

NDIA

ARMY SCIENCE & TECHNOLOGY SYMPOSIUM AND SHOWCASE

EMPOWERING A SOLDIERS SUCCESS



August 21 – 23, 2018

Walter E. Washington Convention Center

Washington, DC

NDIA.org/Army-Science

EVENT INFORMATION

LOCATION

Walter E. Washington Convention Center
801 Mt. Vernon Place NW
Washington, DC 20001

EVENT WEBSITE

NDIA.org/Army-Science

EVENT CONTACT

GENERAL EVENT

Britt Sullivan, CMP

Associate Director
Meetings & Special Projects
(703) 298-1514
bsullivan@ndia.org

AGENDA

Daniel Lung

Program Coordinator
Program Development
(703) 247-9476
dlung@ndia.org

EXHIBITS & SPONSORSHIP

Allison Carpenter, CEM, CMP

Director, Exhibits and Sponsorship
(703) 247-2573
ahcarpenter@ndia.org

REGISTRATION

Renata Casiel

Meeting Planner
(703) 247-2561
rcasiel@ndia.org

EVENT THEME

Empowering A Soldier's Success

ATTIRE

The attire for this Symposium is business for civilians or uniform of the day for the military. For military speakers, we recommend Service dress.

SURVEY AND PARTICIPANT LIST

A survey and list of attendees (name and organization only) will be emailed to you after the conference. NDIA would appreciate your time in completing the survey to help make our event even more successful in the future.

SPEAKER GIFTS

In lieu of speaker gifts, a donation is being made to the Fisher House Foundation.

HARASSMENT STATEMENT

NDIA is committed to providing a professional environment free from physical, psychological and verbal harassment. NDIA will not tolerate harassment of any kind, including but not limited to harassment based on ethnicity, religion, disability, physical appearance, gender, or sexual orientation. This policy applies to all participants and attendees at NDIA conferences, meetings and events. Harassment includes offensive gestures and verbal comments, deliberate intimidation, stalking, following, inappropriate photography and recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome attention. Participants requested to cease harassing behavior are expected to comply immediately, and failure will serve as grounds for revoking access to the NDIA event.

AGENDA

TUESDAY, AUGUST 21

- 7:00 am – 5:30 pm **REGISTRATION OPEN**
HALL C
- 7:00 – 8:00 am **NETWORKING CONTINENTAL BREAKFAST**
PREFUNCTION OF ROOM 146
- 8:00 – 8:15 am **NDIA WELCOME REMARKS**
ROOM 146
Gen Herbert “Hawk” Carlisle, USAF (Ret)
President & CEO, NDIA
- 8:15 – 9:00 am **KEYNOTE SPEAKER**
ROOM 146
GEN James C. McConville, USA
Vice Chief of Staff, U.S. Army
- 9:00 am **GRAND OPENING OF THE SCIENCE & TECHNOLOGY SHOWCASE & POSTER REVIEW**
HALL C
- 9:00 – 9:30 am **NETWORKING BREAK**
HALL C
- 9:30 – 10:15 am **GUEST SPEAKER**
ROOM 146
LTG Eric Wesley, USA
Deputy Commanding General, Futures/Director, Army Capabilities Integration Center (ARCIC) *(Invited)*
- 10:15 – 10:45 am **NETWORKING BREAK**
HALL C
- 10:45 – 11:30 am **GUEST SPEAKER**
ROOM 146
Guest Speaker
Honorable Dr. Bruce D. Jette
Assistant Secretary of the Army (Acquisition, Logistics and Technology)

11:30 am – 1:00 pm **LUNCH ON YOUR OWN**

CONCURRENT BREAKOUT SESSIONS

1:00 – 2:00 pm

C3/C4ISR

ROOM 152 A/B

Stabilized Optical Frequency Combs for Assured Positioning, Navigation and Timing

Dr. James Cahill

Electronics Engineer, Army Research Laboratory

Use of RF Spectrum Monitoring Assets for 3D Geolocation and Drone Detection

Mickey Patterson

Senior Account Executive, CRFS

Embedding Simulation into Mission Command Systems

Dr. John Surdu

Senior Scientist, Cole Engineering Systems, Inc.

