Working Group 8 – Human Dimension

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Bangsamoro Plebiscite Survey Analysis

[27 Oct 15, 1330-1400, Rm 2]

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Keywords: Survey, Assessment

ABSTRACT: As the Bangsamoro Peace Process continues to progress in the Southern Philippines, officials have planned for a plebiscite to determine which areas will constitute the newly formed semi-autonomous "Bangsamoro Region." This study came at the explicit request of LTG Rustico Guerrero, the Commander of Western Mindanao Command (WESMINCOM), specifically for information on expectations of violence leading up to and during the plebiscite. Through expanding the scope of the survey to include information on the political environment and general public perceptions surrounding the peace process, the analysis provided valuable information to a broad group of stakeholders, including Joint Special Operations Task Force Philippines (JSOTF-P) and the U.S. Embassy, as well as the Philippine Office of the Presidential Advisor for the Peace Process (OPAPP) to better prepare for the Plebiscite.

Frenemies: Reimagining Communication Between The Warfighter And The Logistician

[27 Oct 15, 1400-1430, Rm 2]

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Keywords: Logistics, Supply Chain, Supply Eco-Systems

ABSTRACT: In 1969 General Carter Bowie Magruder, a senior Army logistician compiled a list of reoccurring logistics problems he had seen throughout his 27 years of service (WWI, WWII, Korea and Vietnam). General Magruder identified problems that still exist today and forecasted problems that would occur during future logistics support to a large scale conflict. Some of the problems that he identified as 'unsolvable', however, have been resolved by today's commercial markets with emerging communication capabilities. By comparing and contrasting these reoccurring military logistics problems with emerging competitive logistics strategies in commercial markets, there are ample opportunities to restructure the communication channels between the warfighter and the logistician.

Given the communication tools available to the Army in WWII, it was impossible for rear-echelon logisticians to directly ask the front-line units what they needed. Current communication capabilities allow multi-dimensional communication. Not only can a single individual communicate simultaneously with multiple entities (one to many), but multiple entities can communicate effectively at the same time (many to many). Today's commercial entities have demonstrated successful use cases for this new form of communication and have turned the aggregation of communication into a useful product. In recent history, companies across multiple markets have re-imagined their logistics strategies to take advantage of emergent supply chain theory and new technology. In doing so, they have changed their supply chains from a necessity to a tactical advantage. The opportunities today's communication abilities provide the military, could reshape how we communicate with and support the Warfighter. We as a community have the opportunity to ask ourselves, "How can we turn multi-dimensional communication between Warfighters and Logisticians into a military advantage?"

A Soldier System Engineering Architecture (SSEA) Modeling and Simulation Application

[27 Oct 15, 1430-1500, Rm 2]

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Keywords: Human Dimension, Combat Simulation as a Service, Systems Engineering, Architectures, Modeling and Simulation

ABSTRACT: The purpose of the Soldier System Engineering Architecture (SSEA) Science & Technology Objective (STO) is to create a principle-based soldier architecture and framework to enable system-level tradeoff analysis and create the foundation for design parameters for next generation soldier system and subsystems based on human performance capabilities, the full complement of equipment, and mission tasks.

Modeling and Simulation (M&S) is a critical component of the SSEA strategy. SSEA will develop the soldier decomposition (SSEA Work Breakdown Structure) and the SSEA Soldier-Equipment-Task (SET) framework. SSEA will thereby serve as a test bed for concept exploration and requirements definition, and provide a space to investigate R&D investment decisions.
The M&S component will include on-demand Combat Simulation as a Service (CSaaS) to enable interdisciplinary cross-community/domain analytical environment(s) to address SSEA user and enterprise needs.

This paper will discuss the goals of the SSEA STO, our initial M&S implementation plans, the challenges associated with providing a seamless decomposition of the Soldier, and SSEA's relationship to current soldier modeling programs such as the Distributed Soldier Representation (DSR), Executable Architecture Systems Engineering (EASE) Distributed Modeling Framework, Improved Performance Research Integration Tool (IMPRINT), and Infantry Warrior Simulation (IWARS).

