



NDIA

AT THE HEART
OF THE MISSION

2020 HUMAN SYSTEMS CONFERENCE

Human Systems and Multi-Domain Operations

March 3 – 4 | Arlington, VA | [NDIA.org/HumanSystems20](https://ndia.org/HumanSystems20)

AGENDA

TUESDAY, MARCH 3

7:00 am – 5:00 pm

REGISTRATION

ASSEMBLY FOYER

7:00 – 8:00 am

NETWORKING BREAKFAST

ASSEMBLY FOYER

8:00 – 8:15 am

WELCOME AND INTRODUCTORY REMARKS

SOUTH BALLROOM

Jim McCarthy, PhD

Vice President, Instructional Systems, Sonalysts, Inc., NDIA HSD Chair

8:15 – 9:00 am

FEATURED SPEAKER

SOUTH BALLROOM

BG Stephen L.A. Michael, USA

Deputy Commanding General, U.S. Army Combined Arms Center - Training

9:00 – 9:45 am

FEATURED SPEAKER

SOUTH BALLROOM

Holly Handley, PhD, PE

Associate Professor, Engineering Management & Systems Engineering, Old Dominion University

9:45 – 10:15 am

NETWORKING BREAK

ASSEMBLY FOYER

10:15 – 11:15 am

PANEL: HUMAN SYSTEMS COMMUNITY OF INTEREST (COI)

SOUTH BALLROOM

Michelle Zbylut, PhD

Director, Army Research Institute

Moderator

Kendy Vierling, PhD

Deputy Assistant Chief of Staff, USMC Training and Education Command, NDIA HSD Gov't Co-Chair

Mark Draper

Lead: Adaptive Warfighter Interfaces Core Technical Competency, Air Force Research Laboratory (AFRL), NDIA HSD Gov't Co-Chair

Michael LaFiandra, PhD

Branch Chief, Dismounted Warrior Branch

11:15 – 11:20 am

INTRODUCTION TO TECHNICAL SESSIONS

SOUTH BALLROOM

Jim McCarthy, PhD

Vice President, Instructional Systems, Sonalysts, Inc., NDIA HSD Chair

SESSION 1: PERSONALIZED ASSESSMENT, EDUCATION & TRAINING

11:20 – 11:25 am

INTRODUCTION TO SESSION

SOUTH BALLROOM

Kendy Vierling, PhD

Deputy Assistant Chief of Staff, USMC Training and Education Command, NDIA HSD Gov't Co-Chair

11:25 – 11:45 am

DATASIM: The Data and Training Analytics Simulated Input Modeler

Shelly Blake-Plock

CEO, Yet Analytics, Inc.

11:45 am – 12:05 pm

Achieving & Sustaining Optimal Human Performance in High-risk Environments

Michael Hirsch

President, Assessment Technologies

12:05 – 12:25 pm

Holistic Human Performance Training Combined with Neurotechnology Enhances Performance Potential in AETC and US Army "Training Next" Programs

Frances MacInnes

Research and Innovation Manager, Faubert Applied Research Centre

Secondary Author: Tyler Masters, PhD

12:25 – 12:45 pm

Getting the Right Data: Implementing Squad Level Shooting and Communication Measures without Overburdening the Solider

Eric Sikorski, PhD

Director, Programs and Research, Quantum Improvements Consulting

Secondary Authors: Amanda van Lamsweerde and Kati Anglin

12:45 – 1:05 pm

AI-based Performance Assessment and Precision Learning for Aegis

Janet Spruill

Vice President, Aptima, Inc

1:05 – 2:35 pm

NETWORKING LUNCH & POSTER AND DEMO SESSION

NORTH BALLROOM

2:35 – 3:20 pm

FEATURED SPEAKER

SOUTH BALLROOM

LTC Gary Frost, USA (Ret)

