



Accelerating Army Modernization

Autonomous Networks	Autonomy for Maneuverability	Materials Science & Manufacturing	Cybersecurity	Biotechnology	Power & Energy
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Message from Heidi Maupin, ARL South Region Lead:

ARL has changed leadership since our last newsletter. In November 2019, Dr. Philip Perconti was promoted to a position within the Assistant Secretary of the Army. As sad as we were to see Dr. Perconti vacate his position, we were just as pleased to have Dr. Patrick Baker assume the ARL Director role, and congratulate both in their leadership positions. (pg 2)

Some of our best and brightest ARL researchers are positioned within our Open Campus Regions, and this issue highlights recognition of our people and teams. (pg 3) All the combined energy that we have exerted to build our collaborations is paying off! I've included in this issue "snapshots" describing a number of successful research advancements resulting from our Open Campus partnerships. (pg. 9)

With the Army Futures Command (AFC) located in Austin, Texas we are able to augment our basic research with research and development activities sponsored by AFC at our partner universities. This issue includes plans for the RELLIS campus at TAMU. AFC is helping us keep "Army" in our Army Research Lab by including Soldier perspective from nearby military bases.

CCDC ARL SOUTH JANUARY 2020

Combat Capabilities Development Command
Army Research Laboratory (CCDC ARL) South
University of Texas at Austin
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ARL South Visitor
Signature Wall

Our accelerated research advancements would not have happened without our Open Campus research partners who have embraced the type of collaboration we seek. This issue highlights planned and new innovation and collaboration hubs sponsored by our partner universities that demonstrate dedication to collaboration among our university partners (pg. 12).

I encourage you to pass along any recommendations that would enhance our collaborative effort, ideas to improve communication, and articles highlighting success through our Open Campus partnership. ARLSouth@arl.army.mil



New Army Leadership Role for Dr. Phillip Perconti

Congratulations to Dr. Phillip Perconti, former Army Research Laboratory (ARL) Director, who in November 2019 was promoted to Deputy Assistant Secretary of the Army (Research and Technology) and Chief Scientist, Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology). ARL South bade a bittersweet farewell to Dr. Perconti, who embraced our Open Campus research model. Through his leadership we were able to build the strong networks of collaborative research at all four of our Open Campus regions. We are grateful to Dr. Perconti for successfully leading ARL's transformative change in how the Army performs foundational research so that we can ensure superior technological advantage for our Soldiers. Prior to hearing of Dr. Perconti's promotion and pending departure from ARL, we were honored to host our ARL Director at one of our partner universities, Rice University, in October 2019, as we kicked off a new collaborative research agreement. (pg. 6)



Phil Perconti speaks candidly about Army research collaborations during ARL/Rice U event in October 2019.

ARL South Welcomes Dr. Patrick Baker, Army Research Laboratory Director

On December 8, 2019, Dr. Patrick J. Baker assumed the position of the seventh director of the CCDC U. S. Army Research Laboratory. Dr. Baker most recently served as the director of the laboratory's Survivability Lethality Analysis Directorate before overseeing its transition to a new organization, the Data and Analysis Center. Dr. Baker has always been an advocate of our Open Campus research model and will be visiting each of ARL's four regional offices, including ARL South, in March 2020. John S. Willison, CCDC deputy to the commanding general commented, "Under [Baker's] leadership, CCDC ARL will continue to build on a history of innovative science and technology while contributing to our command's critical role as a component of the Army Futures Command."

Prior to his new ARL leadership position, Dr. Baker visited one of our partner universities, UTEP, in November 2019. Dr. Baker is seen in the photo on the right with UTEP President, Heather Wilson.



Pat Baker, ARL Director with UTEP President Heather Young during a recent visit.



Recognition



Dr. Kristin Schweitzer,
ARL South/HRED

ARL South Researcher Kristin Schweitzer Receives the Department of the Army Meritorious Civilian Service Award

ARL South is honored to have such high caliber researchers like Ms. Kristin Schweitzer (ARL-S/UTSA) as part of our community.

Kristin has been recognized for her support to the United States Army Evaluation Center. She developed the critical and definitive summary for the Secretary of the Army to make a "best selection" of electronic physical access control systems for Army Installations' first line of defense against undesirables, malcontents, and terrorists to protect our global workforce, military personnel, and families. Kristin's outstanding contributions and professionalism reflect great credit upon herself, the United States Army Test and Evaluation Command, and the Department of the Army.

"Kristin truly earned this prestigious award! After working with her for 11+ years it is refreshing to see such a deserving scientific researcher recognized by the customer," said Dr. Ray Bateman (ARL S-UTSA).