Complex Military Mission Environment (CM2E) Model

[27 Oct 15, 1515-1545, Rm 2]

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Keywords: human domain, social science, PMESII, closed-form model

ABSTRACT: Today's military operates in an interconnected and complex world. The pace and global impact of actors pursuing varied and often conflicting objectives, add to the complexity. These complex environments are primarily defined by the human domain and impacted by cyberspace, public opinion, religion, and culture as well as the infrastructure, political, economic, and legal systems. One of the many challenges of experimentation in complex environments is the ability to simulate and measure the environment's abstract factors (e.g. political, social, cultural, and economic). In order to meet the needs of decision makers in complex environments, the U.S. Army Training and Doctrine Command (TRADOC) Analysis Center (TRAC) designed a model that decomposes the operational environment into two key components.

To develop the deterministic environment model component, the TRAC team decomposed the Joint doctrinal operational variables of political, military, economic, social, information, and infrastructure (PMESII) into a conceptual model of 900 observable and measurable variables with over 800,000 potential interactions. Applying social science theory, military doctrine, and operational experience from Iraq and Afghanistan, TRAC reduced the construct to a universal, validated subset of 69 variables and 672 interactions. Simple algebraic models describing the strength and direction of these variable interactions were then derived through regression analysis on empirical data. These interoperable models provide decision makers with a range of possible outcomes for complex military missions in complex environments.

The second key component is a stochastic dynamic model that represents scenario and mission variables. This model allows actors and their actions to be decomposed and simulated in the form of highly adaptable decision tables. The hypothesized and measured effects of those actions are then integrated into the environment model. This modeling capability provides an adaptive and simple analytical tool for hypothesis testing, experimentation, and comparative analysis.

This presentation will discuss TRAC's approach to developing this capability as well as how this capability is aimed at being an easy to adapt, closed-form model that is designed and used by analysts.

10 Things Every ORSA Should Study

[27 Oct 15, 1545-1615, Rm 2]

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Keywords: Training, education, personnel, operations research, systems analysis, graph models

ABSTRACT: Operations Research and Systems Analysis (ORSA) is a broad discipline, comprising many interacting fields of study. Within the Army ORSA community, there is currently no defined set of foundational skills that are expected of every ORSA. This paper (presentation) employs a dependency graph model of interacting fields of study within the ORSA discipline to propose a set of minimum competencies within ten fields of study that support the training requirements for the ORSA community's utility player, the ORSA analyst deployed in support of a theater headquarters.

Benefits and limitations of computer-based simulation for Soldier-robot teaming and system design: An overview of RIVET

[27 Oct 15, 1615-1645, Rm 2]

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Keywords: Simulation, Soldier-robot teaming, RIVET, Design, Robot life cycle

ABSTRACT: The United States Army envisions unmanned systems seamlessly operating with Soldiers during joint operations. To meet this end, there will need to be a paradigm shift in the way in which these systems are used during operations, moving away from remote control or tele-operation and towards advanced automation and the intelligence level of a team member. Therefore, the goal is to improve agent-based decision making in order to advance the system's autonomy and promote interdependent operations. The US Army Research Laboratory's Autonomous Systems Enterprise vision is to enable the teaming of autonomous, intelligent systems with Soldiers in dynamic and unstructured combat environments, as well as for use in base operations. A recent National Academy of Sciences Technical Advisory Board (TAB) for human sciences listed key barriers to the extension of existing work to Army field applications. These include: (a) how to achieve integration within increasingly complex decision architectures, (b) how to create flexible and effective knowledge representations, (c) how, what, and when to effectively communicate knowledge back to the Soldier, and (d) how to develop, maintain, and calibrate human trust.

