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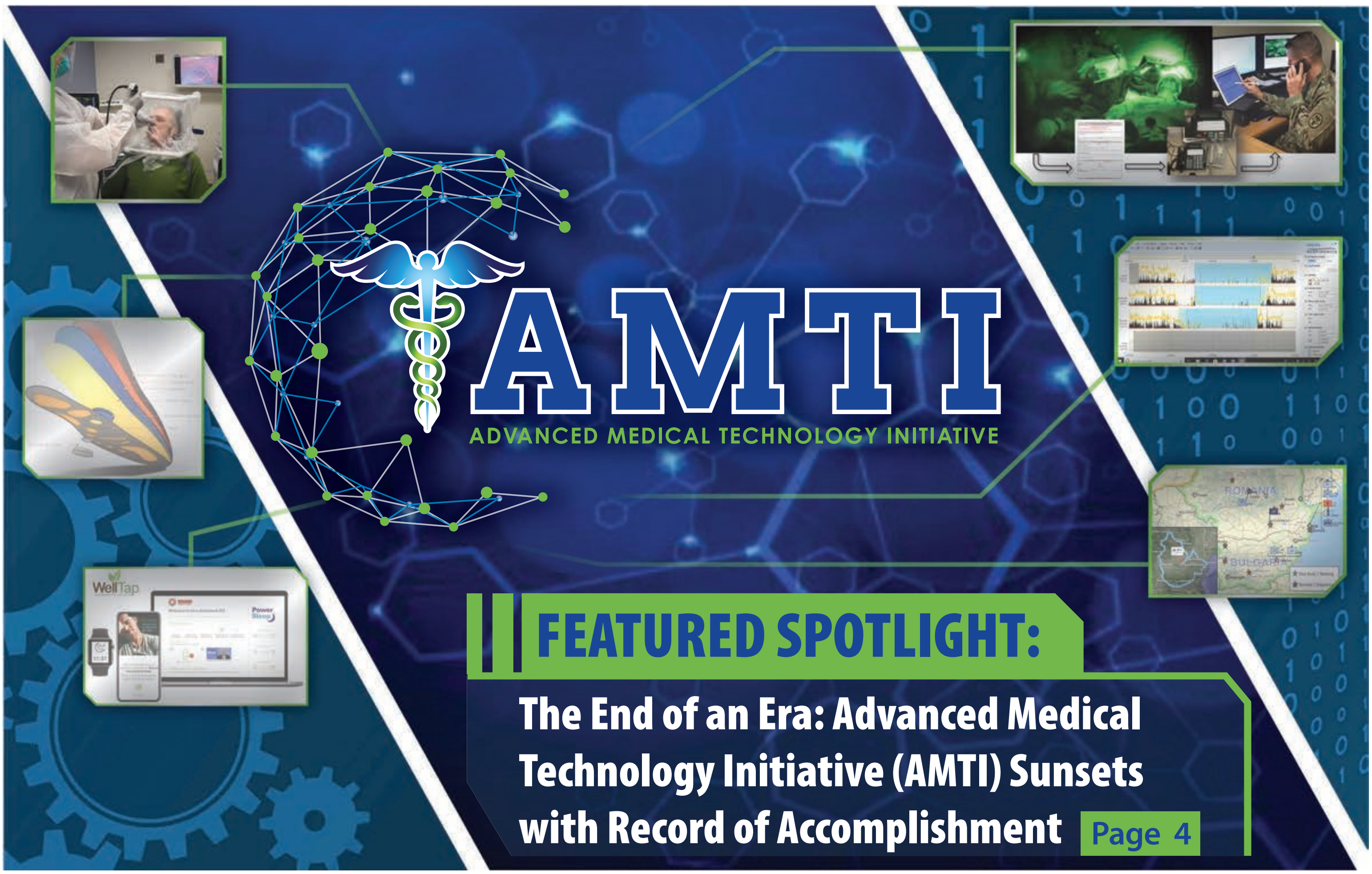

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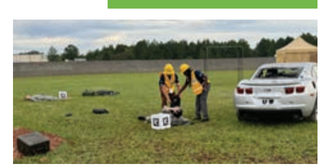

From the Desk of the Commander

COL Jeremy C. Pamplin,
TATRC Commander

Whew, FY24 is done. Welcome to FY25! It's been an incredible quarter since we last posted a consolidated update on our status. As always, there are lots of great things going on at TATRC. For example, Dr. Jaques Reifman, Director of the Biotechnology High Performance Computing Software Applications Institute (BHSAI), was recently awarded the prestigious Presidential Rank Award (his third!) for his groundbreaking work shepherding the APPRAISE algorithm through the FDA process. Team TATRC was also awarded A GOVTECH CONNECTS Digital Health Transformation Award for our efforts to develop Autonomous Medical Documentation for pre-hospital combat casualty care – the notorious 'AutoDoc' project. Congrats to teams BHSAI and TATRC! I'm incredibly thankful to all of our staff, especially our RM team, for getting us through year end close out, successfully - our Command team & support staff continue to amaze with with smooth function despite numerous disruptions of personnel and priorities – keep up the great work team!

Since our last update, TATRC has received the necessary resources to continue the AutoDoc project and to bring the Vision and Intelligence Systems for Medical Teaming Applications (VISTA) system for Army experimentation – signals that indicate we continue to deliver on our medical modernization mission. These resources, particularly for VISTA, will allow us to better understand how units can use the type of data collected from remotely found and physiologically assessed casualties during triage, movement, and holding to make better, more efficient decisions.

TATRC has added partners through the Medical Technology Enterprise Consortium (MTEC) to aid sensor suite and AI algorithm development. The Applied Research Associates (ARA) and Moberg Analytics will deliver fully functional sensor suites to capture caregiver and casualty information. Blue Halo, Crimson Government, and a second team from the ARA, will help us use the data we collect with sensors to produce autonomous documentation of the Tactical Combat Casualty Care Card (DD 1380). This team of teams will be coordinated through our Device Interoperability Coordinating Center, run by the MITRE Federally Funded Research and Development Center (FFRDC), to deliver the fastest, most effective modular solution that accurately and reliably collects data in many difficult contexts (darkness, smoke, muddy, artic, bright, etc. environments) and create documentation from it.

While getting these other teams on contract accelerates our processes, our internal TATRC team has been hard at work enhancing our initial prototype capabilities and facilitating ongoing data collection during medical simulation activities. We've refined our sensor suite and enhanced our data collection, as well as increased our ability to annotate data collected by moving our annotation tool to a cloud environment hosted by MIT-Lincoln Labs. We're appreciative of MIT Lincoln Labs for continuing to break through barriers to developing a data warehouse suitable for sharing this type of data, as well as the initial creation of a cloud-enabled AI Development environment.

Over the next 6 months, we intend to develop plans with the 2nd Medical Training Brigade to be able to use some of these tools to document and study mass casualty events at the Global Medical Exercise taking place in the Summer 2025.

TATRC continues to work with our colleagues at the Defense Advanced Research Projects Agency (DARPA) in support of the DARPA Triage Challenge (Program Manager, Dr. Jean-Paul Chretien) in GOLDEVAC portfolios (Lt Col Adam Willis). For both of these collaborations, TATRC provides an independent verification and validation (IV&V) of products that DARPA develops. Most recently at the first DTC event, TATRC provided the "ground truth" data for approximately 300 casualties per day across three different MASCAL scenarios for DTC participants to evaluate. The DTC event demonstrated TATRC's increasing capability to deliver high fidelity medical simulation in a reliable manner that enables the rigorous measurement of technologies. This rigorous assessment was demonstrated at DTC using consistent, reliable methods that scored DTC participants in real time and was impervious to protest. Within the GOLDEVAC program, TATRC will similarly provide highly

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Updates on New Data Collection Locations

TATRC's Medical Modeling Simulation, Information, and Visualization (MMSIV) team is proud to announce that Ragged Edge Solutions, LLC are officially a Data Collection Location! Their forward thinking and progressive methods have advanced them to an independent location where they are regularly collecting data in their unique hyper-realistic facilities. With the new site comes a flurry of new information that diversifies our data in amazing ways. The addition of their program enriches our data and our team. Their perspectives on simulations, scenario development, and data collection are already a positive impact on our forward progression and mission success.

Members from TATRC's MMSIV Lab met with staff from the U.S. Navy Demonstration and Assessment Team and Ragged Edge Solutions - learning how to work together for tech assessment and integration. TATRC MMSIV Chief, Dr. Ericka Stoor-Burning, shakes hands with Edward Leslie from DAT before Data collection commenced!

For more information, please contact Dr. Ericka Stoor-Burning at: ericka.l.stoor-burning.civ@health.mil.

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realistic medical scenarios during which technologies, intended to scale clinical capacity by offloading clinical tasks to machines, can be evaluated against current standards of care and care performance. In both programs, TATRC's subject matter expertise has been critical to DARPA's priorities for program development. Soon, TATRC hopes to establish additional collaborations with DARPA's Research Infrastructure for Trauma with Medical Observations (RITMO) clinical team.

Moving forward, TATRC is continuing to be a disruptive innovator by changing how we think about solving problems. We are moving from individual project level planning to portfolio level planning to solve big problems. This affords us the flexibility necessary to take advantage of technologically low hanging fruit and opportunities to accelerate deliverables. In this context, we have proposed three projects in our FY26 plans focused on increasing survival of casualties during MASCAL. These proposals address data to decisions across the care continuum, human-robotic teaming for trauma care, and using remote and autonomous casualty management systems that increasingly help the system manage a larger number of casualties by offloading some human tasks to machines. Through these three areas of work, TATRC intends to improve the efficiency and effectiveness of casualty care during mass casualty events, and to increase the capacity for the battlefield trauma system while maintaining high quality care and delivering optimal outcomes.