The **Meritorious Civilian Service Award** is the third highest award granted by the Commanders (MG and above or civilian equivalent). It consists of a medal, lapel button, and citation certificate. Nominees must have established a pattern of excellence, normally demonstrated by the receipt of lower level awards. The award is comparable to the military Meritorious Service Medal.

POC: Ray Bateman
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UT Arlington Wins National Science Foundation Award

The Army relies on accessible and accurate data for every aspect of operations, as well as research and development. UT Arlington faculty, collaborating with ARL South researchers Drs. Laura Marusich Cooper (ARL-S/UT Arlington) and Jonathan Bakdash (ARL-S/UTD), were awarded the National Science Foundation's Convergence Accelerator award. The Convergence Accelerator award is a pilot program aimed at leveraging multidisciplinary research by supporting diverse research teams consisting of academia, government and industry partners working on research with a high potential for disrupting technology for both public and private sectors. The first phase of this project is to develop new capabilities to ensure the quality and credibility of information collected in large assemblages of data known as knowledge graphs or knowledge networks.

Many of today's intelligent software products are powered by massive knowledge assemblages which are often proprietary. Developing an openly available infrastructure based on public data is one of the overarching tracks of the overall Convergence Accelerator Pilot in 2019. The goal of this specific project is to ensure credibility -- integrity, completeness and truthfulness -- in developing such an open knowledge network. As such, this project's efforts are likely to provide insights and value to many of the Convergence Accelerator Phase I efforts initiated in 2019. This project will support the understanding, decision making, and mitigating security threats from software vulnerabilities by looking at the validity and reliability indicators of compromise within collections of cyber threat intelligence.



UNIVERSITY OF
TEXAS
ARLINGTON



POC: Jonathan Bakdash
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Recognition



The National Academy of Inventors Names Three ARL South Researchers as 2019 Fellows

On December 5, 2019, three researchers associated with Army research projects within ARL South received the prestigious honor of being named 2019 Fellows for the National Academy of Inventors. This honor is bestowed annually to researchers who have "demonstrated a spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society" according to the NAI. We are honored to have their expertise and influence here in the ARL South region.



Ryan Wicker (UTEP)
ARL South faculty partner, Dr. Ryan Wicker, is the Director of the W.M. Keck Center for 3D Innovation at the University of Texas at El Paso. He collaborates with ARL to solve Army problems using additive manufacturing.



Eric Wetzel (ARL/WMRD)
ARL/Rice/UTD/MIT is collaborating on the development of 2D materials. Eric partners with PerVivo as part of an ARL CRADA on rate dependent materials response.



John La Scala (ARL/WMRD)
John oversees several projects across ARL South with UT Dallas, UT Austin and Rice University on the development of 2D materials for the Weapons and Materials Research Directorate at ARL.

ARL South Welcomes New UTEP President, Heather Wilson



From left to right: Ms. Thentiem Acosta, President Heather Wilson, Dr. Jaime Acosta.

The University of Texas at El Paso welcomed former U.S. Secretary of the Air Force, Heather Wilson as their new president on September 5, 2019. President Wilson succeeds Diana Natalicio, who served as the university's president since 1988.

UTEP is home to ARL South researcher Jaime Acosta, leading research in Cybersecurity at the UTEP/ARL Center for Cyber Analysis and Assessment. Jaime attended the welcoming reception.

The selection of a former high ranking Defense Agency leader for the position of UTEP President further accentuates the great connection ARL has with our UTEP partner and the El Paso community, also home to Fort Bliss.



From left to right: Former UTEP president Diana Natalicio and new president Heather Wilson.



Recognition

ARL South Research Included in Top 10 Coolest Army Science and Technology Advances of 2019: Dr. Frank Gardea and Texas A&M University



Dr. Frank Gardea and his academic partners at TAMU recently developed a stimuli responsive polymer for additive manufacturing. This exciting new material displays ambient (room) temperature self healing behaviors that can potentially be used in Army air and ground vehicles. The material can also be programmed to morph with varying temperatures, leading to potential reconfigurable Army platforms of the future. This research was included in the Top 10 Coolest Army Science and Technology Advances of 2019 and can be seen as #2 in the video link below!

<https://youtu.be/Vm4of5KOaml>

Dr. Frank Gardea is an Army researcher embedded within the Material Science and Engineering Department at Texas A&M University. Frank has been working on developing new materials that will change the face of Army technologies under the new Discovery and Innovation effort for ARL's Vehicle Technology Directorate.