Our work presents a computer-based simulation approach to research human factors, as well as to engineer solutions specific to system design and individuals' preferences, concerns, and other issues with future Soldier-robot teaming operations. The use of simulation provides the opportunity for collaboration between Soldiers and unmanned platforms at multiple levels in the design process. This helps to guide the design process and provide needed information back into the developmental life cycle. Here we will discuss the Robotic Interactive Visualization Experimentation Technology (RIVET), a computer-based simulation environment which allows users to work cooperatively with unmanned systems to meet a variety of mission objectives. This system is used to design and conduct human use experiments to allow evaluators to gauge the level of trust between intelligent systems and their humans. The benefits and limitations of using this approach to inform design throughout the developmental life cycle of the robot will be discussed.

Addressing Challenges in the US Army's Problem Solving Process

[28 Oct 15, 0945-1015, Rm 2]

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Keywords: Problem Solving, Decision Making, Operational Planning

ABSTRACT: Chapter 4 of Field Manual 6-0, Commander and Staff Organization and Operations, presents the US Army's problem solving process for leaders and planners. The manual distinguishes this methodology from the more specific Military Decision Making Process and Troop Leading Procedures detailed in subsequent chapters for operational planning. This presentation analyzes the problem solving process by exposing several mathematical challenges and provides alternatives from the decision science body of knowledge. This type of evaluation has broad applicability throughout national security analysis, and should appeal to planners, analysts, and decision makers across allied militaries.

The presentation begins by critiquing the process' matching of problem structures to methodologies, which recent research suggests is backwards. Specifically, more complex problems can be efficiently solved with simpler decision making methods rather than increasingly complicated ones. Next, the presentation exposes challenges in the process' evaluation criteria weighting methodology. The existing process uses a unipolar rating scale with a flawed basis and suggests treating the scaled scores as cardinal weights. The presentation offers academically-grounded alternatives to this weighting process before turning attention to the comparison of alternatives. The final area of critique considers the decision matrix method recommended for the analysis of alternatives. The decision matrix method contains contradictory scale directionality and conflicting data types, both of which undermine the results of the comparison. The presentation ends by offering alternatives to the decision matrix method from the normative and descriptive schools of decision science.

Distributed Soldier Representation: M&S Representations of the Human Dimensions of the Soldier

[28 Oct 15, 1015-1045, Rm 2]

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Keywords: Human Dimension, Modeling, Soldier as a System, Service-Oriented Architecture (SOA)

ABSTRACT: The Army has developed Modeling and Simulation (M&S) capabilities representing platforms such as aircraft, vehicles, and weapons system for various uses and of various fidelities. The Army has represented humans – soldiers, civilians, and threats – in its M&S as well. These representations provide physical model characteristics for mobility, delivery accuracy, lethality, and sensing, as well as behavioral representation to support tactical operations, Human Intelligence (HUMINT), and treating simulated wounded. These models rarely model the soldier as a complex system, omitting factors such as stress, human physiology, leadership, unit cohesion, and morale, to name a few. Instead, the actions of the simulated soldier are often based on a deterministic model of human behavior or based on a stochastic model where random numbers provide variability across iterations, with variability provided by a random number seed, not the model. This provides unsatisfactory simulation results, as the simulated soldiers appear robotic or even superhuman.

This paper describes the two year old Distributed Soldier Representation (DSR) research and development effort at the Army Research Laboratory, Human Research and Engineering Directorate, Simulation and Training Technology Center (ARL HRED STTC). We describe our research and identify eleven areas of interest for improving soldier representation. We further describe the development of an innovative Service-Oriented Architecture (SOA) that provides a web services-based approach to integrate disparate models to address these identified representation gaps. We describe the challenges and benefits achieved, as well as the lessons learned from integrating an Effects of Stress model with One Semi-Automated Forces (OneSAF).

Developing Human Performance Measures for a Gaming Environment

[28 Oct 15, 1045-1115, Rm 2]

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Keywords: Human Dimension, Metrics, Human Performance, Gaming, Training

ABSTRACT: In the expanding gaming environment supporting U.S. Army training, the ability to measure human performance is an increasingly important capability. The measures must be based on sound human research factors and established doctrinal standards that do not necessarily take into account the constraints of precisely how data will be collected to calculate those measures.

