



Feb 2022



Senior Leader Perspective: I am honored to serve as the new Chair of the Reliance 21 - Human Systems Community of Interest (CoI). The DoD Human Systems Committee was established in 2009. Mr. Tom Wells hosted one of the first meetings at Wright-Patterson AFB. That Committee transitioned into the Human Systems CoI when Office of the Secretary of Defense developed Project Reliance and the CoI construct. The CoIs were established to "encourage multi-agency coordination and collaboration in cross-cutting technology focus areas with broad multiple-Component investment. CoIs

were to provide a forum for coordinating S&T strategies across the Department, sharing new ideas, technical directions, and technology opportunities, jointly planning programs, measuring technical progress, and reporting on the general state of health for specific technology areas." The Human Systems CoI had four initial subareas: Personnel and Training, System Interfaces, Protection and Sustainment, and Social and Cultural Modeling. The Chair position of the Human Systems CoI rotates every two years and past Chairs have included Mr. Jack Blackhurst and Drs. John Tangney, Laurel Allender, Michelle Sams, Kevin Geiss, and Michelle Zbylut. Mr. Maris Vikmanis (AFRL) was the long-time lead of the Working Group and Mr. Ron Julian was his Deputy. Mr. Vikmanis served as the Air Force liaison and I served as the OSD liaison to the NDIA Human Systems Division.

Enough of the past. My primary goal for the Human Systems CoI is to further enhance coordination, collaboration, and communication across the DoD research enterprise and with national and international government agencies, industry, and academia. I really value the Internal Research and Development (IR&D) Technical Interchange Meetings (TIMS) that have been co-organized by the Human Systems CoI. Members of the Steering Committee can provide you with information pertaining to the various committees that they Chair or participate on throughout the year. For example, Dr. Ben Petro and his team participate on several National Science and Technology Council (NSTC) Subcommittees and have leadership roles in the Joint Human Systems Integration Steering Committee (JSHISC), DoD Human Factors and Engineering Technical Advisory Group (HFE TAG), Combat Feeding Research Executive Board, and DoD Polar Research Coordination Group (PRCG). As several of you know, I hold leadership positions within the NATO Human Factors and Medicine (HFM) Panel, The Technical Cooperation Program — Human Resources and Performance (TTCP HUM Group), and International Cooperative Program for Polar Research — Human Performance Working Group (ICE-PPR HPWG). Each member of the Human System CoI, not just Steering Committee members, should use the knowledge gained from participating on these efforts to create a stronger DoD research and development strategy and program.

I have selected Dr. Jill McQuade to serve as the Lead of the Human Systems CoI Working Group. She has been involved with this CoI since the 2012 timeframe and has developed numerous Roadmap briefings. I am sure that Dr. McQuade and Ms. Stilling will appreciate your assistance when the CoI is responsible for responding to taskers, including organizing meetings, developing briefings and funding documents.

To close, I want emphasize that my role as Chair of the Human Systems Col is to assist you in being successful. Please let me know how the Steering Committee and Working Group can assist you.

Dr. Patrick Mason, Dept Head, Warfighter Performance, Code 34, Office of Naval Research—Incoming Chair





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HUMAN SYSTEMS Col

Vision: Develop & deliver technologies to enable, sustain, enhance & quantify human performance for measurably improved mission effectiveness



Mission: Enhance mission effectiveness through:

- 1) Integrated sims for mission training & experimentation
- 2) Human-machine designs for mission effectiveness,
- 3) Assessment of operator effectiveness
- 4) Operating through battlespace stresses, and
- 5) Mastering the PMESII battle space.

Key Products: Integrated service roadmaps; Col taxonomy, budget & programs; Seedling and ARAP proposals, success stories and new collaboration opportunities.

Key Personnel:

Col Chair: Dr. Patrick Mason, Office of Naval Research

OSD Chair: Dr. Ben Petro, OUSD (R&E)

Air Force Lead: Dr. Gaurav Sharma, Air Force Research Lab

Army Lead: Dr. Corde Lane, Army Research Lab **Army**: Dr. Robb Wilcox, Army Research Lab

Army: Dr. Michelle Zbylut, Army Research Institute

SOCOM Rep: Ms. Lisa Sanders, SOCOM

WG Chair: Dr. Jill McQuade, Air Force Research Lab

PAE&T Lead: Dr. Kendy Vierling, Navy

SICP Lead: Dr. Mark Draper, Air Force Research Lab PSWP Lead: Dr. Logan Williams, Air Force Research Lab

Hails & Farewells

Hail - We welcome Dr. Patrick Mason and Dr. Jill McQuade as our new Human Systems Col and Working Group Chairs! Both have a long history with our community, and are more than prepared to continue the long tradition of leadership excellence that Dr. Michelle Zbylut and Dr. Kelly Ervin just recently demonstrated.