In closing, we celebrate the legacy of the Advanced Medical Technology Initiative (AMTI), one of the most successful innovation programs in Military Healthcare (see this quarter's article). Initially funded by the Army Surgeon General using set aside dollars in 1999, over the past 20 years, the AMTI program has delivered ten technology solutions that continue to provide yearly return on investment of approximately $12 million while improving quality and outcomes. The AMTI program helped many young investigators become senior clinical researchers within the DoD by serving as their entry point into research. Thank you to all AMTI performers and supporters, but especially to the AMTI program manager, Ms. Holly Pavliscsak and the program coordinator, Ms. Sharon Garlena – we couldn't have done it without you!

Looking forward, TATRC, alongside our many partners, remains committed to finding innovative solutions for future battlefield challenges through AI, robotics, and automation, and we anxiously anticipate demonstration of the prototype AutoDoc solution in early 2025 and the performance of VISTA at Project Convergence Capstone 5.

Fuse the Team. Find a Way.

#ExploreInnovateAutomateDeliver
#AllThingsPossibleWereOnceImpossible
#DisruptiveInnovation
#Don'tStopBelieving

AMTI
ADVANCED MEDICAL TECHNOLOGY INITIATIVE

Explore, Integrate, Innovate, Automate, Deliver

The End of an Era: Advanced Medical Technology Initiative (AMTI) Sunsets with Record of Accomplishments

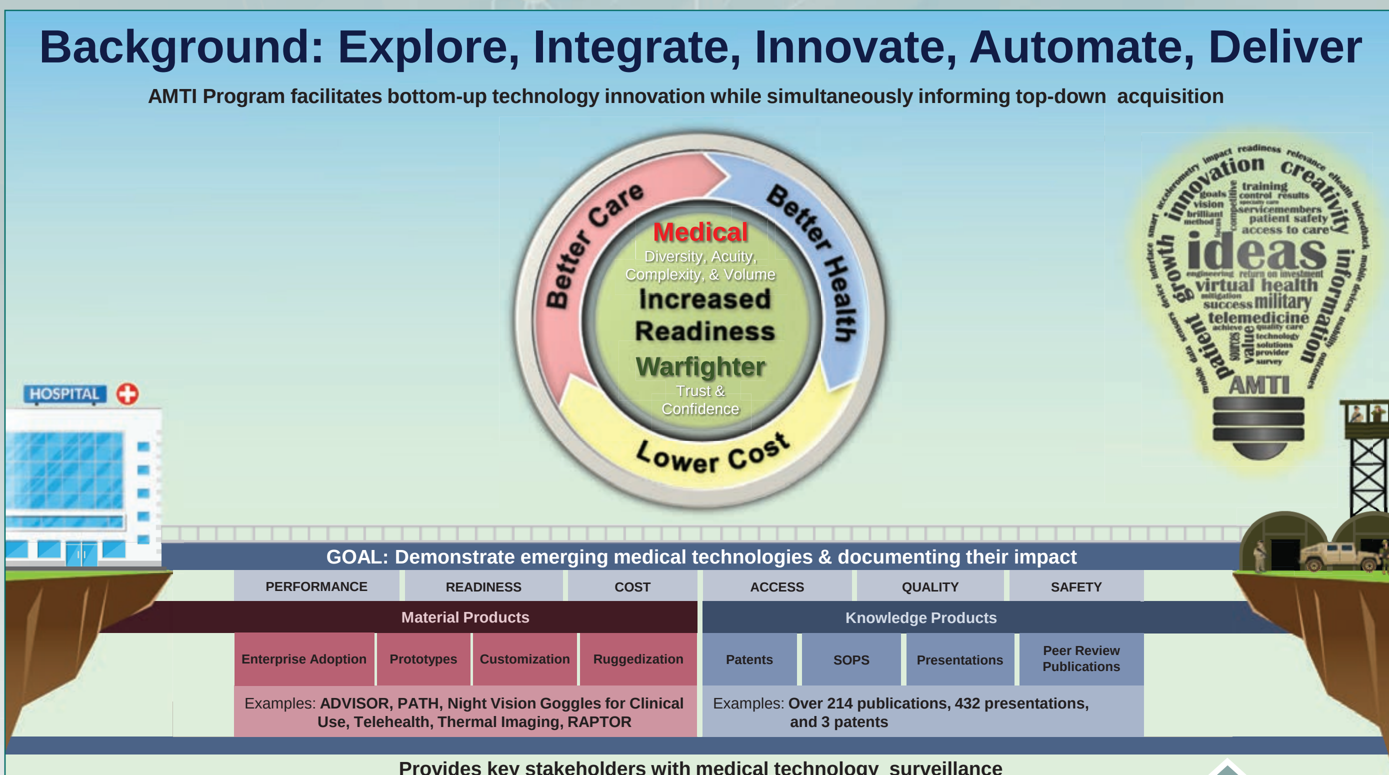

Figure 1: The AMTI Program facilitates bottom-up technolgy innovation while simultaneously informing top-down acquisition.

For the past 25 years, the Advanced Medical Technology Initiative (AMTI) has impacted the military healthcare system (MHS) by supporting military medical thought leaders as they explored improvements in patient care. By providing small-scale funding to enact change, AMTI empowered these leaders and their teams to take ideas from concept to reality, evaluate novel technologies, and test new processes to solve real-world problems within their local Military Treatment Facilities (MTFs) or Operational Units (OUs). The program fostered a culture of innovation: unmet local needs addressed through technology solutions or performance improvement can inform leadership about a problem and decision to invest sustainment resources into a solution identified with AMTI funding. Many successful projects ("AMTIs") that improved readiness, cost, access, quality, or safety (Figure 1) became programs of record, providing substantial return on investment (ROI, see Table 1).

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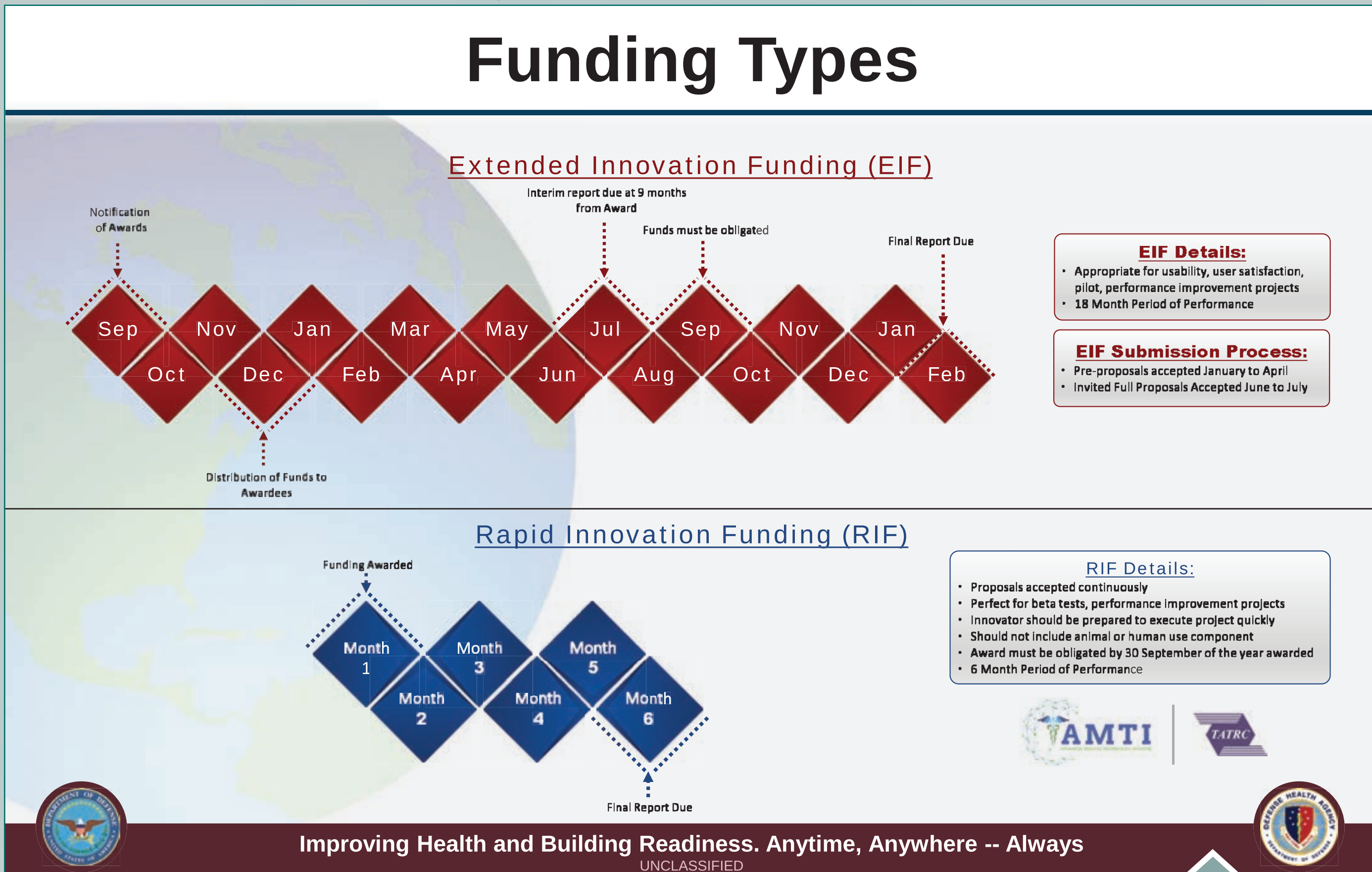

Figure 2: AMTI Funding Types

> **"AMTI supported bright minds across the enterprise, a culture of innovation, and encouraged personal excellence, exploration and entrepreneurship at the lowest level."**
>
> – MS. HOLLY PAVLISCSAK, AMTI PROGRAM MANAGER

Established in 1999 out of the Office of the Surgeon General (OTSG), the AMTI has undergone many changes over the last 25 years. However, the program's mission to support frontline innovation has been the catalyst for performance improvements across the military healthcare spectrum throughout. The program was initially called the AMEDD Telehealth Initiative (ATI) and was focused solely on telemedicine capabilities in the late 1990s. In the early 2000s, the program expanded to include other technology and clinically relevant solutions. It changed names to reflect the program's expansion to the AMEDD Advanced Medical Technology Initiative (AAMTI). During that time, it focused on supporting solutions for Army MTFs. In 2020, the program expanded again to include all military medical services and became known as the Advanced Medical Technology Initiative or AMTI. Throughout its history, the initiative has focused on demonstrating technological solutions in MTF environments or OUs to define the issues that prevent adoption or usability of innovative technologies and to determine new policies or processes required for their implementation and long-term sustainment.