The primary locus of operator measurement is at the user interfaces (UI) including the keyboard, mouse and joystick with no input from expert live trainers or observers. Expressing measures to answer what are often subjective questions in context of a game using objective simulation data presents challenges. The Image Intensification and Thermal Equipment Trainer (IITET), a collaborative effort between the Night Vision and Electronic Sensors (NVESD) and the Army Research Institute (ARI), has addressed these challenges. Measures of Performance (MOP) were developed with traceability to the Army Research Institute's (ARI) study of manned-unmanned teaming (MUM-T) between UAS operators and rotary wing pilots and Army tasks. The use case focused on the current RQ-7B Shadow training needs for UAS payload operators (PO) who must acquire scout and reconnaissance skills in support of MUM-T. The system architecture was developed to allow future expansion to meet the training needs of Gray Eagle operators.

A key After Action Review (AAR) requirement for the NVTT-Shadow is for a PO trainee to use the system and receive training feedback without the immediate supervision of a human trainer in specific tasks and the overall accomplishment of the mission. The IITET measures, data collection methods and presentation to the student have the potential to support other sensor-intensive systems with only minimal modifications to the existing game scenarios, game entities, and other aspects of the system.

This paper discusses the development of gaming metrics, the challenges of measuring in this environment, and lessons learned.

Gender Integration Study

[28 Oct 15, 1115-1145, Rm 2]

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Keywords: Gender Integration, DGCAR, Combat Arms

Improving Individual Adaptability: Lessons from History & Agile Human Systems Integration

[28 Oct 15, 1300-1330, Rm 2]

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Keywords: human systems integration, HSI, agile, adaptability, resiliency, history

ABSTRACT: Inclusion of the Human Dimension in Army operations is critical for improving the adaptability of military and civilian Army personnel, but papers and operating concepts have called for this transition for years. The real question is how do we make it happen?

A brief review of history will reveal that some of the most adaptive and resilient fighters have been guerrillas. What makes these independent fighters successful is the confidence individuals have in themselves with regards to their competence and their ability to make decisions. The traditional downfall of guerrilla actions has been weak leadership or poor organization. In order to integrate these lessons with today's Human Dimension initiatives, we propose an approach that balances leadership and individual development with principles found in high reliability organizations and an iterative process of checks and balances. The concepts work in concert to comprise a methodology that falls under the domain of Agile Human Systems Integration (HSI). The result is a process for developing highly adaptable individuals in a way that optimizes individual and team performance for non-conventional actions.

Integrating the Human Dimension and Systems Engineering

[28 Oct 15, 1330-1400, Rm 2]

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Keywords: Human performance modeling, Systems Engineering, Modeling and Simulation, Human Dimension

ABSTRACT: In an effort to introduce Human Dimension considerations into common Systems Engineering (SE) models and processes, we have incorporated SysML diagrams into the Improved Performance and Research INtegration Tool (IMPRINT) software, which is used in the Army Human Systems Integration (HSI) analysis process. Specifically, we have identified several SysML diagrams and Human View products that map naturally to IMPRINT modeling requirements. A prototype version of the software has been developed that can import the first of these, activity diagrams, as an IMPRINT task network. This capability serves to reduce effort duplicated by HSI practitioners and systems engineers who may be conducting similar task analyses. A high-quality activity diagram conducted by a systems engineer, potentially with assistance from a human factors engineer to include Human Dimension considerations, can now serve as the start of an IMPRINT analysis. This also ensures that the resulting IMPRINT model reflects the same mission and system being analyzed by SE professionals. We are conducting a proof-of-concept analysis focused on a dismounted squad to exercise and validate the integrated analysis process. An IMPRINT analysis and SysML document of the mission will be produced manually to validate the information imported automatically into IMPRINT.

As an extension of this work, we will provide a baseline assessment of existing modeling capabilities to support predictive analysis of representative mission exercises. We will develop a process for determining task attributes and operator skills in order to identify applicable modeling and simulation tools. By studying physical, cognitive, and social capability gaps we can prioritize modifications and improvements to existing M&S tools.