Hail - Dr. Logan Williams is our newest Protection, Sustainment, and Warfighter Performance Subarea Lead! Dr. Williams currently serves in the 711 Human Performance Wing as the Human Performance Product Area Lead, Airman Biosciences Division. He is taking over for our longest running subarea leads, Dr. Peter Squire and Dr. Mike LaFiandra from the Office of Naval Research. Many thanks for their strong leadership in PSWP, and welcome to our newest lead!

Farewell - Dr. John Tangney is retiring, and we want to extend our sincerest thanks for his many contributions to the Col! He was Director of the Human & Bioengineered Systems Division, Code 341, Office of Naval Research as well as the Navy Lead to our Col. Dr. Tangney has been very active, not only serving as Chair from 2015 to 2017, but he was a signatory to the original HS Col Charter in 2010 along with Mr. Blackhurst of AFRL and Dr. Allender of ARL. We've benefited significantly due to his great leadership, energy, and foresight to have us emphasize Mission Effectiveness which improved our products and made our CoI a more valuable asset to the Reliance 21 leadership. Enjoy your retirement and please stay in touch!

Col Highlights - Past Events

Col Annual Meeting. Last year's virtual meeting in late September successfully achieved all our objectives — reviewing FY21 accomplishments, highlighting our FY22 strategy, providing guidance, and engaging in a series of presentations to search for new collaboration opportunities. Highlights were a Steering Group Member Panel that addressed how to improve transitioning from basic to applied research, informative Service Portfolio Reviews and Subarea Updates, plus a special thanks to our many valuable customers and stakeholders who "attended" and provided key insight into their important efforts. POC: Katie Smith Stilling, Strategic Analysis, Inc.

Col Roadmap Review. Another very successful event in late 2021 was Dr. Zbylut briefing our latest roadmap to OSD staff. These reviews are held by OSD over an 18 month cycle to gain insight into the significant accomplishments as well as future S&T programs for all Cols. We received excellent feedback and are ready to execute 2022 and beyond. POC: Katie Smith Stilling, Strategic Analysis Inc.

Major Annual Events/Activities 2022			
ARAP Winner Announced (Nov 2021 Data Call)	Apr		
Human Factors Engineering TAG	May		
NDIA Human Systems Conference	Jun		
Col Information Exchange w/OSD	Jun		
Seedling Proposal Data Call	Jun		
COI Annual Meeting	Sept/Oct		
I/ITSEC	Nov/Dec		
Bi-Annual Events			
Independent R&D (IR&D) TIM w/ Industry	TBD 2023		
Roadmap Review w/OUSD (R&E)	TBD 2023		





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Col Highlights - " Next Up "

Applied Research for the Advancement of S&T Priorities (ARAP) Candidate. Our candidate was one of just four down selected by the Deputies Council to present a final proposal! The effort, titled "Brain Machine Interface Technology to Dominate Cognitive Warfare", was a combined input with the C4I and Biotechnology CoIs and has Dr. Andy McKinley of 711 HPW as Lead Investigator. Key milestones:

- ♦ 14 March: Read-Ahead of ARAP Proposals/Briefings Due
- ♦ 04 April: ARAP Briefings to S&T EXCOM
- ♦ 11 April: Final Decision / Announcement

Best of luck to the team going forward! POC: Katie Smith Stilling, Strategic Analysis, Inc.

NDIA Conference Save the Date. The NDIA Human Systems Division yearly conference will take place 15-16 June 2022 at George Mason University in Fairfax, VA. The theme of the conference is "Teaming at the Edge-Joint Cognitive Systems." Look for our call for abstracts in early February and visit https://www.ndia.org/divisions/human-systems to access event details as they are made available. We look forward to seeing everyone at this exciting event!