AMTI has provided an open call for proposals, with the specifications that proposals must be sponsored by a military or government service (GS) civilian innovator and solve a real-world problem with an emerging technology solution. Projects were required to be small – two hundred fifty thousand dollars or less – and to evaluate commercial off-the-shelf (COTS) or government off-the-shelf (GOTS) technology. To be successful, AMTI Innovators socialized their concept with contemporaries and garnered buy-in from their command, information technology departments, and resource managers before

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AMTI Sunsets continued from page 5

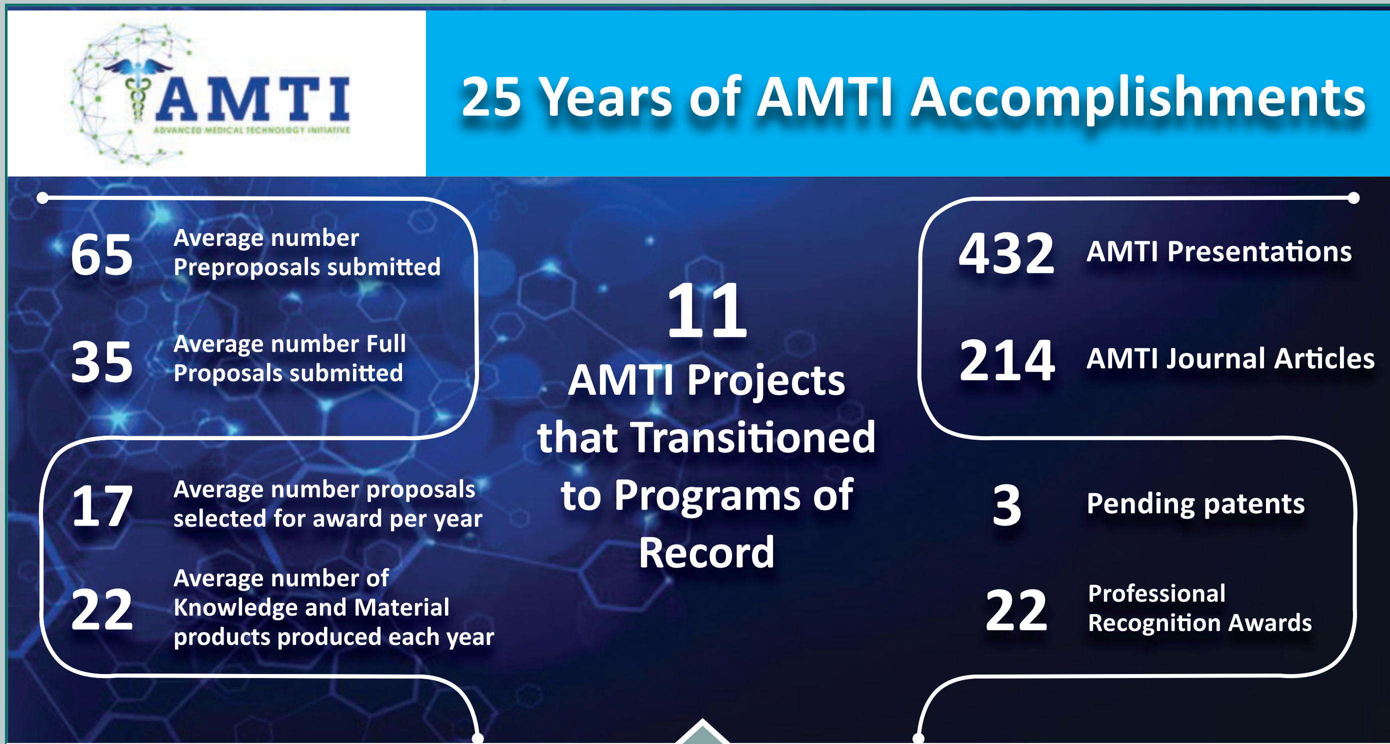

Figure 3: 25 Years of AMTI Accomplishments

submitting their idea for rigorous evaluation by the AMTI reviewers. Submitted proposals were evaluated based on the innovation of the concept, military relevance, metrics for success, and potential for return on investment.

There were two types of projects funded by AMTI: Extended Innovation Funding (EIF) projects had an 18-month period of performance (PoP) and Rapid Innovation Funding (RIF) projects had a 6-month PoP. EIFs preproposals were accepted annually from January to April, reviewed by peer reviewers, and then down-selected based on ranking in the above evaluation categories. Selected proposals received an invite to the full proposal phase. A second group of peer reviewers evaluated and ranked the expanded full proposals and provided recommendations for award. TATRC leadership made final decision on the proposals awarded each year based on reviewer recommendations, funding availability, and strategic priorities. Using only a modified full-proposal template, RIF proposals were typically for smaller amounts (< $100,000) and accepted year-round. These underwent a rapid evaluation process by reviewers from the 75th Innovation Group before being presented to TATRC leadership for funding approval decision. Figure 2 shows the differences between EIF and RIF processes.

An average of 65 EIF preproposals were submitted annually with 35 invited for full proposal submission, and 17 awarded for funding. An average of 10 RIFs were submitted annually, and 2-5 were selected for award. The AMTI remains impactful: 11 projects became programs of record, 432 abstracts were accepted for presentations, 214 manuscripts were published in peer-reviewed journals, three have pending patents, and 22 innovators received professional recognition awards. These accomplishments result in yearly averages of 17 presentations, 8 publications, and almost 1 professional recognition award (Figure 3).

Like many of the technological advances that it supports, the system underwent improvements over the years. For the first 10 years of the program, original records and even full names of principal innovators and project titles were difficult to obtain. Most of the available records come from an Oracle database setup after 2010 that includes original proposals and reports of findings. However, records on knowledge and material products were not implemented until 2018, reducing the ability to accurately trace and account for program impacts and transitions.

Through systematic review and principal investigator interviews, the AMTI program manager identified some of the AMTI projects that have transitioned to programs of record. This review identified several AMTI products that continue to provide value to the military healthcare system through sustained implementation. Table 1 highlights these projects and their return on investments. The ROI for these few projects demonstrates how the modest annual investment of

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$2-5 million has returned monetary gains to the MHS. Utilizing the most conservative estimates, the program 63% of total investment with only four projects: Telehealth in a bag, $14M over 11 years; the ADvanced VIrtual Support for OpeRational Forces (ADVISOR), $14M over 7 years; The Pacific Asynchronous TeleHealth Portal and Health Experts onLine Portal (PATH/HELP), $31.5M over 21 years; and AERO (paperless flight physicals), $1M over 16 years. AMTI provided not only a return on investment but also a return on effectiveness, which is demonstrated by the long-standing nature of many of these small investment projects that are still in existence today and speaks to the important role that the program played in modernizing the MHS.

Table 1: AMTI Return on Investments

Year	Project	Benefit
2004	**PATH (Pacific Asynchronous Telehealth)**	Automated patient movement now part of GTP. **Estimated ROI -$1.5M/YR**[1]
2009	**AERO (Paperless Flight Physical Exam)**	Web-based system enables on-line creation, approval, and archiving of Army flight crew physical exams; database for Army flight personnel medical status; essential solution for the U.S. Army Aeromedical Activity (USAAMA). Also adopted U.S. Coast Guard and U.S. Navy. This platform reduced processing time from 180 days to less than three days – **manpower savings**. This was a paper-based system prior to the creation of AERO. Without AERO, 40% of hard- copy encounters had to be returned to the facility due to missing information or values out of standards, AERO reduced this rate to < 3%.
2011	**Computer Assisted Decision Support (CADS) integrated into Comprehensive Diabetes Management Program (CDMP)**	Still utilized today at for Diabetic Management
2014	**Evaluation of WiFi and Vocera technologies in CSH > WIN-T**	Still utilized today
2014	**Telehealth in a Bag**	The system supports garrison encounters using a telemedicine cart system and encounters from deployed settings using the miniaturized THAIB solution that allows caregivers to use a laptop computer with internet connection and attaches plug-and-play medical devices including vital signs monitors and exam equipment to enhance the remote expert's interaction with patients and caregivers. **Estimated ROI - $1.3/YR.**[2, 3]
2017	**VC3 > ADvanced VIrtual Support for OperRational forces (ADVISOR)**	Text, email and video teleconsultation support 365/24/7. **Estimated : $2M/YR** from downgrading or avoidance of planned evacuations.[4]
2017	**Rapidly Tracking Outcomes in Rehabilitation (RAPTOR) (2017)**	Incorporates outcome tracking, evidence-based practice, and coding guidance while providing automated documentation exists in the MHS now part of the **MIRROR** program.
2019	**Mobile/Web Algorithm Directed Troop Medical Care (ADTMC)**	Clinical Decision Support Tool still actively utilized to train medics
2019	**REBOA COMPASS Portable Pressure Monitor**	Continues to save lives
2020, 2021, 2023	**Boothless Audiometer**	For treatment of masking an estimated $5.1M annual cost avoidance and reduction of 10.26 Type 2 provider FTEs annually by implementing boothless technology with automated masking and for fit testing an estimated $7.4 initial cost avoidance by purchasing boothless technology to perform both hearing protector fit testing and hearing surveillance exams. Amounting to an initial estimated ROI of $12.5M in the first year and conservatively $5.1M annually.