POC: Frank Gardea; frank.gardea4.civ@mail.mil



ARL South Researcher Valerie Rice Wins Best Paper at Resilience Week 2019 Symposium



ARL South researcher, Dr. Valerie Rice, located at Fort Sam Houston, received Best Paper at the 2019 Resilience Week Symposium in San Antonio, TX. The winning paper is titled, "Resilience and mindfulness in active duty and veteran U.S. military service members." Dr. Rice works for the Human Research and Engineering Directorate (HRED) at CCDC ARL, focusing on mindfulness based stress reduction research for individuals in high stress environments.

The paper was selected to help shape discussion at this year's Resilience Week Symposium which is aimed toward using research findings to develop programs (shown to be effective) for use in national and regional Emergency Operations to ensure a secure and reliable flow of energy across the nation.

"Large disasters may ripple across cities, regions or even nationally through interconnected critical infrastructure systems. Right now, many of those connections are invisible, making it very difficult to put effective mitigation strategies in place. Critical links are often uncovered too late, causing greater impacts to infrastructure and challenging recovery efforts on the ground..."

To receive a copy of Dr. Rice's winning paper, please contact Corine Romero at Corine.Romero.ctr@mail.mil





Events

The University of Texas at El Paso hosts U.S. Army Futures Commanding General John. M. Murray

General John M. Murray, Commanding General of Army Futures Command, made a special visit to El Paso, TX on December 16, 2019 to take a first hand look at the university's military focused research and engineering capabilities. Gen. Murray visited with, Rep. Veronica Escobar, D-Texas, Army and university researchers in the College of Engineering, and other university facilities already working on Army problems. UTEP was one of ARL's first CRADA partners since we established our Open Campus initiative. We collaborate with UTEP in the areas of additive manufacturing and cybersecurity. Dr. Jaime Acosta, ARL researcher specializing in cyber security and located at UTEP was able to meet with Gen Murray representing ARL South.

POC: Heidi Maupin, hedwig.e.maupin.civ@mail.mil



ARL/Rice University Kicks Off Collaborative Research

On 31 October 2019, about 200 researchers from Rice U and the Army Research Laboratory gathered at Rice U to discuss our new collaboration "An Integrative Program in Advanced Materials and Next Generation Networks." We were able to listen in on a conversation between our leaders, Dr. Yousif Shamoo, Vice President of Research, Rice U, and Dr. Phil Perconti, Director, ARL, as they discussed their vision for the new collaboration. Executive leaders from ARL and senior Rice faculty provided a panel discussion to share their thoughts of the research. We completed the morning with a panel discussion about Open Campus opportunities and then a poster exhibit of on-going research at Rice.

Our new research collaboration is aimed at achieving unprecedented intelligence, surveillance, and reconnaissance capabilities specifically focused on next-generation wireless networks and radio frequency. Our researchers will jointly focus on synthesizing diamond-based electronics which present a fundamentally new platform for building device architectures with improved thermal and electromagnetic properties that can enable next generation autonomous and responsive networking. The knowledge we gain from this initiative will generate disruptive technological advancements for our soldiers.



Rice VPR Yousif Shamoo, SGM Snipes (ARL), Dr. Philip Perconti (Former Director, ARL) cutting the cake in traditional Army style.



VPR Yousif Shamoo, and (Former) ARL Director, Philip Perconti during a candid conversation.



Why Diamonds? Panel: Pulickel Ajayan (Rice U), Cynthia Bedell (Director, CISD), Keith Krappels (Director, SEDD), Ashutosh Sabharwal (Rice U).



SGM Snipes, ARL Senior Enlisted Advisor with ROTC Cadets from University of Houston

POC: Heidi Maupin, hedwig.e.maupin.civ@mail.mil



Events

Defense One Genius Machines: The New Silicon Valley Accelerating Military Innovation Panel

With the Army Futures Command planting roots in Austin and centers dedicated to Department of Defense research springing up throughout the south, Texas is quickly becoming the place to observe the latest in research advancement. The Genius Machines Summit series aims to showcase the government leaders, tech experts, researchers and thought leaders who are shaping the future of artificial intelligence.

Heidi Maupin, ARL South Lead, was one of three panelists on the Defense One Genius Machines: The New Silicon Valley Accelerating Military Innovation Panel. The event was held on September 25, 2019 in San Antonio, Texas. The panelists described the role of Artificial Intelligence in the pursuit of technology acceleration for both military as well as commercial applications, leading to societal benefit. Heidi was joined on the panel by Zach Walker, Texas Lead for the Defense Innovation Unit, Matthew Scott, Managing Director for AFWERX-Austin, U.S. Air Force, and moderated by Patrick Tucker, Technology Editor at Defense One.