1:00 – 2:00 pm

INTEGRATED FIRES

ROOM 151 A/B

Localization Technologies for Swarming Munitions

Michael Don

Electrical Engineering, Army Research Laboratory

Agile and Reconfigurable Digital Radar Technology for Air and Missile Defense

Dr. Abigail Hedden

Physicist, Army Research Laboratory

1:00 – 2:00 pm

PANEL: DISRUPTIVE TECHNOLOGIES

ROOM 150 A/B

Dr. Margaret Murnane

Professor, University of Colorado

Dr. Jerrold Prothero

Co-founder and CEO, Astrapi Corporation

Dr. Stefan Svensson

Physicist, Army Research Laboratory

2:00 – 2:30 pm

NETWORKING BREAK

HALL C

CONCURRENT BREAKOUT SESSIONS

2:30 – 3:30 pm

PANEL: HUMAN APTITUDE ASSESSMENTS

ROOM 152 A/B

Dr. Kara Orvis

Vice President, Research and Development Group, Aptima, Inc. ,
Moderator

Dr. Randy J. Brou

Research Psychologist, Army
Research Institute

Dr. William S. Weyhrauch

Research Psychologist, Army
Research Institute

Dr. Alexander Wind

Research Psychologist, Army
Research Institute

2:30 – 3:30 pm

PANEL: MACHINE REASONING FOR DECISION SUPPORT

ROOM 151 A/B

Dr. Lance Kaplan

Team Leader, Army Research
Laboratory

Dr. Charles Kim

Professor, Howard University

Dr. Nick Vlahopoulos

Professor, University of Michigan

2:30 – 3:30 pm

EXPEDITIONARY OPERATIONS

ROOM 150 A/B

Hyper-spectral, UHD Imaging NANO-SAT Formations or HAPS To Detect, Identify, Geolocate and Track CBRN Gases, Fuel Vapors and Other Substances

Arnold Kravitz

President, Innovim Defense Services

Resilient Communications with Hybrid Adaptive Networking

Craig Miller

Vice President, Chief Technical Officer, Viasat, Inc.

Energy Efficient “Shelter in Shelter” Concept for Large Expeditionary Structures Application

Reza Salavani

Energy Program Manager, Air Force Civil Engineer Center (AFCEC)

Deep Learning Application for Radio Frequency Data

Adam Thompson

Senior Solutions Architect, NVIDIA

3:30 – 5:30 pm

WELCOME NETWORKING RECEPTION AND POSTER REVIEW

HALL C

WEDNESDAY, AUGUST 22

- 7:00 am – 6:30 pm **REGISTRATION OPEN**
HALL C
- 7:00 – 8:00 am **NETWORKING CONTINENTAL BREAKFAST**
PREFUNCTION OF ROOM 146
- 8:00 – 8:15 am **ADMINISTRATIVE REMARKS**
ROOM 146
Gen Herbert “Hawk” Carlisle, USAF (Ret)
President & CEO, NDIA
- 8:15 – 9:00 am **KEYNOTE SPEAKER**
ROOM 146
Mary Miller
Performing the Duties of Assistant Secretary of Defense for Research and Engineering (ASD (R&E)) *(Invited)*
- 9:00 – 9:30 am **GUEST SPEAKER**
Dr. Thomas Russell
Deputy Assistant Secretary of the Army (Research & Technology)
- 9:30 am **OPENING OF THE SCIENCE & TECHNOLOGY
SHOWCASE & POSTER REVIEW**
HALL C
- 9:30 – 10:00 am **NETWORKING BREAK**
HALL C
- 10:00 – 10:45 am **GUEST SPEAKER**
ROOM 146
GEN David G. Perkins, USA (Ret)
Former Commanding General, U.S. Army Training and Doctrine Command (TRADOC) *(Invited)*
- 10:45 – 11:30 am **GUEST PANEL**
ROOM 146

11:30 am – 1:00 pm **LUNCH ON YOUR OWN**

CONCURRENT BREAKOUT SESSIONS

1:00 – 2:00 pm

PANEL: IMMERSIVE TECHNOLOGY

ROOM 150 A/B

RADM James A. Robb, USN (Ret)

President, National Training and Simulation Association (NTSA)
Moderator

Dr. Simon Su

Computer Scientist, Army
Research Laboratory

Thomas Huisman

Product Manager, Barco

Dr. W. Geoffrey Wright

Associate Professor, Temple
University

1:00 – 2:00 pm

MATERIALS SCIENCE

ROOM 151 A/B

Automating Science to Rapidly Discover Higher Performing Armor Ceramics for Readiness Today

Michael Golt

Materials Engineer, Army Research Laboratory

Enhancing Warfighter Performance with Non-Invasive Neurostimulation Enabled by Dry Skin Electrodes