Deputy Director, STE CFT

3:20 – 3:40 pm

NETWORKING BREAK

ASSEMBLY FOYER

SESSION 2: PROTECTION, SUSTAINMENT, AND WARFIGHTER PERFORMANCE

3:40 – 3:45 pm

INTRODUCTION TO SESSION

SOUTH BALLROOM

Michael LaFiandra, PhD

Branch Chief, Dismounted Warrior Branch

Brad Chedister

Chief Technology Officer, Defensewerx, NDIA HSD Industry Co-Chair

3:45 – 4:05 PM

Developing High Performance Indicators (HPI) for Close Combat Forces Study

Rory O'Brien

Chief, Program Evaluation Office, MCoE, U.S. Army Maneuver Center of Excellence

4:05 – 4:25 PM

In-Flight Physiological Monitoring

Lloyd Tripp, PhD, FAsMA, FAsHFA,

Lead, Acceleration and Altitude Research

4:25 – 4:50 pm

CLOSING REMARKS

SOUTH BALLROOM

Nic Adams

National Security Advisor, U.S. Senator Joni Ernst (R-IA)

4:50 – 5:50 pm

NETWORKING RECEPTION

ASSEMBLY FOYER

WEDNESDAY, MARCH 4

7:00 am – 4:30 pm

REGISTRATION

ASSEMBLY FOYER

7:00 – 8:00 am

NETWORKING BREAKFAST

ASSEMBLY FOYER

8:00 – 8:15 am

WELCOME AND INTRODUCTORY REMARKS

SOUTH BALLROOM

MG James Boozer, Sr., USA (Ret)

Executive Vice President, National Defense Industrial Association

8:15 – 9:00 am

FEATURED SPEAKER

SOUTH BALLROOM

COL Michael McGurk, USA

Director, Research and Analysis, Directorate CIMT

9:00 – 10:15 am

PANEL: HUMAN BEHAVIOR REPRESENTATION DEFINITIONS, STANDARDS, AND REQUIREMENTS

SOUTH BALLROOM

LTC Glenn Hodges

Assistant Professor & Deputy Director, Naval Postgraduate School

Jeffrey Thomas

Research Psychologist, U.S. Army Research Laboratory, NDIA HSD Conference Co-Chair

LTC Gary Frost, USA (Ret)

Deputy Director, STE CFT

Karim Malek, PhD

Director and Professor, University of Iowa Technology Institute

10:15 – 10:40 am

NETWORKING BREAK

ASSEMBLY FOYER

10:40 – 10:45 am

INTRODUCTION TO TECHNICAL SESSIONS

SOUTH BALLROOM

Jim McCarthy, PhD

Vice President, Instructional Systems, Sonalysts, Inc.

SESSION 3: SYSTEMS INTERFACE AND COGNITIVE PROCESSING

10:45 – 10:50 am

INTRODUCTION TO SESSION

SOUTH BALLROOM

Mark Draper

Lead: Adaptive Warfighter Interfaces Core Technical Competency, Air Force Research Laboratory (AFRL), NDIA Gov't Co-Chair

10:50 – 11:10 am

AI for Strategy: Leveraging Human Factors to create man-machine symbiosis in strategic planning

Melissa Carraway

Human Factors Engineer, Johns Hopkins University Applied Physics Laboratory - Force Projections Sector

11:10 – 11:30 am

Prioritizing Events with Headline Visualization

John Ianni

Senior Computer Scientist, Air Force Research Laboratory

11:30 – 11:50 am

Fusing Macroognition, Commander's Critical Information Requirements (CCIR) and System Interfaces to Facilitate Effective Decision-making in Multi-Domain Operations

Jeffery Marshall

President, Morgan Works

11:50 – 12:10 pm **Decision Support for Multi-Domain Tactical Combat Casualty Care**
Christopher Nemeth
Principal Scientist, Applied Research Associates, Inc.

12:10 – 1:10 PM **NETWORKING LUNCH & POSTER AND DEMO SESSION**
NORTH BALLROOM

SESSION 4: HUMAN SYSTEMS METRICS

1:10 – 1:15 pm **INTRODUCTION TO SESSION**
SOUTH BALLROOM

George Salazar
Human Computer Interface Tech Discipline Lead, NASA Lyndon B. Johnson Space Center, NDIA Gov't Lead

1:15 – 1:45 pm **Assessing Cognitive Load for Quantifying Swarming Wave Glider System Usability**
Andre Douglas
Section Supervisor, The John Hopkins University Physics Lab