POC: Kathleen Delano
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Cybersecurity Network Traffic Annotation Workshop

Dr. Jaime Acosta hosted a cybersecurity network traffic annotation workshop at Adelphi, Maryland for several CDC ARL Network Security Branch (NSB) personnel on August 15, 2019. The workshop was a synergistic collection of several efforts contributed by ARL co-workers in the branch and UTEP students and faculty. The content was hosted at UTEP and accessed remotely. Throughout the workshop, participants learned how to collect and annotate actions and network traffic related to cyber security phenomena. The annotations were converted into intrusion signatures and participants were charged with refining their work until they achieved a perfect score. The workshop was a successful demonstration of the Collaborative Innovation Testbed and other collaborative research and development efforts between CDC ARL NSB and UTEP, an ARL South satellite location.

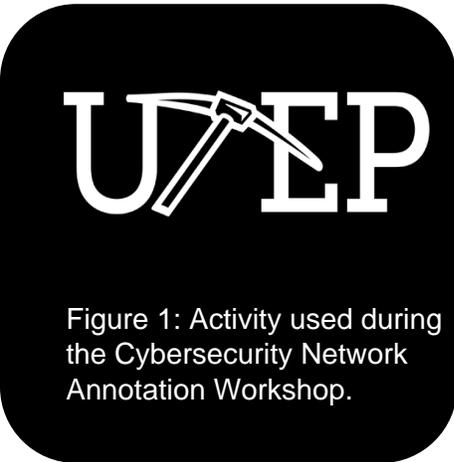
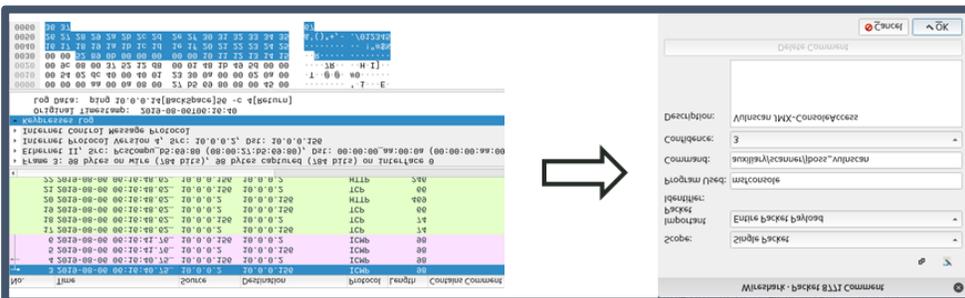


Figure 1: Activity used during the Cybersecurity Network Annotation Workshop.



Traffic annotation exercise screenshots

POC: Jaime Acosta
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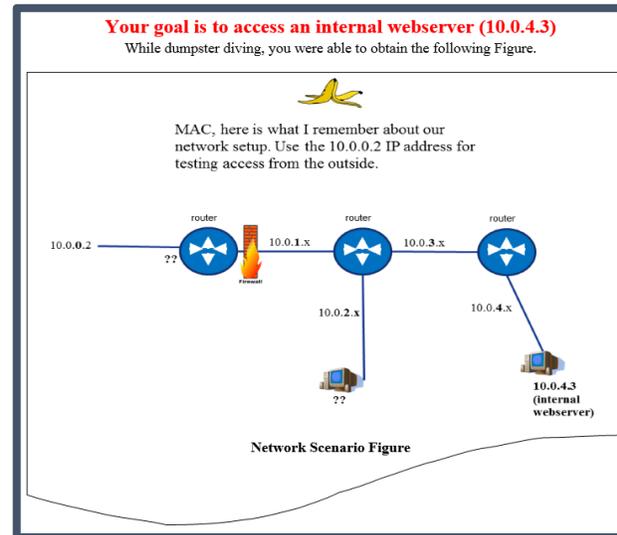


Figure 1



Events

ARL/UNT Address UAS Common Research Configurations

Rajneesh Singh (ARL/VTD) delivered an invited seminar at University of North Texas, Denton on 9th Oct 2019. Dr. Singh provided an overview of research challenges and opportunities in Unmanned Aerial System design technologies. Dr. Singh described ARL's Common Research Configuration (CRC) initiative which engages the vertical flight S&T community to collaboratively address these challenges. After the seminar, the ARL and UNT participants were able to observe a demonstration of the CRC-3 platform fabricated at UNT.



UNT also provided an overview of their cross-department Capstone senior design project. Three projects were created on UAS vehicle platform technologies areas, including adjustable rotor blade pitch for UAS operations, versatile platform for measuring aerodynamics and aeroacoustics characteristics of UAS, and design and manufacturing concepts of UAS morphing structural elements. ARL/VTD SMEs serve as mentors on each of these projects.