Dr. Amy M. Heintz

Research Leader, Battelle

Phase Change Material Filled Graphite for Electronics Cooling in Transient Environments

Dr. James W. Klett

Senior Research Staff Member, Oak Ridge National Laboratory

Development of Flexible Wrinkle-free Optical Stress Sensor for Studying Cell Substrate Interactions

Dr. Jian Sheng

Associate Professor, Texas A&M University - Corpus Christi

1:00 – 2:00 pm

OPERATIONAL/EXPEDITIONARY ENERGY

ROOM 150 A/B

High-Voltage Supercapacitors with Water-in-Salt Electrolytes

Dr. Yi Ding

Engineer, TARDEC

Advances in Li/CFx Non-rechargeable Batteries for Portable Electronic Systems

Paula Latorre

Research Chemical Engineer, ARMY CERDEC

Active Cooling Thermally Induced Vapor-Polymerization Effect (ACTIVE)

Dr. Aly H. Shaaban

Director, Applied Research Associates

Photovoltaic/Thermal (PV/T) Energy Addition to Expeditionary Buildings

Michael Tomac

Process/Design Engineer, South Dakota School of Mines and Technology

CONCURRENT BREAKOUT SESSIONS

2:00 – 3:00 pm

HUMAN SYSTEMS INTEGRATION

ROOM 152 A/B

Graphene Electronic Tattoos for Imperceptible Human Monitoring and Human-system Interfaces

Dr. Deji Akinwande

Professor, University of Texas – Austin

Tactical Augmented Reality, Precisely Where You Need It: Bringing Registered AR to the Field

Eric M. Jones

Human Systems Architecture, Draper

Preliminary Characterization of Head-Supported Mass Exposure in a Simulated Dismounted Operating Environment

Dr. Bethany L. Shivers

Research Kinesiologist, U.S. Army Aeromedical Research Laboratory

2:00 – 3:00 pm

PANEL: STEM/EDUCATIONAL OUTREACH

ROOM 151 A/B

Emily S. DeRocco

Founder & CEO, E3- Engage, Educate, Employ

Dr. Victor M. Nakano

Executive Program Director, Johns Hopkins University

Evelyn Villanueva

Research Geologist, Army Corps of Engineers,
Engineer Research and Development Center
(ERDC)

Justin Wang

Student, Chantilly High School

2:00 – 3:00 pm

DIRECTED ENERGY

ROOM 150 A/B

Efficient Laser Operation of a Clad-Pumped Double-Clad ‘Crystalline-core/Crystalline-cladding (C4) Fiber

Dr. Mark Dubinskii

Physicist, Army Research Laboratory

New Process for Efficient Laser Pumping: Three-for-One Cross-Relaxation

Dr. Larry Merkle

Scientist/Engineer, General Technical Services

A Compact Modular High-Power Microwave System for (1) Air Missile Defense, (2) Immobilization of Vehicles, Boats, and (3) Ground Surface and Buried Explosive Hazards Neutralization

Dr. James Tatoian

Chairman & CEO, Eureka Aerospace, Inc.

3:00 – 3:30 pm

NETWORKING BREAK

HALL C

CONCURRENT BREAKOUT SESSIONS

3:30 – 4:30 pm

PANEL: MANNED-UNMANNED TEAMING

ROOM 152 A/B

Dr. Derrik E. Asher

Psychologist, Army Research Laboratory

Dr. Daniel E. Koditschek

Professor, University of Pennsylvania

Dr. Ozlem Kilic

Professor, The Catholic University of America

Dan Magy

Founder & CEO, Citadel Defense Company

3:30 – 4:30 pm

NEUROSCIENCE

ROOM 151 A/B

Variability in Human Head Surrogate Data with Changes to Boundary Conditions in Blunt and Blast Trauma

Abdus Ali

PhD Student, New Jersey Institute of Technology

Brain Tissue Mechanics in Blast Loading

Dr. Kurosh Darvish

Associate Professor, Temple University

A Pilot Study to Characterize the Epigenomic Status of the U.S. OEF/OIF War Veterans with PTSD

Dr. Rasha Hammamieh

Director of Integrative Systems Biology, Army Center for Environmental Health Research

Taking New Concepts for Systems Design and Control From Neuroscience to Accelerate Innovation in Artificial Intelligence