POCs: Chair of NDIA HSD, Dr. Kara Orvis, Aptima, Inc. at korvis@aptima.com; Deputy Chair of NDIA HSD, Dr. Lillian Asiala, Sonalysts, Inc. at lasiala@sonalysts.com

DoD Human Factors Engineering (HFE) Technical Advisory Group (TAG) Meeting. The TAG will occur May 16-20, 2022 at the Federal Aviation Administration Aeronautical Center in Oklahoma City, Oklahoma. The Call for Abstracts is open! **Important Dates**

- Abstract submissions: Closes March 18th. HS Col members at large can also compete. Submit only public abstracts with Distro A statements. Abstract submission form: https://events.sa-meetings.com/ereg/index.php?eventid=663152
- ♦ Registration: February 18th to May 6th
- Notification of abstract acceptance: April 1st with final presentations due May 6th

Theme: "Holistic Human Factors Engineering"

In the human factors, human performance, and Human Systems Integration (HSI) fields, there is recognition that factors combine and interact to influence efficiency, effectiveness, safety, and satisfaction related to human performance, sometimes in unpredictable ways. It is important to investigate and account for these interactions in order to reach and sustain the capability levels and operational tempo required of modern technology and warfare.

TAG #74 Highlights: Focus is on Holistic Human Factors Engineering and exploring impacts that innovative technologies, ubiquitous threats, and novel approaches have on human mental and physical health, wellness, and capabilities. A myriad of human factors techniques and technologies are relevant to this space: wearables for situation awareness; mental imagery for mastery; big-data analytics to target interventions; and mixed reality, artificial intelligence, and machine learning application to selection, training, and system maintenance.

This is a golden opportunity to garner feedback on your design and discover opportunities for collaboration. For more information, please visit the DoD HFE TAG website https://rt.cto.mil/ddre-rt/dd-rtl/hfetag/ or social media (@DoDHFETAG). POCs: Dr. Ben Petro (HFE TAG Proponent) or Dr. Liana Algarín (HFE TAG Coordinator) at OSD.

Col Information Exchange. Scheduled for June 23-24 and 27-28, 2022, this annual event allows the S&T Executive Committee to receive briefings from each CoI assessing the state of technology investment in their portfolio and identify future technology opportunities to inform resource decisions. Planned as a virtual event for 2 hours each day, Cols will be allotted 30 minutes to include Q&A. Along with the Roadmap Reviews, these are outstanding opportunities for interaction with and guidance from OSD staff.

POC: Katie Smith Stilling, Strategic Analysis, Inc.





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International

Project Agreement with US and Singapore Approved. The Operational Research Collaboration for Human Improvement in Defense (ORCHID) project agreement was recently signed and approved on behalf of the Air Force Research Labs - US and The Ministry of Defense - Singapore. This Agreement is a five year collaboration looking to share and develop data, devices, algorithms and methods of application associated with warfighter physical and psychological stress or strain, such as extreme heat and humidity, night operations, or extreme physically and cognitively demanding tasks. By building upon ongoing investments and strengths from both countries, this PA is set to test and evaluate capabilities, communicate and analyze data, and share results to speed development in both countries. Singapore maintains a strong commitment to human performance research and development, and offers a good basis for equitable partnership.

POC: Dr. James Christensen, 711 Human Performance Wing, Air Force Research Laboratory

From Our Stakeholders and Partners

Join ADL in Creating an Interoperable System-of-Systems that Optimizes Learning and Development. The Enterprise Digital Learning Modernization (EDLM) reform effort launched in 2018 seeks to enable learning system interoperability across the DoD. In January 2022, the Advanced Distributed Learning (ADL) Initiative, in coordination with Defense Support Services Center and the DoD Chief Information Officer Information Enterprise, held a workshop to articulate and catalog the organizational barriers, opportunities, and corresponding actions for implementing enterprise-level digital learning interoperability.

The *goal* of the EDLM reform is to develop the technical and organizational infrastructure for a learning ecosystem to modernize career-long education and training. This ecosystem uses digital learning technologies, driven by data, to provide more effective, equitable, and modern learning opportunities across military, civilian, and DoD intel personnel. The science and technology to achieve this vision is already being implemented, but organizational and cultural barriers will limit success unless we simultaneously rethink our organizational culture and business processes, including acquisition approaches, policies, organizational incentives, resourcing, staffing, and leadership coordination. Bringing the distributed learning community together to reinforce the benefits of interoperability, while also identifying barriers to achieving this vision, proved to be valuable with over 130 attendees sharing insight on day one of the workshop. In addition to producing helpful resources from attendee input, this workshop also served as the kickoff of a Department-wide task group to help drive these reforms. Contact the ADL Initiative to get involved.