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ARL/VTD on Military Operations Panel at the 21st Annual UAS TAAC Conference, New Mexico State University



Mr. Fred Hughes (VTD) was invited to participate on a panel focused on UAS in Military Operations at the 21st Annual UAS TAAC Conference in Las Cruces, New Mexico on December 10.

The Military Operations panel was led by BG (RET) Eric L. Sanchez, whose current role is Deputy Director for the New Mexico State University, Physical Science Laboratory. Mr. Hughes was accompanied on the panel with representatives from the Defense Threat Reduction Agency, White Sands Test Center, Holloman Air Force Base, and Virgin Galactic.

Mr. Hughes presented a perspective on collaborative UAS development between the US Army, DARPA, industry and academia to meet the challenges associated with multi domain operations.

NMSU has helped to create an environment focused on UAS technology that includes several facilities as well as industry partners from both in and outside of New Mexico.

POC: Fred Hughes, frederick.j.hughes2.civ@mail.mil





Snapshots of Success: Autonomy for Maneuverability

Bell/ARL Collaboration Demonstrates Autonomous micro-UAS Flight

Collaborations between Bell and ARL have met some remarkable milestones, and in December 2019 researchers met at the Ft Worth facility where they demonstrated a small Unmanned Air System (sUAS) vertical takeoff and landing (VTOL) concept vehicle in support of Future Vertical Lift. This sUAS is a Soldier portable long range micro VTOL asset weighing roughly 1 pound with vertical VTOL capabilities, an estimated flight time of 60 – 90 minutes and an estimated range of 30+ km. The demonstration included autonomous takeoff, maneuver to GPS waypoints, and landing. This work supports the Army Modernization Priority for Future Vertical Lift by providing knowledge and understanding of unprecedented capability in sUAS platforms for use in a variety of Army aerial applications. We continue to collaborate with Bell to implement and demonstrate more autonomous behaviors onto the vehicle with an extended flight time.

POC: Dr. John Hrynuik; john.t.hrynuik.civ@mail.mil



Toward Robotic Imitation Learning

Garrett Warnell (ARL S/CISD/UT Austin) has been advancing artificial intelligence and machine learning technology to allow future Army robots to learn new skills by simply watching human demonstrators. In particular, Garrett and his collaborators at The University of Texas at Austin have proposed and studied new *imitation from observation* algorithms. Using these techniques, Garrett and his team have shown that robots can learn from observation, similar to how humans are able to learn from watching YouTube videos. Ultimately, Garrett's intent is to provide soldiers the capability to directly teach Army robots new behaviors to robots from video alone.



TEXAS
The University of Texas at Austin

POC: Garrett Warnell;
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Snapshots of Success: Materials and Manufacturing

Hydrogen Assisted Processing of Ti-6Al-4V

ARL researchers working alongside TAMU researchers and also collaborating with University of Utah researchers developed a process that will dramatically improve the properties of additively manufactured Ti alloy without post process working of the metal. This novel and simple process will enable retention of the near net shape capability of additive manufacturing. The team showed that their new heat treatment process increases the alloy toughness by 225%. Titanium is a material that could be used for replacement parts; this process will be cost effective for point of need/use part production. The researchers are currently in discussion with a major 3-D printing company to license the technology.

POC: James Paramore;
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Monolithic Tungsten for Kinetic Energy Munitions

ARL researchers embedded within the Texas A&M University (TAMU) laboratory have been collaborating with ShearForm Inc., a TAMU spinoff company, and researchers from Armaments Center to advance a process that will produce dramatically improved properties of tungsten and tungsten alloys. By using severe plastic deformation, they have created a tungsten alloy with improved toughness that exhibits a self-sharpening behavior similar to the behavior of depleted uranium. Tungsten and its alloys are useful for the Army as a kinetic energy penetrator material. These materials are also of interest to the nuclear energy companies as a secure containment device.

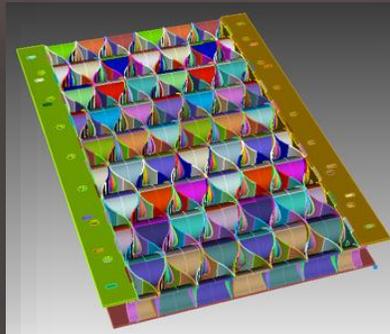
POC: Brady Butler; brady.g.butler.civ@mail.mil



Rapid Manufacturing and Testing: Cutting R&D cost by \$millions and time by years!