Acronyms: AERO: Aeromedical Electronic Resource Office CSH-WIN-T: Combat Support Hospital Warfighter Information Network-Tactical
MIRROR: Musculoskeletal Injury Rehabilitation Research for Operational Readiness
REBOA COMPASS: Resuscitative Endovascular Balloon Occlusion of the Aorta, commercially available portable and disposable pressure transducer

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Table 2. AMTI Projects that contributed to current Department of Defense (DoD) Solutions

Army Medical Department (AMEDD) Telehealth Initiative (ATI)			
1999	Teledermatology	2003	APPRAISE
2001	Telepathology	2004	Patient Heartsounds
2002	Tele-echocardiography	2004	Tele-chemistry
2003	Telecardiology		
Approximate Transition of ATI to the AMEDD Advanced Medical Technology Initiative (AAMTI)			
2004	Commander's Dashboard	2011	Computer Assisted Decision Support (CADS) integrated into the Comprehensive Diabetes Management Program (CDMP)
2005	Firearm Training System (FATS)	2011	Original e-IRB
2006	Integration of Clinical Information with AHLTA	2012	SOF medical handbook with CD Update
2006	Tele-neurology	2014	Evaluation of WiFi and Vocera technologies in CSH > WIN-T
2006	Virtual Colonoscopy Training	2014	Telehealth-In-A-Bag
2006	AHLTA Common Development Environment	2014	Extension of PCMH Dashboard
2007	Custom fabricated earplugs for warriors	2016	TEAM STEPPS Surgical OR
2007	Virtual Reality for PTSD/Stress Inoculation	2017	VC3 > Advanced Virtual Support for OperRational forces (ADVISOR)
2007	Early-Stage Platform (ESP)	2017	Moulage Tattoo
2008	AHLTA Print	2018	Mobile/Virtual Reality Trauma Simulation
2008	Telebehavioral Health > Program of Record	2018	BECOME an app for change
2008	DigiPen	2018	Agile Networks for Mobile Medics
2008	Afterdeployment.org	2019	GREAT Running
2009	Speech Recognition for Medical Applications	2019	Web Algorithm Directed Troop Medical Care (ADTMC)
2009	Paperless Flight Physical Exam (AERO)	2019	Ectopic Pregnancy Kits and Methods
2010	Amputee Virtual Environment Support Space	2019	REBOA COMPASS Portable Pressure Monitor
Advanced Medical Technology Initiative			
2020	High-Fidelity Simulation Model	2021	Nudge Technology for Nutrition
2020	3D Printed Orthopaedic Splints & Orthoses	2021	Boothless Audiology
2020	Virtual Reality Measure of Occular Malignment	2022	PALOTS: Patient and Logistics Tracking System
2020	Night Vision Googles	2023	Sensory Wearable Clothing
2021	Medical Supply Management	2024	Entomological Surveillance Dashboard

AMTI is often just the start for performance improvement projects, and its small investment informs the potential for more significant, more impactful acquisition strategies. While AMTI has undergone many changes over its 25-years, it has consistently been an engine for translating ideas into action, with many successful DoD initiatives originating as AMTI projects. Indeed, AMTI has been the voice for frontline clinicians and other staff to propose, try, and evaluate ways to solve their problems and fulfill their unmet needs to catalyze rapid improvements in performance, cost, readiness, access, quality, and safety in operational and garrison environments across the MHS. Because AMTI is often the start of a great idea, it has been difficult (the entire AMTI program is run by 1.5 persons!) to capture the entire lifecycle as it moves on to clinical validation, advanced development, and ultimately transitions to a program of record. Table 2 showcases some notably successful AMTI projects over the years.

In 2023, Dr. Benjamin Knisely and Ms. Holly Pavliscsak analyzed the AMTI program using AMTI records from 2010 to 2022 (n=825). The first analysis focused solely on the "problems to be solved" and "technology to be demonstrated" sections of original proposal applications that ultimately were translated into identified problem sets and solution sets. The process identified 24 unique problems and 20 unique solutions (Figure 4) by using manual document analysis and semi-supervised clustering. Machine learning helped analyze large amounts of data quickly, supporting technology surveillance and informing future military healthcare needs.[5,6]

Additional follow-on analysis of the AMTI program investigated the evaluation criteria to create predictive analysis that could be used with

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Figure 4. AMTI Problem and Solution Sets

traditional peer reviewer panels to reduce bias and modernize the review process.[7]

Over the past seven years, TATRC has followed the Medical Research and Development Command through its transitions from the Army Medical Command to the Army Material Command to the Army Futures Command and now into the Defense Health Agency. Each transition has presented its own challenges and opportunities. Ultimately, however, funding to support the continuation of AMTI has not been realized, and the program must come to an end. Moving forward, TATRC will not request new proposals or start new projects.

The sunsetting of an important and impactful program like AMTI marks the end of an era. AMTI offered an opportunity to often young military and civilian innovators across the MHS to become creatively impactful for their local community. As we have witnessed, their often "wild and crazy" ideas have translated into improvements across the MHS with respect to cost, quality, readiness, safety, and access to care. We hope the MHS can find a new mechanism for providing this type of opportunity that allows medical caregivers to test the waters of research and innovation while helping the enterprise improve one small step at a time. We want to thank all the AMTI participants, our innovators, and reviewers over the years. Without the participation of each one of these individuals, AMTI would not have been the success that it was: you have helped improve the military health system and will continue to do so for years to come.

More information about AMTI awards, presentations, and publications can be found on the TATRC website at: https://www.tatrc.org/www/amti/.

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Science Director's Corner: Sprinting Toward Autonomous Casualty Care

The end of September 2024 marked the end of the second sprint of TATRC's AutoDoc project to attain trusted passive data collection and autonomous documentation of tactical combat casualty care (TC3) in real-time, for prioritized care contexts. It also marks the half-way point for this first project in our Automating Casualty Care (AC2) portfolio and shows significant progress toward establishing the fundamental, enabling capability to automate aspects of TC3 beyond documentation.

Mr. Matt Quinn, Science Director, TATRC

So, what were the major accomplishments in Sprint 2, and what lies ahead for Sprint 3?

In late September, TATRC briefed Dr. Carrie Quinn, Deputy to USAMRDC Commanding General, MG Paula C. Lodi, Dr. Mark Dertzbaugh, the previous Principal Assistant for Research and Technology (PART), and Dr. Therese West, along with other staff from the Combat Casualty Care Research Program (CCCRP). This represented the first opportunity to share details and gain important feedback from Dr. Quinn on Sprint 2 accomplishments, the plans for Sprint 3, and the overall vision for the AC2 portfolio.

Sprint 2 focused on scaling data collection and big advances in our data infrastructure, data pipeline, sensors, algorithms, and casualty care data set.

We awarded important contracts (OTA's) for extramural sensor suite (Applied Research Associates, Inc. and Moberg) and algorithm development teams (Applied Research Associates, Inc., BlueHalo, and Crimson Government LLC) to complement our intramural teams and one to Ragged Edge Solutions to complement our military data collection partners.
Thanks to amendments to our IRBs, data collection kicked into high gear at Fort Indiantown Gap, the Defense Medical Readiness Training Institute (DMRTI, Fort Sam Houston), Joint Special Operations Medical Training Center (JSOMTC, Fort Liberty), the 59th Medical Wing, Ragged Edge, and TATRC's own NEXUS lab. Working with our partners at MIT Lincoln Lab, TATRC expanded the capabilities of the AGENT RAPIDS cloud-based environment, including providing access to AGENT RAPIDS accounts for algorithm partners and expanding annotation and analytic capacity by hosting the ADAT annotation tool and Jupyter notebooks in AGENT RAPIDS.

The team finalized "point of treatment" data aggregation (POTAG) software (video, audio, IMU) on a ruggedized tablet, and used POTAG for data collection at local and remote sites, along with developing and testing data integration on an edge device.

The team accomplished a variety of data science activities including providing the first labeled dataset to intramural algorithm developers for model training, defining a common edge computing development environment & algorithm orchestration framework, completing baseline performance characterizations of our intramural (Design Interactive and Arete') algorithms, developing a baseline capability for audio processing for performance evaluation, developing a connection between the POTAG sensor data stream and algorithm compute module, and demonstrating BATDOK vitals data transfer to AutoDoc.

Importantly, TATRC conducted the first "medical performance" analysis – time on task, sequence of tasks and other descriptive measures – on data collected during simulated combat casualty care. This is the tip of the iceberg in being able to use data both to build algorithms but also to assess medical performance. Sprint 3, which runs from October 2024 to March 2025, will focus on three main areas: 1) Getting our "data house" in order, 2) real world clinical performance, and 3) making an AutoDoc solution and data ecosystem that works.

Getting our "data house" in order refers to both continuing to collect more data (and establish a plan for generating simulated data) but also to continued improvements to our data pipeline. TATRC has set a goal to reduce 'Ready to Use Time' (RTUT), which is the time from data collection during simulated casualty care to the availability of the data in the AGENT RAPIDS environment for analysis or algorithm development to 72 hours by the end of Sprint 3. This is aggressive and will require functional teams to collaborate but is essential to the success of the project and portfolio overall.

To date, data collection for the AutoDoc project has occurred in simulated (albeit realistic) TC3 environments. In Sprint 3, TATRC seeks to bring data collection (and associated medical

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MMSIV Lead Presents at IAPAE

The International Academy of Physician Associate Educators (IAPAE) is a group of providers from all across the globe who come together annually to share their experiences, call for action, and lessons learned. This year's event was held in Lynchburg, VA. Ericka Stoor-Burning, DHSc, MS, PA-C, TATRC's Medical Modeling Simulation, Information, and Visualization (MMSIV) Lead, had the privilege of presenting two items at this esteemed conference. First, she presented with MAJ Hyun "John" Yi about the concept of how data can be successfully obtained from training opportunities and how we were able to successfully set that up at MEDCoE's Tactical Combat Medical Care (TCMC) Course. The content was well received and inspired both providers and educators from around the globe to inquire how to help TATRC's data collection effort, which will improve our data diversity, thus helping to develop a reliable and trustworthy AI tool that can be utilized

MMSIV chief, Dr. Ericka Stoor-Burning talking about her TATRC research and her work with MAJ John (Hyun) Yi, from the Dept. Of Operational Medicine at MedCoE! They co-presented on "The use of field care training to advance AI technology for automation of casualty care!".

internationally. Additionally, she was able to present her passion project on the topic of low-resource medical education with a cohort of PAs and PA students from Liberia. The successful pilot program, using merely a cellphone and laptop camera to instruct, test clinical skills, and didactic knowledge remotely, will lead to additional curriculum opportunities in austere locations.