POC: Dr. Sae Schatz, The ADL Initiative, sae.schatz@adlnet.gov.

Col Accomplishments

Bold Quest 21.2 – JVT Fielding to 2d ANGLICO. From 1-11 Nov 2021, the Office of Naval Research (ONR) worked with US Marine, Joint, and Coalition Joint Terminal Attack Controllers (JTAC) in Exercise Bold Quest 21.2 at Muscatatuck and Camp Atterbury Indiana. ONR tested both the JTAC Heads Up Display, a tactical system to assist them in conducting close air support, and the Warfighter Augmented Reality system which is designed to train JFOs/JTACs in conducting supporting arms. Users found both systems valuable in enabling close air support and fire support training while providing enhanced situational awareness and increased training accessibility.

ONR performers also tested the JTAC Virtual Trainer, a virtual system designed to train JFOs/JTACs in conducting supporting arms with a view to certify it as a future system capable of achieving simulations qualifications for JTACs. Marines were impressed by the ability to conduct the full range of fire support training (except naval fires), and to use all the tools that would be available to JTACs in real world operations. Marines even requested to take the systems back to their bases to continue training and made recommendations for improvements. Overall, the participation in the exercise was successful in allowing user testing with a large number of JTACs as well as integration with live air.

POC: Dr. Peter Squire, Office of Naval Research





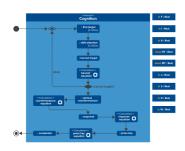




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Col Accomplishments (Continued)

Integrating Human Cognitive Models With Systems Engineering - Radar Operation as a Use Case. Maintaining situation awareness and completing complex tasks in denied environments is a crucial challenge faced by Warfighters. Electronic warfare attacks are becoming increasingly sophisticated, forcing Warfighters to adapt, think, and act while accounting for partial or misleading information. Human models that can account for the effects of these critical threats on performance and help identify mitigation opportunities are needed. In this project, models are designed that simulate the performance of human radar operators under a variety of operational pressures, such as fatigue, perceptual/cognitive load, and information uncertainty. The 711 Human Performance Wing (HPW) team has partnered with the Naval Sea System Command (NAVSEA) who is building a simulated Aegis surface-warfare system using a Model-Based Systems Engineering (MBSE) model at its core. MBSE is a powerful unifying framework for models at various levels of analysis because it offers a clear representation of



System Modeling Language Diagram of the Central Perceptual/ Cognitive/Motor Loop

information flow between complex systems. HPW supports the effort by building a library of human models in MBSE as well as external languages that interface with the model to simulate human performance under mission-relevant circumstances, including visual marking of tracks, various display densities, and display blackouts.

<u>S&T Accomplishment</u>: The first version of the human model has been validated against the published benchmark data and delivered to NAVSEA. To expand the range of situations captured by the models, novel laboratory research is being conducted to better understand how fatigue, cognitive load, and electronic warfare interact to affect radar operator performance. The aim is to create a set of robust and reliable simulation capabilities that will provide insight for mission planning, war-gaming, and system design.

POC: Dr. Christopher Stevens, 711 Human Performance Wing, Air Force Research Laboratory

MASTR-E Participation in Army Expeditionary Warrior Experiment (AEWE) 2022 at the Maneuver Center of Excellence. What is the capability to be delivered? During AEWE 2022 from Nov 2021 through March 2022, the MASTR-E Applications, Demonstration, and Experimentation team aims to demonstrate the utility of wearable sensors, integrated with athlete management software, to influence Soldier health and wellness with the Experimentation Force (EXFOR). The EXFOR is a platoon-sized infantry unit at the Center of Excellence dedicated to experimentation with the Maneuver Battle Lab. The team issued sensors and software, working closely with EXFOR leaders to design custom "dashboards" that portray data from their Soldiers. Key metrics included heart rate, sleep, nervous system recovery, daily physical activity and PT, and perceived readiness and performance. The MASTR-E team also partnered with the Tactical Athlete Performance Center at Fort Benning, whose staff of certified human performance specialists are providing custom tactical athlete PT programming to a subset of the EXFOR during the Warrior Experiment.