Many researchers have been designing and producing small scale prototype structures using additive manufacturing (AM) techniques, but no one had evaluated how representative the properties of these small scale prototypes are when compared with the scaled up size. Researchers from UNT, ARL, West Point, the Naval Academy, and Quad City Manufacturers teamed up to design, print, and test small scale hull structures to determine underbody blast resistance of the newly designed prototypes. They compared the properties with the scaled up test results and demonstrated that the small scale prototype designs were representative of their larger corresponding versions. This validation allows researchers to confidently pursue R&D to advance vehicle protection using the smaller AM printed manufacturing methods, and enable R&D time to be reduced from years to weeks and costs reduced from millions to thousands of dollars. The team will continue to develop new alloys that represent the fielded alloys commonly used by the Army.

POC: Chris Cummins; christopher.j.cummins4.civ@mail.mil





Snapshots of Success: Power and Energy

Wireless Power Transfer for Seamless Power Offloading to a Small UAV

In August 2019, Dr. Argenis Bilbao (ARL South/SEDD@TTU) and researchers from the Vehicle Technology Directorate (VTD) successfully demonstrated wireless power transfer to a small Unmanned Aerial Vehicle (UAV). In their demonstration, the UAV autonomously landed on a designated landing platform to wirelessly recharge its battery. The researchers are working diligently to achieve their next milestone of transferring power while both the UAV and the manned or unmanned land vehicle with the charging device are in motion. Dr. Bilbao's technology uses a first of its kind inductive-resonant wireless power transfer method that features "Maximum Power Point Tracking" technology to achieve higher recharge rates and/or increased efficiency under non-ideal conditions.

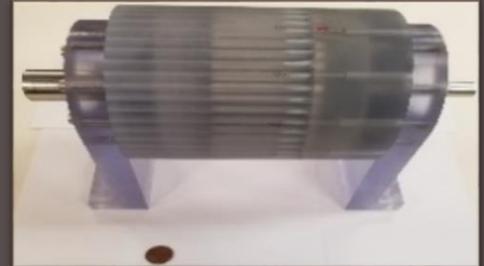
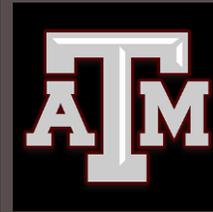
POC: Argenis Bilbao; argenis.bilbao.civ@mail.mil



Magnetic Gear Prototype Demonstration

An ARL researcher embedded within a TAMU laboratory teamed with TAMU researchers as they modeled, designed, and built a magnetic gear prototype. The gear demonstrated >99% efficiency. Potential advantages of magnetic gears over conventional mechanical gears include dramatically reduced noise and wear to the parts, as well as inherent overload protection, resulting in much longer service time.

POC: Matt Johnson; matthew.c.johnson186.civ@mail.mil



Wearable Power

ARL researchers collaborating with UT Austin researchers successfully demonstrated remote charging of a cell phone from an electronic tattoo on the palm. Wirelessly transmitting power from a central battery source on the body's core to powerful electronics on the periphery is a critical component of adding new capabilities for the Soldier, reducing both cabling and battery weight and complexity. We have demonstrated improved efficiency of getting the power from the palm to a handheld device, successfully charging an iPhone from a stretchable e-tattoo. The project is a unique synthesis of UT Austin's expertise in stretchable device fabrication and ARL's expertise in design of wearable wireless power coils and systems. We are also collaborating with materials scientists at Iowa State University to identify an effective thermal management material to allow soldiers to safely transmit higher power levels to handheld devices. Ultimately, we will be able to use stretchable fabric in uniforms to move power safely and efficiently across the body.

POC: Nathan Lazarus; nathan.s.lazarus.civ@mail.mil



Zeta Energy

A start-up company resulting from successful research at Rice University has developed an efficient, light weight battery that eliminates problems associated with current Li ion batteries. ARL researchers are relying on this battery to support the medical drone research collaboration with Rice U, Pitt, CMU, and ARL. Zeta Energy's battery is able to charge in less than 20 minutes, a fraction of the time it takes to charge conventional Li ion batteries, and it can hold its charge for more than 10 times longer than the conventional lithium ion batteries. Zeta Energy has delivered the battery to C5ISR in Aberdeen, MD to be tested in its Prototype Insertion Facility.

POC: Thad Thomas; thaddeus.p.thomas.civ@mail.mil





Innovation and Collaboration Hubs

Ballistic, Aero-Optics, and Materials (BAM) Testing Range at Texas A&M University RELLIS Campus

The Army Futures Command recognizes the great opportunities at Texas A&M (TAMU). The RELLIS campus, which stands for the university's core values of respect, excellence, leadership, loyalty, integrity and selfless service, covers over 2,000 acres of land and promises to be a place where research and technology can be discovered and quickly transferred to tangible products that our armed forces can use in the near future. The RELLIS campus has quickly drawn the attention of government, academic and industry leading experts and has been designated the new site for the second missile testing range in the nation for hypersonics, named the Ballistic, Aero-Optics, and Materials (BAM) Testing Range.