For more information on these presentations, please contact Dr. Ericka Stoor-Burning at: ericka.l.stoor-burning.civ@health.mil.

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performance analysis) into actual clinical settings. While the setting is not likely to be combat casualty care, collecting data from at least one real world setting using the common data set based on standardized clinical and performance metrics will enhance our data collection methods, require IRB amendments, and demonstrate the value of AutoDoc-type solutions in higher role-of-care settings.

Finally, making an AutoDoc solution and data ecosystem that works will challenge TATRC and its partners to make incremental improvements and work together in novel ways. In Sprint 2, TATRC baselined performance of its intramural algorithms. In Sprint 3, TATRC will seek to improve the accuracy of machine vision algorithms for each of the eight elements of the DD 1380 in prioritized hyper-realistic simulation care contexts (like bright light, dark, rain, and smoke) by 20%. With the assistance of MITRE and the use of a collaborative project management structure (called the Device Interoperability and Autonomy Coordinating Center, or DIACC) that served us well during our COVID-19 work in building the NETCCN and "virtual hospital" ecosystems, TATRC will finalize the conceptual system design for a combined (intramural + extramural) prototype solution by the end of sprint 3.

TATRC continues to blaze new trails with AutoDoc. In recognition of the importance of this project and Team TATRC's hard work, ingenuity, perseverance, and teamwork in laying the foundation for automating casualty care, TATRC received a GOVTECH CONNECTS 2024 Digital Health Transformation Award, the first major recognition of this effort and only one of three in the Defense Health Agency. While awards are great, Team TATRC looks forward to seeing AutoDoc's sensors, algorithms and all the rest being used to assist Combat Medics to deliver even better care!

TATRC Evaluates the Military Emergency Tele Critical Care Platform (METCC-P) at Cyber Quest 24

Mr. Marvin Cole (Right) a Systems Integrator from TATRC South, with three Soldiers from B Co., 50th Expeditionary Signal Battalion, tasked with supporting TATRC's Cyber Quest 24 Experimentation. SFC Timothy Pigott (Left) is assigned to the US Army Cyber Battle Lab and supported TATRC's experimentation as their lead analyst.

As part of TATRC's commitment to providing trustworthy solutions that optimize medical performance and casualty care, TATRC technologies continuously undergo iterative, rigorous testing and experimentation in an operational environment. These operational exercises occur all throughout the year, and often require planning from 12-18 months in advance. During a visit to TATRC, MRDC's Principal Assistant for Research and Technology (PART) emphasized the importance of operational exercises, saying, "Innovation can't go forward unless you have accomplished and iteratively evaluated the innovation with users in an operational environment to re-validate the value proposition. We MUST execute Operational Experimentation." As such, TATRC relentlessly pursues opportunities to continuously test and evaluate its technologies in operational exercises.

At Ft. Eisenhower, GA, the TATRC South team evaluates TATRC technologies under the cyber and network constraints of an operational environment. Over the years, TATRC South has partnered with the US Army Cyber Battle Lab (CBL), conveniently co-located at Ft. Eisenhower, to better understand these cyber and network constraints. This partnership has helped TATRC establish its own controlled network environment in which TATRC has performed specialized testing and evaluation of various TATRC technologies.

This year, evaluations were conducted at Cyber Quest 2024 (CQ24), an annual data-centric operational exercise that provides the capability development and acquisition communities a unique, realistic, operationally based environment to inform critical capability gaps facing Cyber, Electronic Warfare, Intelligence and Signal operational

METCC-P ***continued to page 13***

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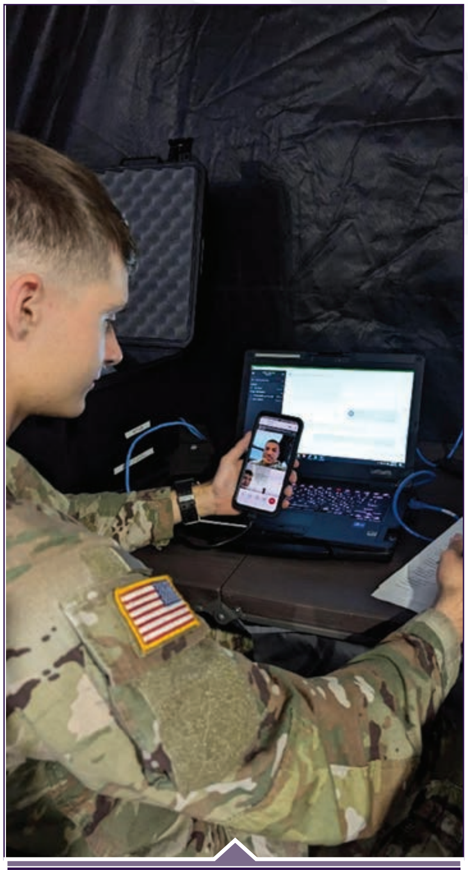
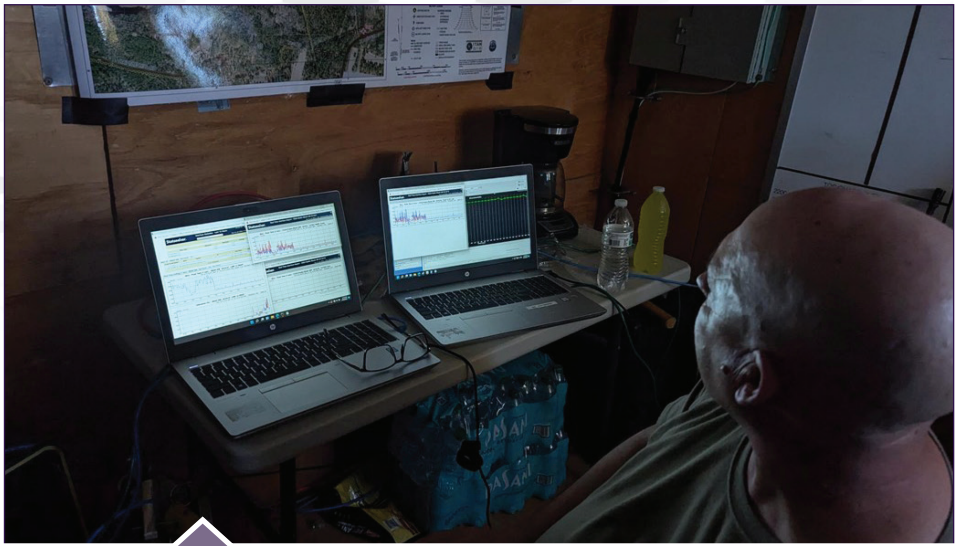


A Soldier from B Co. 50th Expeditionary Signal Battalion tests different communication modalities over degraded satellite communications.



Traffic is analyzed by an Analysis Team member from the U.S. Army Cyber Battle Lab.

forces. CQ is conducted at Fort Eisenhower, GA and is typically focused on Brigade and above echelons.

The event brings Soldiers from Army Cyber Command, Forces Command, Army Futures Command, and International Partners to evaluate emerging Cyber, Electronic Warfare, Intelligence and Signal solutions/ technologies against Multi-Domain Operations (MDO) aligned critical capability gaps. The outcome will inform capability development requirements for MDO 2028, Organizational and Operational Concepts, and Cross Functional Team priorities, and will allow TATRC to refine development of their products to meet the needs of the Warfighter.

During CQ24, TATRC's focus was on testing and evaluating recent advancements made to its Military Emergency Tele Critical Care Platform (METCC-P). METCC-P delivers clinical expertise from "anywhere to anywhere" through secure, HIPAA-compliant and easy-to-use, smartphone-based synchronous and asynchronous telemedicine, in both well-connected and DIL environments across the care continuum, including at the point of injury (POI). METCC-P is an android and iOS application that is available on BYOD and NETT-Warrior with innate solution scalability using Amazon Web Service's (AWS) Wickr through custom-built patient and medical regulation workflows supporting the Medics and Medical professionals from POI through the continuum of care.

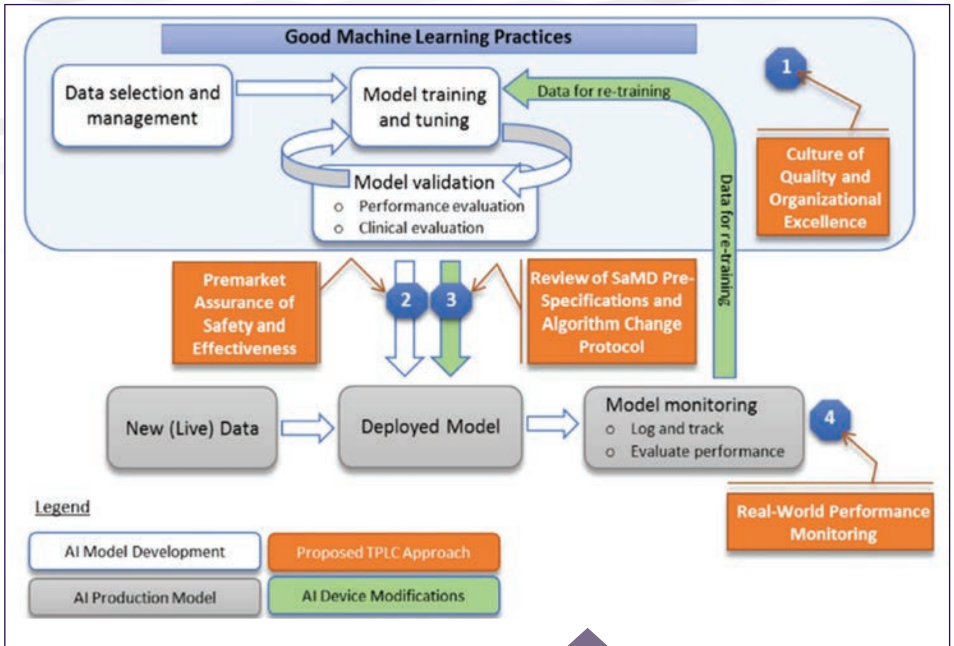
Part of TATRC's efforts during CQ24 were to evaluate the modalities of AWS Wickr on a tactical network. Active-duty military signal personnel were tasked with supporting data collection through various tactical network settings. The purpose of this evaluation was to understand thresholds of asynchronous and synchronous communications over a degraded tactical network consisting of various transport methods. Understanding the limitations of medical technologies is critical to delivering remote care, tele-medicine and tele-mentorship during unique evacuation scenarios, and relaying timely patient and medical regulation information from and to the tactical edge.