MARC: MIL-STD-1472 Anthropometry Resource Companion

[28 Oct 15, 1400-1430, Rm 2]

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Keywords: Anthropometry, Physical Accommodation Analysis

ABSTRACT: In the design of military vehicles, equipment, weapons, and other systems, the spatial requirements of the warfighter must be considered to ensure fit, safety, and performance. Detailed databases of reference anthropometry (body dimensions) for the military have been compiled in recent years and made available to system designers and evaluators. These databases—including the 1988 ANSUR survey and the 2012 ANSUR II/MC-ANSUR—are used when determining required adjustability, reach, clearance, and other parameters for materiel. MIL-STD-1472, Department of Defense Design Criteria Standard: Human Engineering is a significant resource that establishes requirements for considering the user in the design of materiel for the U.S. military. It provides basic guidance for finding and applying measures of anthropometry. A new tool called the MIL-STD-1472 Anthropometry Resource Companion (MARC) has been developed to augment the limited guidance and data available in MIL-STD-1472 related to anthropometry and physical accommodation.

MARC has the following primary features: (1) a data explorer that provides percentile values and raw data from available military anthropometric surveys; (2) a calculator that can properly account for multiple measures of anthropometry when determining accommodation, along with the ability to consider the effect of clothing and equipment for various Army ensembles using recent published data; and (3) a tool for organizing, recording, and comparing anthropometric data collected during a small-sample fit study. Given these features, MARC would find use in several roles, including: (1) interpreting requirements; (2) getting or checking values for design; (3) encouraging appreciation for the effect of clothing and equipment; and (4) collecting data and analyzing performance of a design in real time during an evaluation effort. MARC provides convenient access to complete and accurate anthropometric data and interactive analysis capabilities to assist in application of the data. MARC is available as a web app accessible on a PC or tablet.

Nonlinearity in the Auditory Hazard Assessment Algorithm for Humans (AHAAH)

[28 Oct 15, 1445-1515, Rm 2]

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Keywords: Nonlinear, Hearing Damage Risk, AHAAH, Annular Ligament

ABSTRACT: Soldiers often experience impulsive noises caused by firing weapons or using explosive materials. This exposes them to significant risk for hearing damage. Analysis results are presented that show that the risk of auditory hazard is not linearly related to noise inputs. The Auditory Hazard Assessment Algorithm for Humans (AHAAH) is a software application that evaluates hearing damage risk associated with impulsive noise (http://www.arl.army.mil/ahaah). It is specified for Department of Defense (DoD) use in MIL-STD 1474. And, it is used in the Operational Requirements-based Casualty Assessment (ORCA) in the DoD's MUVES® vulnerability assessment tool. AHAAH models the ear's biomechanical response dynamics by applying pressure across the external, middle, and inner ear. The risk of auditory hazard due to exposure to impulsive noises is determined by cumulative strain-induced fatigue in the cochlea's organ of Corti, which is driven by nonlinear displacement of the stapes bone found in the middle ear. This nonlinearity has been validated (Price G. R. (2007) "Validation of the auditory hazard assessment algorithm for the human with impulse noise data," J. Acoust. Soc. Am., 122, 2787-2802.) using previous human test results (e.g., Johnson, D. L. "Blast overpressure studies with animals and men: A walk-up study." USAARL Report (1994): 94-2.). Because of this nonlinearity, the risk of auditory hazard is not found to behave monotonically with any summary waveform characteristic, such as waveform energy or peak pressure. Accounting for the intrinsic nonlinearity of the human auditory system by including AHAAH predictions in the ORCA model, therefore, improves the accuracy of Soldier vulnerability assessments.

Operational Realism in Operational Testing – New Approaches, "Experienced" Technologies

[28 Oct 15, 1515-1545, Rm 2]

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Keywords: Advances in OR, Live Virtual Constructive, Operational Test, Architectures, Modeling and Simulation

ABSTRACT: The Director of Defense Operational Test and Evaluation (DOT&E), during the past three years, has cited the Army's need to improve operational realism in its operational testing events as a major gap. To close that gap, the Army's Test and Evaluation Command (ATEC) has revitalized its Live/Virtual/Constructive (LVC) and real-time casualty assessment (RTCA) investments and, as of October 2014, launched an Integrated LVC Test Environments (ILTE) program.