<u>Why is this important and where are we headed?</u> The utility of wearable sensors and software platforms to monitor and potentially improve soldier health and wellness requires additional soldier and leader feedback. The team will remotely monitor the EXFOR, analyze the data, and report insights on whether the sensors and software were enough to improve health and wellness or were additional touchpoints (leader engagement, professional PT programming) needed in order to observe improvements. POC: Karen Gregorczik, CCDC — Soldier Center

Decision Science Course Module. In December 2021, Office of Naval Research facilitated implementation of the newly developed "Introduction to Data-Driven Decision Making (ID3M)" instructional module, an introductory Decision Science lesson, to the Senior Leader Course at the Navy Leadership and Ethics Center. The purpose of this project was to support the Navy in modernizing the content and instructional approaches for integrating decision science theory and practice, with an overall goal to improve strategic and operational decisions through a coherent, enterprise-level decision science learning strategy. It is designed to address the introductory decision science learning needs for all ranks and ratings in the Navy, to include those who make the decisions and those who support the decision makers with analytics.

POC: Dr. Peter Squire, Office of Naval Research





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Col Accomplishments (Continued)

Data Driven Decision Tools for Maritime Patrol Reconnaissance: Improving Human Performance within Complex Systems. Due to the large quantity and breadth of variables that can impact performance in complex military aviation domains, it's nearly impossible to decipher the specific impact of any one factor or make accurate assessments of performance. However, advances in cloud based computing, data mining, algorithm development, artificial intelligence, machine learning, and data visualization have created new opportunities to fuse data, perform robust and detailed analyses, and use data in novel ways. Early in the data science movement, the Commander, Patrol and Reconnaissance Group released a statement of urgent need regarding the lack of existing Navy products that support force-wide Anti-Submarine Warfare training assessments and objective outcome-based assessments of aircrew performance that enable the measurement of force-wide tactical proficiency and implementation of focused training solutions.

From this call, the Naval Air Warfare Center Training Systems Division's (NAWCTSD) Basic & Applied Training & Technologies for Learning and Evaluation (BATTLE) Lab has developed a portfolio dedicated to the investigation of a system-of-systems toolset. These technologies, which vary in technology readiness levels, include:

- A web-based application backed by a centralized database on a secure cloud server (i.e., Post Mission Assessment for Tactical Training and Trend Analysis (PMATT-TA))
- A simulation-based automated performance measurement tool (i.e., PMATT-TA: Simulation-based Training Tools),
- A tool that leverages artificial intelligence to fuse and adjust causal data models as contexts change (i.e., Techniques to Adjust Computational Trends Involving Changing Data)
- An observer and system-based human performance analysis technology to fuse data identified teachable moments into a data-driven after action review (i.e., Aircrew Performance Measurement and Proficiency System)
- A predictive data analytics tool to identify optimal tactics given certain threats and environments (i.e., Predictive Data Analytics to Refine Aircrew Training and Operations)

From lessons learned on these efforts, the BATTLE Lab has come to the realization that exploration of available and necessary data sets, as well as the tagging and organization of data, is as imperative for success as the technology development itself. As such, the team has recently initiated the Enhancing Aviation Anti-Submarine Warfare Tactical Readiness Analysis project. For more information on these aforementioned efforts, visit the NAWCTSD's Research Compendium, or contact ORLO PDRT@navy.mil to discuss cross-service collaboration opportunities.

POC: Ms. Beth Wheeler Atkinson, Naval Air Warfare Center Training Systems Division

Publications/Articles

National Academy of Sciences Report on Artificial Intelligence. Recognizing the many challenges that artificial intelligence (AI) many have for human performance, the Air Force Research Laboratory's 711 Human Performance Wing (HPW) asked the National Academies of Sciences, Engineering, and Medicine to convene an expert committee to examine and recommend research to guide the appropriate use of this technology in future operations. In particular, the 711 HPW was interested in AI-related challenges associated with the emerging area of multi-domain operations. The resulting committee, which included experts in human factors, cognitive engineering, human-computer interaction, AI, as well as experts in military operations related to human-autonomy teaming, assessed the state of research on human-AI teaming and determined gaps and future research priorities.

The committee's report "Human-Al Teaming: State-of-the-Art and Research Needs" has recently been released. It examines the factors relevant to the design and implementation of Al systems with respect to human operations and recommends needed research for achieving successful performance across teams of Al and human decision makers. Identified research priorities include strengthening team effectiveness and processes, strengthening interaction mechanisms and strategies, developing training to support human-Al environment, and priorities related to decision biases, situation awareness, trust, and development of team models. The entire report can be accessed at the National Academies of Sciences, Engineering, and Medicine website. POC: Dr. Mark Draper, 711 Human Performance Wing, Air Force Research Laboratory





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Publications/Articles (Continued)

DEVCOM Special Report on Processing Human Systems Integration Data.