During the exercise, TATRC was able to transmit meta data into the CQ data repository, validate ATAK plug-in capability, and understand new network thresholds. Most importantly, TATRC was able to sit down with the Cyber Battle Lab's analysis team and blueprint future opportunities for the continued cyber and network development of TATRC's portfolio. TATRC looks forward to continuing its work with the CBL to analyze the results of CQ24, and plan for future experimentation at Cyber Quest and other operational exercises.

For more information on TATRC's Operational Exercise involvement at CQ24, please reach out to Ms. Jeanette Little, jeanette.r.little.civ@health.mil.

TATRC Focuses on Data Science

Data Science activities have significantly increased across TATRC over the last several months as the team has been diligently working to enhance our data infrastructure, improve operational efficiency, and foster collaboration. With the successful launching of the AutoDoc project across TATRC, our focus has shifted towards learning from our initial experience with the data collected improving the organization of our data house, and streamlining operations. We have made significant strides in this direction, thanks to the collaborative efforts throughout our TATRC team and external partners.



Good Machine Learning Practices Diagram.

The Device Interoperability and Autonomy Coordinating Center (DIACC) was designed to support rapid harmonization of technical teams to achieve and demonstrate interoperability among multiple manufacturers' medical devices during TATRC's award-winning "virtual hospital" work, and has recently restarted in support of AutoDoc. The DIACC facilitates collaboration with our partners and guides our approach to designing our data and analytics ecosystem. The initial two meetings displayed amazing collaboration between different extramural and intramural partners to accelerate the preparation of data for analysis and reducing redundant efforts across groups. It can't be overstated how impressive it is to see different organizations willingly share their methods and ideas with one another to advance the mission. Other topics the DIACC will soon address are the processes for: annotating AutoDoc sensor data, including exploring opportunities to crowd-source; randomizing data for analysis and validation; and evaluating algorithms for accuracy and utility. These discussions will ensure that our data practices are aligned with best industry standards and promote innovative solutions.

We have also collaborated with MIT Lincoln Laboratory (MIT LL) to integrate JupyterLab on AGENT RAPIDS cloud environment. This integration enables us to analyze uploaded but unpublished data more effectively. JupyterLab provides a robust environment for data analysis, visualization, and collaboration, which will significantly enhance our data processing capabilities.

In partnership with MIT LL and the Johns Hopkins Applied Physics Laboratory (APL), we have successfully made the AutoDoc Annotation Tool (ADAT), developed in collaboration with APL, available on AGENT RAPIDS. ADAT enables accessing AutoDoc video files and documenting (in a structured way), as well as the activities of the volunteer medic during recorded Tactical Combat Casualty Care (TC3) simulations. This initiative allows us to crowd-source annotations, fostering a collaborative environment that leverages the expertise of a broader community.

In another effort to streamline our data collection, storage, and sharing process, we have also begun development of data collection forms (instruments) within REDCap (Research Electronic Data Capture). REDCap is a secure, web-based software platform designed to support data capture for research studies and operations. Developed by Vanderbilt University, REDCap is widely used in academic, non-profit, and governmental organizations and we are leveraging an instance hosted by MIT. REDCap is HIPAA compliant and designed with robust security features to protect sensitive data, including encryption, user authentication, and role-based access control. It also supports multi-user access, enabling our research data collection teams to collaborate effectively on data collection and management, while improving data security and reducing risk of data errors with manual data capture.

This provides a major step in re-designing our data architecture to support future needs as we attempt to think holistically while acting within our immediate scope of work. To this end, we have looked towards the medical device industry to understand the research and product lifecycle of clinical Artificial Intelligence/Machine Learning (AI/ML) model-based tools. The FDA 2019 "Proposed Regulatory

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BHSAI NEWS

Dr. Jaques Reifman Recognized with Third Presidential Rank Award

The Defense Health Agency's (DHA) United States Army Medical Research and Development Command's (USAMRDC) Telemedicine & Advanced Technology Research Center (TATRC) Senior Research Scientist, Dr. Jaques Reifman has been recognized once again with the Presidential Rank Award. Reifman, the Director of the Biotechnology High-Performance Computing Software Applications Institute (BHSAI), is perhaps the only Army Senior Executive to receive this distinguished honor three times in his career.

The Presidential Rank Award is awarded by the U.S. Office of Personnel Management. The Civil Service Reform Act of 1978 established the Presidential Rank Awards Program to recognize a select group of career members of the Senior Executive Service (SES) for exceptional performance over an extended period of time. Later, the Rank Award statute was amended to extend eligibility to senior career employees with a sustained record of exceptional professional, technical, and/or scientific achievement recognized on a national or international level.

"It is a tremendous honor to receive this award for a third time," says Reifman. "I am gratified that the dedication and the work that I put in every day to accomplish our mission is recognized at the highest levels. It is a source of external validation that what I have been able to do here has had an impact to the health and well-being of our Service Members."

This prestigious award highlights Dr. Reifman's exceptional research efforts and his dedication to supporting our Service Members both at home and abroad. This recognition encompasses not one specific project, but highlights the countless innovative technological advancements that Dr. Reifman and his team have been at the forefront of for nearly 25 years.

Dr. Jaques Reifman, Director and Senior Research Scientist of the Biotechnology High-Performance Computing Software Applications Institute.

To learn more about his body of research and details on this latest Presidential Rank Award, please visit: https://www.dvidshub.net/news/487841/reifman-receives-third-presidential-rank-award.

Congratulations on this incredibly well-deserved honor, Dr. Reifman!

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Framework for Modifications to Artificial Intelligence/Machine Learning (AI/ML)-Based Software as a Medical Device (SaMD) - Discussion Paper and Request for Feedback" publication on AI/ML development provides a strategy for considering the total product lifecycle in the development of AI/ML medical devices. The below figure from that document provides an overlay of the FDA's Total Product Life Cycle for AI/ML. AI/ML research is typically constrained within the light blue box, ideally using good machine learning practices. However, real-world performance monitoring also leads to data that should be directly fed back into the initial research process for model retraining.

Although data science research efforts remain primarily focused on the model training and validation, we are also laying the foundation for future implementation and the continuous evaluation and refinement required for effective AI/ML solutions. We are doing this by considering broadly recognized standards, such as FHIR, OMOP and SNOMED CT for data sharing and research, and building that into our fundamental data design allowing for seamless transition from simulated data to real-world data. This small investment will yield tremendous efficiencies as our models mature from retrospective validation to deploying into real-world use cases.

Our ongoing efforts are aimed at building a robust data infrastructure that supports our mission and enables us to deliver high-quality, data-driven insights. We are committed to continuous improvement and innovation and believe that happens best through meaningful collaboration. We thank all of TATRC and our outstanding partners for their dedication and hard work. Together, we are making significant strides in advancing our data science capabilities.

For more information contact TATRC's Data Science Lead, Dr. Omar Badawi at: omar.badawi.civ@health.mil.

MedRAS Participates in Challenge 1 for DARPA Triage Challenge

The DARPA Triage Challenge (DTC) is a large-scale, three-year effort to drive innovation for rapid medical triage and assessment to help medical responders perform scalable, timely, and accurate triage during mass casualty incidents (MCIs). DTC allows performing teams to compete for monetary prizes at the annual evaluation challenges. The performing teams are made up of national and international organizations that have developed novel systems and technologies to meet the goals of the challenge. The DTC is split into two focus tracks: primary triage and secondary triage. The goal of the primary triage challenge is to develop algorithms to identify injury patterns in stand-off sensor data for triage in MCIs. The secondary triage challenge goal is to develop noninvasive sensors that continuously and autonomously capture physiological data and use algorithms to track in real-time to anticipate medical needs. The primary triage focus is further split into the systems and virtual competitions. The overall goal of the system and virtual competitions are to use stand-off sensors to gather data of casualty physiological status for their algorithms in order to provide real-time casualty identification and injury assessment. The system competition allows performing teams to assess real-life simulated mass casualty scenarios using robotic mobility platforms, while the virtual competition allows teams to access a virtual/digital mass casualty simulation. Each year, the challenge-performing teams test their developed technologies in both annual training workshops and evaluation challenges. (For more information on DTC, visit: https://triagechallenge.darpa.mil/.)

TATRC and TACMED team members testing connections with casualty worn sensors.

TATRC is one of the independent verification and validation (IV&V) teams supporting the DTC in the systems primary triage competition. TATRC's main role in the DTC is to plan, coordinate, and execute the large-scale mass casualty scenarios. Additionally, TATRC is tasked with conducting data collection events to generate representative datasets the challenge-performing teams will use to prepare their algorithms leading up to the annual challenge events. Each year the scenario designs get more complex and harder for teams to navigate and perform in. This allows the DTC to keep pushing the limits, to ensure that the technology developed by this challenge is robust and able to perform in varied real-world mass-casualty situations.