LVC simulation capabilities are essential to establishing operationally realistic environments that can generate RTCA to help the tester understand the effectiveness, suitability and survivability of systems under test. In most cases, achieving adequate operational realism for a test means leveraging and adapting existing training community solutions to meet test objectives. To support and guide this work, two key efforts have been launched to support this cross-community collaboration: 1) establishment of governance and technical methods and architectures to better promote the integration and re-use of capabilities, and 2) the establishment of an operational realism assessment model to focus technology adaptation and acquisition efforts on the LVC tools that are most important to providing a realistic, relevant test environment.

A key tenet of this work is the adaptation of existing training simulations and architectures to work with rapidly evolving weapons, networks, and mission command systems that have been fielded for testing but are not yet broadly fielded to the Army as a whole. One of the most important investments in this area is the Army M&S Office's (AMSO) sponsorship and co-funding (with PEO STRI and ATEC) of the Live-Synthetic Enterprise Architecture (LSEA) which is establishing governance, architectures, and prototypes to demonstrate the power of adapting existing training tools, via a services oriented architecture (SOA) approach, to achieve more agile and extensible solutions needed not just in training but also in testing.

The operational realism model has been developed based on Army and joint task lists and is used iteratively through test planning and technology selection to build on the initial test framework

developed via the Design of Experiments (DOE). Once the building blocks of the test are established during DoE – test duration, test unit size and type, size and type of threat, terrain/weather conditions, etc. – the operational realism model assists in identify which aspects of the live-synthetic environment are most critical to providing a fair and accurate test and then identifying which available capabilities, if any, can meet those objectives. Considerations could include the level of fidelity for weapons and munition emulation, signatures and information sent to mission command systems, or changes made to target hit/damage signatures to support detection by new sensors.

These new approaches to technology leverage and planning will greatly benefit the Army, via incremental enhancements, to insure that LVC environments keep pace with platform, weapon, and systems modernization and fielding.

Performing Human Systems Integration (HSI) Design of Tele-operated Systems

[28 Oct 15, 1545-1615, Rm 2]

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Keywords: Tele-Operated, Human Figure Modeling, Operational Environments

ABSTRACT: Equipping military ground, aviation or naval platforms to control tele-operated equipment makes it possible to use those systems in hazardous conditions or hostile environments and limit human exposure by keeping the operator at a safe and remote location. However, two factors that need to be considered in the design of these tele-operated systems are accommodation and the operational environment. In many cases, the operator workstation used to control these systems require a custom retrofit of a vehicle or existing platform to integrate all the components and systems required to support the option of tele-operation. Also, equipment such as unmanned turrets, while operated remotely, still must provide access to perform maintenance or corrective action procedures to restore proper operation. Operational environment takes into consideration the ability of the operator to successfully perform the tasks in varying conditions such as crew station orientation, varying speeds, terrain and day-night operations. In such instances, the challenge is to configure a workstation that provides effective operation and control of the tele-operated system for a wide range of body sizes in a confined space or area across varying environmental conditions. The human factors design related issues to these systems are discussed in this presentation.

Person-Event Data Environment Overview

[28 Oct 15, 1615-1645, Rm 2]

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Keywords: Big Data, Personnel Data

ABSTRACT: The U.S. Army faces a challenge in maintaining data for over one million Active-Duty, Reserve, National Guard Soldiers, family members, and civilian employees. In addition to the management of the numerous datasets collected from multiple Department of Defense (DoD) agencies, the Army also has a dilemma in figuring out how to evaluate this voluminous information to provide insights that support senior Army leader decisions. The Person-Event Data Environment (PDE) provides a solution to both of these problems by consolidating various DoD databases into a secure cloud-based enclave, and a separate virtual office space with analysis tools for analysts to conduct research and studies that support senior Army leader decisions.

