIMPAC) exercises afforded Navy sailors the opportunity to provide operational feedback on the Airborne Laser Mine Detection System (ALMDS), a mine detector mounted on a U.S. Navy MH-60S helicopter. The ALMDS allows faster detection of mines over a much wider surface area than traditional countermining methods. The emerging technology will provide a significant boost to the survivability of U.S. littoral combat ships, and allow these vessels to more rapidly conduct anti-submarine and reconnaissance. (*Fox News*, July 20, 2018)