The first annual challenge brought eleven performing teams to compete. This challenge was held at the

DARPA Triage Challenge
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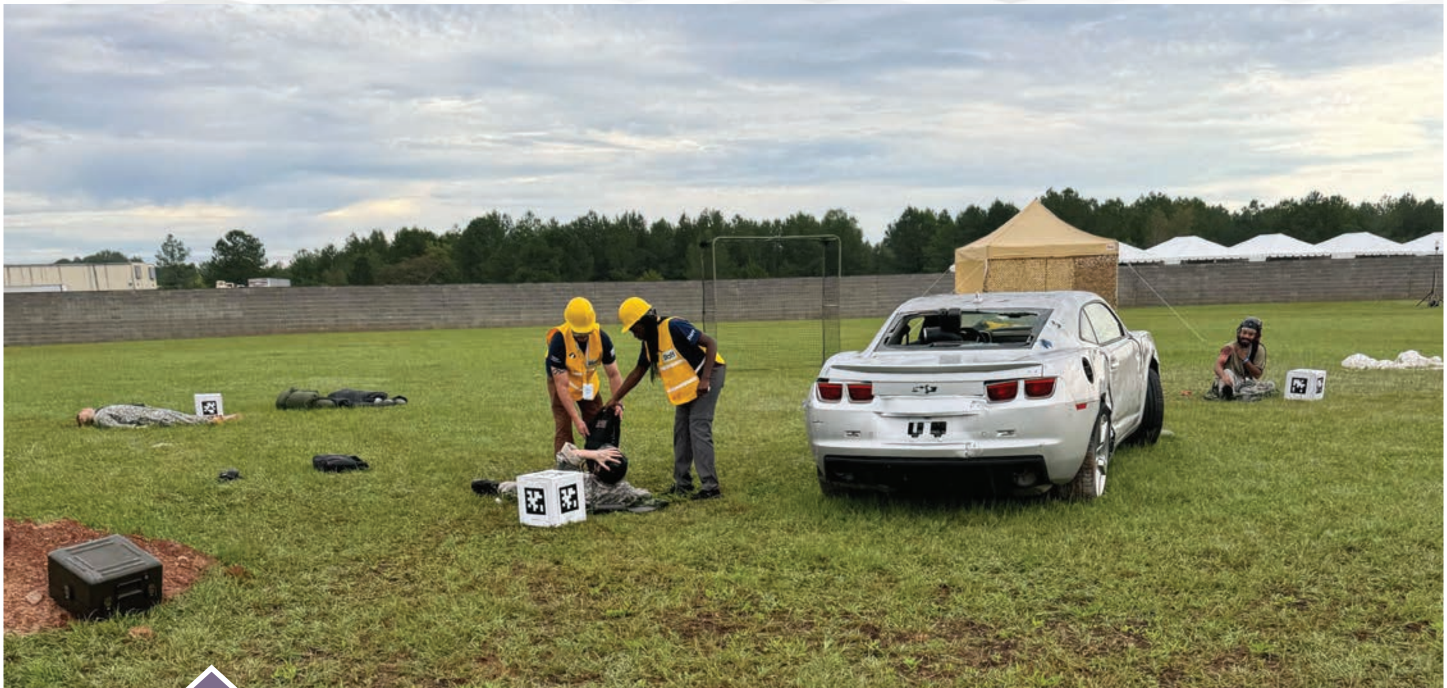
DARPA Triage Challenge *continued from page 16*



TATRC and moulage team members placing live role players in the battlefield scenario field.

TATRC team members observing simulated runs on the convoy ambush scenario field.

Guardian Centers of Georgia in Perry, Georgia. There were three large-scale simulation scenarios of various fields included in this first challenge. There was a large-scale battlefield scenario, convoy ambush scenario, and an airplane crash scenario. Each field consisted of various simulation materials and casualties consistent with the scenario presentation. During the challenge, each team conducted triage runs of their technology on all three fields where they were tasked with navigating the course with robotic systems equipped with sensors and algorithms, and autonomously reporting back found causalities and their physiological signatures detected. When asked about the level of effort TATRC put into developing, setting up, and executing the simulation courses, Alix Donnelly, TATRC's DTC Project Manager had to say:

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Full TATRC Challenge 1 Team group shoot.

TATRC team members starting simulation set up the airplane crash scenario field.

"TATRC has put a ton of effort into not only the execution of the scenarios seen at the DTC Challenge 1, but also into the planning that went into this event. The TATRC team was able to take their combined knowledge of real-world triage, simulation, and data collection into this event to ensure we were creating and presenting realistic and challenging fields to train the developed systems to overall advance technology in this area."

With the successful execution of Challenge 1, the TATRC DTC team has now shifted their focus to start planning the second year for DTC. The next annual training workshop will be held in the Spring of 2025. For year two, we can expect to see larger and more challenging scenes with even more data collected, which we are really excited about.

For more information, contact MedRAS Lead, Mr. Nathan Fisher at: nathan.t.fisher3.civ@health.mil.

TATRC Leverages FFRDC affiliations and MTEC OTA Research Contracts to Support AutoDoc

In the second and third quarters of FY24, TATRC awarded two support contracts to Federally Funded Research and Development Centers (FFRDCs) to provide support services to accomplish the initial Autonomous Documentation (AutoDoc) research project, as part of TATRC's larger Autonomous Casualty Care (AC2) research portfolio. The first FFRDC support contract was awarded to Massachusetts Institute of Technology (MIT) Lincoln Labs based out of Lexington, Massachusetts. MIT Lincoln Labs is providing TATRC with a gov cloud infrastructure to house the AutoDoc research data using an accredited platform that can be leveraged by multiple partners, both within the DoD as well as external agencies as a collaborative environment. The second FFRDC support contract was awarded to MITRE Corporation, based out of McLean, Virginia. MITRE is providing coordination and collaboration support services which will focus on ensuring the data developed as part of the AutoDoc research project is interoperable and adheres to the data standards and formats that benefit everyone involved in the effort now, and in the future.

Additionally, in the fourth quarter of FY24, TATRC awarded three new research contracts leveraging the Medical Technology Enterprise Consortium (MTEC) Other Transaction Authority (OTA) mechanisms.

The first of these MTEC OTA research awards leverage the private sector to provide TATRC with expanded capabilities to collect combat casualty care data in hyper realistic environments. This simulation ecosystem contract was awarded to Ragged Edge Solutions (RES), based out of Greenville, North Carolina. The RES team is providing TATRC with additional prolonged field care focused medical simulation curricula, which can be leveraged at both the RES facilities and other TATRC led data collection events. Additionally, the RES team is providing an initial 9 months of data collection (with an optional, merit-based year of additional data collection) activities at their location, using the AutoDoc Sensor Suite technologies. Data collected by RES will augment our centralized data repository and can be leveraged to develop new machine learning (ML) and artificial intelligence (AI) driving algorithms to support the care provider in the future.

The second MTEC OTA research enables TATRC to expand its suite of passive sensor capabilities to capture information from both the caregiver and the casualty in a tactical combat casualty care (TCCC) environment. This research and development award is focused on identifying specific technologies that can be used to collect data about care delivery in austere environments and provide a means to passively document the care provided at the point of injury (POI). The AutoDoc Sensor Suite contract was awarded to: Applied Research Associates (ARA) based out of Elkridge, Maryland and Moberg Analytics, based out of Philadelphia, Pennsylvania. Both performes are required to provide their fully functional sensor suite to TATRC in the initial six-month sprint. Solutions will be formally assessed, and if found to have merit, will be funded for additional six-month sprints, not to exceed an 18-month effort.

Finally, the last METC OTA research award is focused on leveraging the AutoDoc sensor suite data to develop new ML and AI driven algorithms that will allow the population of an electronic DD Form 1380, (TCCC card), and other AC2 support functions. The AutoDoc Algorithm contract was awarded to: ARA based out of Elkridge, Maryland, Blue Halo from Arlington, Virginia, and Crimson Government (a division of Crimson Phoenix) of Herndon, Virginia. These three performers will focus on using the AC2 data repository to develop algorithms to automate the casualty care documentation process, and other autonomous care delivery support functions. Like the sensor suite teams, they will provide their initial algorithms to the government after an initial 6-month sprint, where they too will be formally evaluated. If found to have merit, the team will be funded for additional six-month sprints, not to exceed an 18-month effort.

The combination of support that TATRC receives from both its FFRDC partnerships and its MTEC OTA performers greatly enhances the probability of success in meeting the AutoDoc research project objectives.

For more information on these contract awards, please contact Ms. Jeanette Little, jeanette.r.little.civ@health.mil.

TATRC Returns to Northern Strike

Medic from the 437 Medical Company using the VISTA end-user device to locate casualties detected by the VISTA UAS.

In the late Summer, members of TATRC's Medical Robotics and Autonomous Systems (MedRAS) team, along with their research partners at Areté Associates, conducted testing and demonstrations of their Vision and Intelligence Systems for Medical Teaming Applications (VISTA) and Patient Handling via Audio, Recording, and Observation System (PHAROS) technologies at Northern Strike 2024 in Grayling, Michigan. Hosted by the Army National Guard, this event provided TATRC with the opportunity to acquire data and feedback on their VISTA and PHAROS systems by integrating the technologies with the 437th Medical Company and Marines Mortuary Affairs Unit during their experimentation and training scenarios.

VISTA and PHAROS are automated technologies developed to support medics with casualty detection and standoff vitals monitoring at point-of-injury and evacuation care settings. Development of these technologies is part of a broader effort at TATRC to reduce the cognitive and physical demands on medics while enhancing casualty survival rates.