The BAM testing range is being envisioned as an intermediate facility that bridges the gap between bench-top and full-scale tests. The proposed equipment is a highly instrumented 1 km long and 2 m diameter closed environment to provide a new opportunity to assess aero-optic effects on high-energy laser propagation, provide realistic hypersonic flight conditions, and large-scale hypervelocity impacts. The planned facility will enable extensive tests under realistic atmospheric conditions including a quiescent environment, turbulence, weather, and particulate effects. ARL South currently has six army researchers on the TAMU campus advancing capabilities in Power and Energy, Materials Science, and Unmanned Aerial Systems.

POC: Pamela Clark:
Pamela.d.clark.civ@mail.mil



RELLIS Campus layout

Proposed RELLIS campus building

OTC ribbon cutting ceremony

Operational Test Command's (OTC) Army Technology Integration Center (ATEC) Ribbon Cutting Ceremony, August 28, 2019

ARL South enthusiastically participated in the grand opening of the Operational Test Command's Technology Integration Center. The center connects test technology developers and users worldwide with other engineers, analysts, technicians, and educators. In addition, this Center will be leveraged to connect to the greater Killeen community. The Killeen Independent School District, Central Texas College and the Texas A&M University - Central Texas signed a charter pledge on Cyber Information Sharing following the ribbon cutting event.

Following the ribbon cutting event, Texas A&M - Central Texas held a summit at the college and discussed upcoming plans to build a Research Park in the Killeen area to serve as a gateway to Fort Hood and the OTC. While still early in the planning stages, team members from the college, Killeen Chamber of Commerce, Deloitte Consulting, and the Heart of Texas Defense Alliance outlined the need for critical cyber analysts workforce that will initially be the primary focus of research activities at the Park.

The ATEC/Texas A&M-Central Texas relationship serves as a bridge for Soldier testing of promising technologies developed through Army and academic collaboration in academic test beds like that under development on the TAMU Rellis Campus in College Station. Soldier feedback will be essential as technology solutions progress toward a proof-of-concept prototype and ultimately to a new Army capability. Relationships like these are essential for garnering this feedback earlier in the development cycle.

POC: Shannon Strank
Shannon.m.strank.civ@mail.mil



Innovation and Collaboration Hubs

National Security Collaboration Center (NSCC) in San Antonio, TX

Since the establishment of ARL South, we have had a presence at the University of Texas at San Antonio (UTSA). UTSA welcomed us warmly with open arms, and our two ARL researchers Raymond Bateman (ARL/CISD) and Kristin Schweitzer (ARL/HRED) collaborate with UTSA, NSA, and the plethora of cybersecurity experts for which San Antonio is known. Together we join the powerhouse of forces that is UTSA's National Security Collaboration Center (NSCC) to safeguard against prevalent and quickly evolving security threats that affect many communities within military, other government agencies, and industry. The facility where the center will be housed is currently under construction, yet the NSCC is already operating in a bridge facility on UTSA's main campus. The new building will be co-located with UTSA's School of Data Science and will stand adjacent to the new home for the university's College of Business. Planned opening of the facility is expected in 2021 and will be located in the heart of downtown San Antonio, attracting beneficial collaboration between federal agencies and the tech community with its presence. Retired Brigadier General Guy Walsh was recently named as NSCC's Executive Director. Walsh previously served as the Technical Advisor to the Deputy Commander of the U.S. Cyber Command in Fort Meade, Maryland.



POC: Sarah Hada
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Rice University's Midtown Innovation Hub, "The Ion"

Rice University has initiated construction to transform the former Sears building in Midtown Houston into "The Ion," a building that will be integral to Houston's new South Main innovation district. The building will serve as a co-working space, provide resources for entrepreneurs and startups and host events. Army Research Laboratory will be keeping an eye on (ahem, an "ION"...) the innovative activities that will occur there, and looks forward to engaging with the Ion community. Participating organizations include government agencies such as NASA, DOE, industry, and universities in the area, including University of Houston, the University of St. Thomas, Houston Community College, Texas Southern University, Houston Baptist University, San Jacinto College, and the South Texas College of Law. Texas A&M University will also be invited to join the Ion community. Station Houston, the city's hub organization for tech entrepreneurs and the broader startup community will have a huge presence in the Ion, overseeing its programming.



Rice President David Leebron stated, "We chose the name Ion because it's from the Greek *ienai*, which means 'go.' We see it as embodying the ever forward motion of discovery, the spark at the center of a truly original idea. It also represents the last three letters in many of the words that define the building's mission, like inspiration, creation, acceleration and innovation." Construction on the 270,000 square foot building began in May 2019, and is expected to be completed by early 2021.