The PDE is an online cloud-based medium that facilitates the staging, analysis, and reporting of various datasets across the DoD in separate enclaves. The Army Analytics Group Research Facilitation Team collects the data and uses various techniques to de-identify the data for follow-on analysis. The analyst for a study, in a separate secure environment, utilizes the available tools in the PDE, to explore and examine complex de-identified and/or encoded data sets. Using separate and secure enclaves significantly reduces the risk for the researcher when conducting human subject research. This presentation will provide an overview of how data is collected, organized, and analyzed within the PDE and i's contribution to research.

Ranger Assessment Study

[29 Oct 15, 0945-1015, Rm 2]

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Keywords: Gender Integration, DGCAR, Assessment, RTAC, Ranger

ABSTRACT: On 14 May 2012, the Secretary of the Army rescinded the portion of the 1994 Department of Defense (DOD) Direct Ground Combat Definition and Assignment Rule (DGCAR) that permitted the Army to bar assignment of women to units and positions doctrinally required to physically collocate and remain with direct ground combat units. Additionally, on 24 January 2013, the Secretary of Defense rescinded the entire DGCAR and directed DOD to begin removing gender-based barriers to service. These actions required the Army to plan for the expansion of opportunities for women by opening all remaining closed areas of concentration, military occupational specialties, units, and positions as expeditiously as possible, but no later than 1 January 2016. In January 2015, as a part of the overall gender integration of the combat arms, the Secretary of the Army approved the provisional participation of women in the U.S. Army Ranger Course.

Designated by the U.S. Army Training and Doctrine Command (TRADOC) as the "Ranger Assessment" and beginning with Class 06-15, this initiative directed an assessment to identify challenges associated with opening the course to women. As a part of this assessment, TRADOC tasked the TRADOC Analysis Center (TRAC) to conduct a study of integrated conditions at the pre-Ranger training, conducted at the Ranger Training and Assessment Course (RTAC), and the Ranger Course. Additionally, the assessment studied the potential integration of women into combat units and likely impacts to cohesion and readiness.

This presentation will describe the study approach used to identify factors, changes, impacts, and challenges associated with opening RTAC and the Ranger Course to women. Specifically, the study examined factors that influence candidate success. The study also looked at changes made to the course supporting integration. Last, the study assessed integration impacts on Ranger Class 06-15 and challenges with mitigation strategies for integrating RTAC and the Ranger Course.

Subjective and Objective Stress Measurement in Soldier Relevant Scenarios in an Immersive Cognitive Readiness Simulator (ICoRS)

[29 Oct 15, 1015-1045, Rm 2]

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ABSTRACT: Acute stress exposure is known to have deleterious effects on cognition and behavior (for a review see Lupien et al., 2007). US Army Soldiers operate under risky and stressful conditions; this exposure to stress in the operational environment leads to an emotional response in terms of subjective experience, expression, and/or physiology (Gross & Thompson, 2007). Together, the physiological and psychological responses to stress and the emotions produced by these stressors can influence cognition, which carries consequences for mission success. To better understand the effects of stress on mission success, NSRDEC and ARL joined efforts to investigate cognitive resiliency predictors to acute stressors. Together they used measures of personality (Patton, 2014) and state arousal to investigate psychological and physiological responses to acute stress and the effects on a decision making task in the Immersive Cognitive Simulator (ICoRS) located at the Army Research Laboratory's Cognitive Assessment and Simulation Laboratory.

The proposed research hypothesized that 1) the shock condition will prove more stressful than the no shock condition. This will be supported by the increase in participants' psychological and physiological responses during the cognitive task. 2) we expect performance decrements in the threat of shock condition relative to the no shock condition when performing tasks in the simulator (e.g., decision making) 3) that the personality measures will be predictive of both performance and stress responses while performing the cognitive task both the shock and non-shock conditions. Participants engaged in a cognitive task, decision making, while we measured their psycho-physiological responses and behavioral performance under stress vs. no stress conditions (shock vs. vibration). This presentation shows a snapshot of preliminary results from of this joint research effort, the stress and performance during the stress vs. non-stress (shock vs. vibration) session.