1:45 – 2:05 pm **Defining Realistic Human Behavior Representation in Modeling & Simulation: Leveraging Mature Technology to Inform Standards, Requirements, and Measurement Criteria**
Karim Malek, PhD
Director and Professor, University of Iowa Technology Institute

2:05 – 2:35 pm **Driving Intuitive System Design with Usability Metrics**
Pamela Savage-Knepshield
Research Psychologist, Combat Capabilities Development Command, Data Analysis Center

2:35 – 3:00 pm **NETWORKING BREAK**
ASSEMBLY FOYER

3:00 – 4:00 pm **ROUNDTABLE/WORKING GROUP DISCUSSIONS**
SOUTH BALLROOM

4:00 – 4:30 pm **ROUNDTABLE OUTBRIEF**
SOUTH BALLROOM

4:30 pm **CLOSING REMARKS**
SOUTH BALLROOM

Kelly Hale, PhD
Principal Member of Technical Staff, The Charles Stark Draper Laboratory, Inc., NDIA HSD Deputy Chair

The NDIA has a policy of strict compliance with federal and state antitrust laws. The antitrust laws prohibit competitors from engaging in actions that could result in an unreasonable restraint of trade. Consequently, NDIA members must avoid discussing certain topics when they are together at formal association membership, board, committee, and other meetings and in informal contacts with other industry members: prices, fees, rates, profit margins, or other terms or conditions of sale (including allowances, credit terms, and warranties); allocation of markets or customers or division of territories; or refusals to deal with or boycotts of suppliers, customers or other third parties, or topics that may lead participants not to deal with a particular supplier, customer or third party.

BIOGRAPHIES



LTC GARY FROST, USA (RET)

Deputy Director

Synthetic Training Environment Cross Functional Team

With 20-years of active duty, Gary retired as a Lieutenant Colonel (Infantry) from

the United States Army in February 2008. Gary's most recent operational experience in the Army was with the 11th Armored Cavalry Regiment as the Deputy Regimental Commander and as the TASK FORCE FREEDOM Coalition Deputy Chief of Staff for Operations in Iraq. Prior to his deployment to Iraq, he also served in Afghanistan with the 2nd Brigade Combat Team, 10th Mountain Division where he established and led one of the US Army's first Military Transition Teams.

After retiring from the Army, Gary began his service as a Department of the Army Civilian (GS-15) with the Headquarters, Department of the Army G-3/5/7 Training Directorate. After a year in the Training Directorate, he was offered a position

with the Army's Rapid Equipping Force as the Chief of the Technology Management Division where he and his team were responsible for conducting detailed problem analysis, researching emerging technologies, developing solution concepts, and conducting prototype development in order to support Soldiers deployed around the world. Later he was selected to serve as Rapid Equipping Force's Acting Deputy Director. Gary then accepted an assignment in the Pentagon with the Headquarters, Department of the Army, Deputy Chief of Staff G-3/5/7 Initiative Group as a Senior Strategist.

After leaving the Federal Government for a sabbatical, Gary spent a year at the Admiral Farragut Academy in Saint Petersburg, Florida as the Science, Technology, Engineering, and Mathematics Director and Engineering Educator. Gary then transitioned

to a position as the Training and Readiness Accelerator (TRex) Consortium Director for a non-profit organization that managed over 400-industry members, conducted technology scouting, and administered contract awards for PEO-STRI and Army Contracting Command - Orlando. In April 2019 he re-joined the Department of the Army and is currently serving as the Deputy Director for the Cross Functional Team - Synthetic Training Environment, Army Futures Command in Orlando, Florida.

Gary was born and reared near Tampa, Florida. He earned an undergraduate degree in Business Management and also holds a master's degree in Business Administration. He is also working on a master's degree in Education. Gary is married to his wife, Ellie, who retired as a Lieutenant Colonel from the United States Air Force. Ellie and Gary have a 9-year old daughter, Katie.