POC: Nathan Cook
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Upcoming Events

- February 6, 2020---Research Day at University of Central Florida with Lockheed Martin and ARL
RSVP Contact: Patricia Carten, patricia.carten@lmco.com
- February 11-12, 2020---Army Rapid Capabilities and Critical Technologies Office (RCCTO) Innovation Days, Austin, TX
- February 13, 2020---French American Innovation Day, TAMU, College Station, TX
- February 17, 2020---President's Day
- February 20, 2020---Materials Science & NanoEngineering Series, Seminar given by Dr. Tony Ivanov (ARL), Rice, Houston, TX
- February 24-27, 2020---FLEX 2020 Joint Conference: Mems & Sensors Technical Congress, San Jose, CA
<http://flex.semi.org/>
<http://flex.semi.org/programs-catalog/mems-sensors-technical-congress>
- March 5-6, 2020---Cyber Workshop cohosted by UTEP/UTSA at UTSA
POC: Jaime Acosta jaime.c.acosta.civ@mail.mil, Ray Bateman raymond.m.bateman4.civ@mail.mil
Kristin Schweitzer kristin.m.schweitzer.civ@mail.mil
- March 27, 2020--- Cybersecurity Capture the Flag, at UTEP, El Paso, TX
POC: Jaime Acosta, Jaime.c.acosta.civ@mail.mil
- March 30-April 3, 2020---CCDC ARL Greening Course 20-10, APG, MD
Registration deadline is March 23, 2020. Contact Justin.b.teague.mil@mail.mil
- April 1-2, 2020---CCDC ARL Diamond Electronics Workshop: Status, Challenges, and Opportunities, Washington, DC.
- April 2, 2020---Dr. Baker Town Hall meeting with ARL South
For more info, contact Corine and corine.romero.ctr@mail.mil
- April 4, 2020---Global Workshop, CCDC HQ
- June 22-26, 2020---Inaugural ARL South GEMS Program
POC: Corine Romero, corine.romero.ctr@mail.mil
- October 2020---25th International Command and Control Research and Technology Symposium (ICCRTS), Rice University, Houston, TX
POC: David Alberts, dalberts@ida.org



Acronym Relief

ARL Acronyms

- Combat Capabilities Development Command (CCDC) Soldier Center, formerly Natick Soldier Research, Development and Engineering Center (NSRDEC)
- CCDC Aviation & Missile Center, formerly Aviation & Missile Research, Development and Engineering Center (AMRDEC)
- CCDC Army Research Laboratory (ARL), formerly Army Research Laboratory
- CCDC Data & Analysis Center, formerly Army Material Systems Analysis (AMSAA), Survivability/Lethality Analysis Directorate (SLAD), Human Systems Integration (HSI)
- CCDC Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR), formerly Communications-Electronics Research Development and Engineering Center (CERDEC)
- CCDC Ground Vehicle Systems Center, formerly Tank Automotive Research Development and Engineering Center (TARDEC)
- CCDC Armaments Center, formerly Armament Research, Development and Engineering Center (ARDEC)
- CCDC Chemical Biological Center, formerly Edgewood Chemical Biological Center (ECBC)
- ARO-Army Research Office
- ARL/CISD-Computational & Information Sciences Directorate
- ARL/HRED-Human Research & Engineering Directorate
- ARL/SEDD-Sensors & Electron Devices Directorate
- ARL/VTD-Vehicle Technology Directorate
- ARL/WMRD- Weapons & Materials Research Directorate

University Acronyms

- SCI-Smalley Curl Institute
- TAMU-Texas Agricultural & Mechanical University (Texas A&M University)
- TTU- Texas Tech University
- UNT-University of North Texas
- UTA-University of Texas at Arlington
- UTD-University of Texas at Dallas
- UTEP-University of Texas at El Paso
- UTSA-University of Texas at San Antonio



Visitor Wall



Kim Sablon, Director for Science and Technology, AFC



Ravi Thyagarajan, Physical Scientist, AFC



Harvey Tsang, ARL



Chris Morrone, Chief Safety and Occupational Health Office, ARL



Rommie Hardy, Associate Chief, Information Sciences Division, ARL



Pauline Smith, Technical Liaison Officer AFC



LTC Morgan Southern, Deputy Commander-Operations, U.S. Army Asymmetric Warfare Group



ARL Entrepreneurial Mindset Graduates tour ARL South/UT Austin



Andres Bujanda, ARL



Sikhanda Satapathy and Brian Schuster, ARL