Author: Dr. David Scribner

Abstract: This report, titled "A User's Guide to Processing Your Human Systems Integration (HSI) Data" was prepared for the HSI community of practice, but is also relevant for researchers and analysts of all types. The information is intended to assist ensuring the normality assumption is met for your data set before doing your most commonly used parametric statistics that require normalized data such as t-tests and linear regressions. The report outlines the four basic steps to properly treat your data in reviewing the data sets: 1) the treatment of missing data, 2) identifying outliers, 3) examining the normality of your data, and 4) transforming the data to account for skewness in data. These steps are arguably the most important for parametric statistical tests, but are often skipped or ignored which can cause non-optimal statistical findings. They also apply to any of your customers, partners or contractors who are performing statistical analysis.

The DEVCOM 2021-SR-003 report can be found at https://apps.dtic.mil/sti/citations/AD1137682.

POC: Dr. Dave Scribner, DEVCOM Analysis Center

Air Force Research Labs and University of Cincinnati Collaboration on Innovative Biosensing Technology

Authors: Dr. Steve Kim, Ms. Debrosse (Defense Associated Graduate Student Innovators (DAGSI) student), Dr. Brothers, Dr. Hussain, along with Dr. Heikenfeld's team at U. Cincinnati

Abstract: The authors published a research article titled "Oil-Membrane Protection of Electrochemical Sensors for Foulingand pH-Insensitive Detection of Lipophilic Analytes" in the American Chemical Society Applied Materials and Interfaces Journal (impact factor 9.23). The presented work emphasized recent progress in highly generalizable methods for reducing background noise, allowing electrochemical sensors to address a much wider spectrum of analytes beyond the current limit of existing biosensors. This work provides a key technical milestone to the Health and Performance Sensing and Assessment Core Research Area task to develop wearable chemical and biochemical monitors for human performance monitoring and protection.

DOI: https://doi.org/10.1021/acsami.1c14175

POC: Dr. Steve Kim, 711 Human Performance Wing, Air Force Research Laboratory





Col Contact Information

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AF Lead (Acting)	Chief Scientist, 711 th Human Performance Wing (711 HPW), Air Force Research Laboratory (AFRL)	Dr. Gaurav Sharma			
Army	Director, Army Research Institute (ARI)	Dr. Michelle Zbylut			
SOCOM	Director, SOF AT&L Science & Technology	Ms. Lisa Sanders			
Army	S&T Lead Soldier System Performance, DEVCOM Soldier Center	Dr. Robb Wilcox			
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ŀ	- Human Systems Col – Working Group N	/lembers			
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Air Force	Contractor Support (JYG Innovations Inc)	Mr. Al Livada			
OUSD(R&E)	Contractor Support (MITRE Corp)	Dr. Tracy Sanders			





Human Systems Col – SUB-AREA LEADS & MEMBERS				
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Navy	ONR (Code 34)	LCDR Pete Walker		
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AF	AFRL, 711 HPW	Ms. Roxanne Constable		
AF	Air Force Futures, A5	Maj. Lea Johansen		
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Navy	ONR Code 34	Dr. Sandra Chapman		
Navy	ONR Code 34	LCDR Josh Swift		
Navy	ONR Code 34	Mr. Keith King		
Navy	Space & Naval Warfare Systems Command	Dr. Karl Van Orden		
Navy	DON Secretariat at ASN(M&RA)	Dr. Kendy Vierling		
Navy	Nav Surface Warfare Center Dahlgren	Dr. Alex Kniffin		





Human Systems CoI – SUB-AREA LEADS & MEMBERS System Interfaces and Cognitive Processing (SICP)			
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Army	Army Research Laboratory	Dr. Jeff Hansberger	
Navy	ONR Code 34	Dr. Tom McKenna	
Navy	ONR Code 34	Dr. Jeff Morrison	
Air Force	AFRL 711 HPW	Dr. Tamara Chelette	
Air Force	AFRL 711 HPW	Dr. Laurie Fenstermacher	
Air Force	AFRL 711 HPW	Mr. Eric Hansen	
Air Force	AFRL 711 HPW	Dr. Daniel Zelik	
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Army	ARO	Dr. Lisa Troyer	
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Navy	Naval Surface Warfare Center	Dr. Jessica Jones	
Navy	COMPACFLT N5	Dr. Dale Russell	
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