HOLLY HANDLEY, PHD, PE

Associate Professor, Engineering Management & Systems Engineering Old Dominion University

Dr. Holly Ann Heine Handley is an Associate Professor in the Engineering

Management and System Engineering Department at Old Dominion University. Dr. Handley applies engineering principles and experience in computational modeling

to support projects in human systems engineering research and development. She develops models and methodologies to better represent the human component of socio-technical systems. She is currently part of the committee developing HSI industry-wide standards and was also a member of the original NATO panel to

develop the Human Viewpoint for system architecture development. Currently her Human System Engineering Laboratory @ ODU is investigating questions on the balance of human roles and automation and the implications for personnel capabilities and manpower requirements across systems and organizations.



COL MICHAEL MCGURKS, USA (RET)

Director, Research and Analysis Directorate, Center for Initial Military Training, Training & Doctrine Command U.S. Army

Michael S. McGurk enlisted in 1979 in the Infantry as member of

the Army National Guard, this was the start of over 30 years of uniformed service to the nation. Michael attended and graduated from the United States Military Academy at West Point, and in 1985 he was commissioned Infantry. 2nd Lieutenant McGurk attended the Infantry Officers Basic Course at Fort

Benning, Airborne School, Pathfinder School, and U.S. Army Ranger School and other training. His first duty assignment was 25th Infantry, Schofield Barracks, Hawaii.

In over 26 years as an officer Michael served as a platoon leader, company commander, battalion adjutant, battalion executive officer, Director of Operations, Instructor and military attaché (in Paris). During the summer of

2004, LTC McGurk deployed to Baghdad, Iraq where he was awarded the Bronze Star for meritorious service, returning from combat in January 2005.

Colonel McGurk retired from active military service in 2011 to pursue a civilian career with the Department of Defense. Mr. McGurk currently works for the Department of the Army as a the Director of Research for the

US Army Center for Initial Military Training at TRADOC, Fort Eustis Virginia. In his current role he is the lead for the US Army for the development and fielding of the new Army Combat Fitness Test (ACFT). He directs the

test implementation and standards for the entire Active Army, Army National Guard and Army Reserve, across the globe.

He is married to the former Miss Angela Szebel, of Windsor, Canada. The happy couple currently resides in Williamsburg, Virginia. He enjoys traveling, history, reading and public speaking.



BG STEPHEN L.A. MICHAEL, USA

Deputy Commanding General

U.S. Army Combined Arms Center - Training

BG Steve Michael was born in Guyana, South America in 1964, immigrated

to the United States in 1979 and was commissioned into the Infantry in 1988. His military education includes the Infantry Officer Basic and Advanced courses, the Combined Arms and Services Staff School, and the U.S. Army Command and General Staff College. He holds a Bachelor's of Science Degree in Civil Engineering from the United

States Military Academy and completed the Operations Research Systems Analysis Military Applications Course at Fort Lee, Virginia. He was the Senior Service College Fellow to Columbia University for FY11. Prior to serving as the Columbia Fellow, he was the Regimental Tactical Officer for 4th Regiment in the United States Corps of Cadets at West Point.

BG Michael began his career at Fort Drum as a Rifle Platoon Leader, Mortar Platoon Leader, Company Executive Officer and then as the Battalion S4 in 2nd Battalion 87th Infantry, 2nd Brigade, 10th Mountain Division. Immediately after the Career Course, he served as the Battalion S3 for the Columbus Recruiting Battalion in Columbus, Ohio. Next, he served as the Battalion S4 and Charlie Company Commander for 2nd Battalion 325th Airborne Infantry Regiment, 82nd Airborne Division. He then served as the S3 for 2nd Battalion, 503rd Infantry (Airborne), 173rd Airborne Brigade. Later, he commanded 2nd Battalion, 12th Infantry Regiment at Fort Carson and 1st Brigade Combat Team, 10th Mountain Division (Light) at Fort Drum. Afterwards, BG

Michael served as the Deputy Director for the Pakistan Afghanistan and Transregional Threats Coordination Cell on the Joint Staff, J5. BG Michael then served as the Deputy Commanding General for Operations, 25th Infantry Division at Schofield Barracks, Hawaii and as the G-3/5/7 for U.S. Army Pacific. Most recently, BG Michael served as the Deputy Director for Strategic Planning and Policy (J5), U.S. Indo-Pacific Command at Camp Smith, Hawaii.