VISTA is a vision system mounted on an Uncrewed Aerial System (UAS) that enables remote detection, identification, and assessment of battlefield casualties from a standoff distance, and relays critical information to the medic(s) for pre-triage decision making. Using a suite of advanced computer perception and machine learning algorithms, VISTA is able to detect casualties, continuously monitor vital signs (heart and respiration rates) and assess injuries as it hovers over a casualty scene. PHAROS builds on the algorithms deployed for VISTA and adapts them for patient monitoring during transport in evacuation vehicles and in extended care settings. PHAROS consists of a compact, vision-based sensor pack that can be positioned above a casualty in various environments for continuous monitoring of patient vitals (respiration and heart rate), responsiveness, patient movements and poses, and characterization of external wounds. PHAROS also enables forward communication on the status of the enroute casualties to receiving roles of care over the ATAK (Android Tactical

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The VISTA technology (payload) integrated into the Ascent AeroSystems Spirit UAS.

The VISTA handheld controller visualization as the UAS hovers above a casualty while a medical team responds for extraction during a simulated point-of-injury TCC and extraction training mission.

Assault Kit) network. Ultimately, the goal of PHAROS is to improve patient outcomes by augmenting a medics' ability to continuously monitor patients and document care, freeing them up to focus on time-critical lifesaving interventions.

At this year's Northern Strike, TATRC successfully tested and demonstrated both the VISTA and PHAROS technologies in operationally relevant scenarios giving key military stakeholders the opportunity to assess their potential benefits to the future warfighter, provide feedback on modifications to enhance value and usability, and supply TATRC with data to refine algorithm performance in future iterations. Dr. Jonathan Chambers, a Robotics Engineer at TATRC, described an operational scenario where the 437th Medical Company utilized VISTA, PHAROS, and BATDOK technologies in a joint exercise to assist a medical evacuation team in a casualty extraction mission.

"We had three casualties dispersed in a low-visibility wooded and brush-filled area. First, the VISTA system – running on an Ascent Aerosystems Spirit UAS – was used to detect casualty positions and rapidly direct the medical team toward their positions through a soldier-worn ATAK device. Once the soldiers arrived at a casualty position, the casualty's health status was digitally documented using a Soldier's wrist-worn BATDOK device. The casualties were then transferred to a Field Litter Ambulance (FLA) outfitted with a PHAROS system that aided onboard medics in monitoring casualty health status for the remaining hour of the extraction mission. Each casualty's digitized health data, acquired using VISTA, BATDOK, and PHAROS, provided a clear health status history that could then be used by a downstream healthcare provider to make better informed healthcare decisions for better casualty outcomes."

Through scenarios like this, the TATRC team received a lot of valuable feedback from the Soldier end-users through after-action reporting. Soldiers noted how the VISTA technology improved their situational awareness in the battlefield by locating casualties that were not visible by eye, while also providing feedback on opportunities for improved communication and coordination between teams during casualty extraction missions. Similarly, feedback on the PHAROS system was largely positive with Soldiers commending the system for being non-intrusive in the tight confines of the FLA while also offloading the medics from continuous vitals monitoring tasks to enable them to focus on providing other lifesaving measures. These exercises also provided large amounts of operationally relevant data that will serve as a critical asset to evaluate and further refine algorithm performance to help inform future development trajectories.

Northern Strike also provided TATRC with opportunities for collaboration between military and industry partners. Since VISTA and PHAROS are both platform agnostic technologies, TATRC has continued interest in testing these technologies on a wide range of platforms to prove-out the technology. To this end, TATRC worked with Edge Autonomy – creators of the Stalker UAS – to test the VISTA algorithms on images acquired at higher altitudes. Demonstrations of the VISTA and PHAROS technologies also garnered interest from many distinguished visitors and military leadership, and has led to the request of future demonstrations at events such as PCC5.

For more information on the exercise, please contact MedRAS Deputy, Mr. Ethan Quist at ethan.t.quist.civ@health.mil.

EMPLOYEE SPOTLIGHT

TATRC Welcomes New MMSIV Military Deputy

CPT Tamara Richardson has joined our Medical Modeling Simulation, Information, and Visualization (MMSIV) team as the new Military Deputy!

CPT Richardson joined the Army in 2007 as a Combat Medic. Throughout her 17 years of service, she also worked as License Practical Nurse. She received her commission as a Second Lieutenant in the Army Nurse Corps (ANC) at the Direct Commissioning Course in Fort Sill, OK in 2019. She earned her Bachelor of Science in Nursing (BSN) at Augusta University. She has also earned her Master of Science in Public Health Nursing from Liberty University. CPT Richardson is also a graduate of the United States Army Medical Department (AMEDD) Basic Officer Leadership Course (BOLC).

Her assignments include Health Care Specialist, 203D BSB, Fort Benning, GA; License Practical Nurse, Eisenhower Army Medical Center, Fort Gordon, GA; Brigade Training and Schools NCO, Eisenhower Army Medical Center, Fort Gordon, GA; Medical Surgical Staff Nurse, Walter Reed National Military Medical Center, Bethesda, MD; Class Coordinator and LPN Instructor, Practical Nurse Course Phase II site, Walter Reed National Military Medical Center, Bethesda, MD.

CPT Tamara Richardson, Military Deputy Medical Modeling Simulation, Information, and Visualization (MMSIV)

CPT Richardson's military awards and decorations include the Army Commendation Medal, Army Achievement Medal, Humanitarian Service Medal, Army Good Conduct Medal, National Defense Service Medal, Global War on Terrorism Medal, Non-Commissioned Officer Professional Development Ribbon, and Army Service Ribbon.

CPT Richardson is the proud mother of two wonderful children, her daughter Sanaa and her son Terrence. She enjoys spending time with her family, cooking, and shopping.

CPT Richardson is extremely excited about joining the TATRC team. She hopes to bring her experience as a nurse to the help propel the Autonomous Casualty Care mission.

A New Systems Engineer Joins the TATRC South Team!

Andre Garner has joined our TATRC south team as a Systems Engineer. He is a retired Army Veteran from Alabama (Roll Tide) with over 20 years of experience in Information Technology and security. Throughout his career, he has held various roles, including Service Desk Manager, Network and Systems Administrator, and Server and Desktop Administrator.

His professional training encompasses a wide range of topics, including Windows Server, Windows 11 and earlier versions, Microsoft Office 365, Windows Security, Cisco CCNA, IT Networking, and Routing, as well as courses in Network Management Security and System Administrator Security. Additionally, he has completed training in Microsoft Exchange Server, Army Public Key Infrastructure (PKI) Trusted Agent, and Risk Management Framework.

Mr. Andre Garner, Systems Engineer

Mr. Garner holds several certifications, including CompTIA Advanced Security Practitioner (CASP), CompTIA Security+, CompTIA Network+, and Microsoft Azure Security Engineer Associate. In his most recent role, he served as a Security Control Assessment Policy Reviewer, collaborating with a team to conduct a comprehensive Security Test and Evaluation (ST&E) for a prominent Department of Energy (DOE) science and energy laboratory.

Outside of Andre's professional pursuits, he enjoys the great outdoors by fishing, riding motorcycles, and following Alabama and Dallas Cowboys football.

Welcome to the team, Andre!

AI / ML Engineer Joins TATRC's MedRAS Team

Mr. Nicholas Williams joins our team as an AI / ML Engineer and Principal Investigator within the Medical Robotics and Autonomous Systems (MedRAS) team. His primary focus lies in providing Machine Learning and Data Science support for military healthcare projects. As the Principal Investigator for Medic CDSS, a clinical decision support tool, Nick delves into diverse datasets to extract insights and facilitate administrative decision-making. Additionally, he plays a pivotal role in designing data pipelines and protocols for the automated casualty care documentation project. As a Certified Project Management Professional and Scrum Master, Nick thrives on collaboration, conducts requirements analysis, gathers user feedback, and implements agile solutions.

Nick earned his master's degree in library and information science from the University of Maryland, College Park in 2016. During his time there, he participated in a Capstone research project with the Food and Drug Administration, Center for Drug Evaluation and Research (CDER). His contributions involved updating and modernizing regulatory documentation and training guidance for Investigational New Drugs. Before joining our team, Nicholas also worked at Absolute Business Solutions as a Clinical Data Modeler, supporting HHS Operation Warp Speed in their mission to accelerate COVID-19 vaccine development, manufacturing, and distribution. His work on data pipeline development and logistical forecasting during the COVID-19 pandemic response improved readiness and access to medical devices and therapeutic treatments as these products moved from emergency use authorization through to commercialization.

Originally from Boston, Nick grew up in Montgomery County, Maryland. When he's not immersed in data, you'll find him cheering for the Red Sox, enjoying outdoor activities like hiking and disc golf, and staying active through running. Nick recently completed his first Disc Golf tournament (though he's coy about his placement!). He's an avid coffee enthusiast, still indulges in Halo (the video game), and can talk your ear off about his meticulously designed home office setup. One of his favorite quotes, attributed to Admiral Grace Hopper, resonates with his analytical mindset: "One accurate measurement is worth more than a thousand expert opinions."

**Mr. Nicholas Williams,
AI / ML Engineer & Principal Investigator
Medical Robotics and Autonomous Systems (MedRAS)**

Information Assurance Officer Returns to TATRC

Mr. Dana Hudnall has returned to TATRC as our Information Assurance Officer. Born and raised in the sunshine state of Florida, he joined the Navy when he was 19 and retired as a Chief Warrant Officer (Cryptologist) in 2004 after 22 years.

Dana has worked in some type of security role (personnel, physical, and cybersecurity) for over 35 years, but has been working specifically in Cybersecurity for the last 22 years.

Dana worked at TATRC before (Secret Digital Society ID #381) as the system security analyst from 2016 to 2018 before moving to Florida where he worked for Central Command (CENTCOM) and Special Operations Command (SOCOM) at MacDill Air Force Base. During COVID, he found himself back at DHA again working with the Policies Division. Dana had semi-retired (just teaching) when he was called and asked if he would come back to TATRC, and he agreed!

Dana is the proud father of two college age daughters and two sons, both prior Marines. He is married to his lovely wife, who also works for DHA as a security analyst and both of them teach system design / information systems security at various colleges. In his free time, Dana loves to fish and woodwork.

TATRC is happy to have Dana back on our IT team!

**Mr. Dana Hudnall,
Information Officer**

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