BG Michael has a diverse operational background; from Fort Drum he took part in Operation Restore Hope in Somalia, as the Battalion Logistics Officer for 2-87 Infantry. As the Commander of Charlie Company, 2nd Battalion, 325th Airborne Infantry Regiment, 82nd Airborne Division, he deployed as part of Operation Desert Focus to Dhahran, Saudi Arabia to secure American citizens and forward deployed units in response to the Khobar Towers Bombing. As Operations Officer for 2nd Battalion, 503rd Infantry (Airborne), 173rd Airborne Brigade in Vicenza, Italy, he deployed on two back-to-back operational missions; Operation Rapid Guardian in Kosovo and Operation Iraqi Freedom I, where the Battalion conducted a night combat parachute assault onto Bashur Drop Zone in Northern Iraq and helped secure the city of Kirkuk.

Next, as ground planner in the Southern European Task Force's Joint Planning Group with the responsibility for Sub-Saharan Africa, BG Michael deployed to Ghana and Nigeria as part of Joint Task Force Liberia to help the Economic Community of West African States stabilize Liberia as President Charles Taylor was exiled to Nigeria. He

then served as Aide de Camp to Lieutenant General Kip Ward, then the Deputy Commander for United States Army Europe and 7th Army; with Lieutenant General Ward, BG Michael deployed to Israel for ten months as part of the inaugural Israeli-Palestinian Security Coordinator Mission to help prepare the Palestinian Authority take control of Gaza.

As the Commander of 2-12 Infantry, BG Michael deployed for 15 months to Al Doura, Baghdad as part of the surge. In 2013, BG Michael deployed as the 1st Brigade Combat Team Commander to Regional Command - East on the Security Force Advise and Assist mission in order to enable the Afghan National Security Forces to stand up, fight, and win in Ghazni, Afghanistan. As Deputy Director for the Pakistan-Afghanistan and Transregional Threats Coordination Cells, BG Michael enabled the Chairman of the Joint Chiefs of Staff best military advice on plans and policy for Afghanistan - Pakistan and Transregional Threats. As Deputy Commander for Operations, 25th ID, BG Michael enabled the Commander, 25th ID and his subordinate Commanders to get their formations ready for the crucible of Ground Combat and Operations, Activities and Investments throughout the Indo-Pacific. As the G-3/5n for U.S. Army Pacific, was responsible for driving and synchronizing all Army Operations, Activities and Investments and connecting the "The Network" - the operations, plans, intelligence, Component, Combined and Inter-Agency enterprise to deliver results. Similarly, he did likewise as the Deputy J5 for the Indo-Pacific Command in the areas of Strategy, Plans, & Policy.

POSTER AND DEMONSTRATION SESSION

TUESDAY, MARCH 3

12:40 – 2:00 pm

A Measurement Pyramid for Assessing Performance in Uncontrolled Task Environments

Lilian Asiala

Sonalysts, Inc.

James McCarthy, PhD

Sonalysts, Inc.

Demo: A Measurement Pyramid for Assessing Performance in Uncontrolled Task Environments

Lisa Bolin

SimVentions

Matt Wilson

Technology Solutions Group

Adaptive Training in the Future Army Environment

Dennis Boykin

DB4 Consulting, LLC

CSM Jeffery Stitzel, USA (Ret)

DB4 Consulting, LLC

Quantifying Physiologic Response to Cognitive Stress for Training Down Regulation Techniques

David Holmes, PhD

Mayo Clinic

Physiological Sensing in Action: A Step Towards Dynamic Human Performance Assessment in Multi-Domain Operations

Zachary Kiehl

Aptima

Cyber DCO Cultural Patterns and Operational Behavior

Marc Kolenko

MTSI

Developing a Cognitive Readiness Assessment, Education, and Training Framework to Enable Soldier and Leader Effectiveness in Multi-Domain Operations

Jeffery Marshall

Morgan Works

Demo: Impairment Sciences

Tim Stephens

DRUID App

Human Factors for Operational Cyber

Rachel Yang

John Hopkins Applied Physics Laboratory

Dynamic Information Needs Analysis in Subterranean Environments

Farakh Zaman

University of Iowa