Dr. Kelvin S. Oie

Senior Campaign Scientist for Human Sciences, Army Research Laboratory

3:30 – 4:30 pm

HUMAN PERFORMANCE OPTIMIZATION AND ENHANCEMENT

ROOM 150 A/B

Development and Testing of Augmented Reality Command Control Communicate Coordinate (ARC4) for Enhanced Battlefield Situational Awareness

Dr. Eric Gans

Principal Engineer, Applied Research Associates

Exoskeletons for Soldier Augmentation: Current Research Perspectives

Karen Gregorczyk

Biomech Team & Physical Performance Branch Lead, Natick Soldier RD&E Center

Warrior Performance Platform (WP2™) for U.S. Navy: Leveraging Best-of-Breed Human Performance Tracking and Analytics Technology to Enhance Navy's Physical Fitness, Wellness, and Nutrition Capabilities

Jake Repanshek

Director of Solutions & Technology, The Informatics Application Group, Inc.

Biophysics-Based Measuring & Modeling of Social Dynamics

Dr. Lisa Troyer

Program Manager, Army Research Office/Army Research Laboratory

4:30 – 6:30 pm

NETWORKING RECEPTION AND POSTER REVIEW

HALL C

THURSDAY, AUGUST 23

7:00 – 11:30 am

REGISTRATION OPEN

PREFUNCTION OF ROOM 146

7:00 – 8:00 am

NETWORKING CONTINENTAL BREAKFAST

PREFUNCTION OF ROOM 146

CONCURRENT BREAKOUT SESSIONS

8:00 – 9:00 am

SYNTHETIC BIOLOGY AND LIVING MATERIALS

ROOM 152 A/B

Microbial Reactors - Indigenous Feed Stocks to Functional Materials

Dr. Katherine Germane

Research Biologist, Army Research Laboratory

Genetic Tools and Synthetic Biology “Parts” for *Clostridium Acetobutylicum*, a Microbe of Military Interest

Dr. Alexander Tobias

Senior Researcher, General Technical Services, LLC

Production of Tunable Nanomaterials Using Assembled Bacteriophage Droplets

Dr. Chris Warner

Research Biologist, Army Corps of Engineers

Bioinformatic and Deep-Learning Insight into Engineered DNA at Synthetic Biology Foundries

Dr. Mikhail Wolfson

Senior Software Engineer, Ginkgo Bioworks

8:00 – 9:00 am

ARTIFICIAL INTELLIGENCE

ROOM 151 A/B

Human Emotion Recognition Using Fused Physiological Signals

Dr. Shaun Canavan

Assistant Professor, University of South Florida

Biologically-Inspired Processor for Ultra-Low Power Video Surveillance Applications

Dr. Lester Foster

Chief Technology Officer, EWA Government Systems, Inc.

Implementing Emotions in Cognitive Robots

Dr. Lyle Long

Professor, Penn State University

The Tactical Distributed Ledger: An Enabling Technology for Deploying Resilient Decentralized Cybernetic Systems

Manny Vindiola

Scientist, Army Research Laboratory

8:00 – 9:00 am

PANEL: VEHICLE MOBILITY/ARCHITECTURES

ROOM 151 A/B

Dr. Kyung Choi

Professor, University of Iowa

Jason Pusey

Mechanical Engineer, Army Research Laboratory

Dr. Chuanbo Yang

Energy Storage Engineer, National Renewable Energy Laboratory

Mr. Dion Anglin

Director, Cummins, Inc.

CONCURRENT BREAKOUT SESSIONS

9:00 – 10:00 am

QUANTUM COMMUNICATIONS AND SENSING

ROOM 152 A/B

Schrödinger's Web — Race to Build the Quantum Internet

Dr. Jonathan P. Dowling

Director, Institute for Theoretical Physics

Optimal Pulse Schemes for High-Precision Atom Interferometry

Dr. Michael H. Goerz

Postdoctoral Fellow, Army Research Laboratory

High-rate Entanglement Generation Using Real Quantum Memories

Dr. Siddhartha Santra

Postdoctoral Research Associate, Army Research Laboratory

Quantum-secured Communications Over an Optical Network

Dr. George Siopsis

Professor, University of Tennessee

9:00 – 10:00 am

PANEL: VERTICAL LIFT

ROOM 151 A/B

Dr. Mulugeta A. Haile

Research Aerospace Engineer,
Army Research Laboratory

Eric Spero

Team Lead, Army Research
Laboratory

Dr. Andrew Wissink

Aerospace Engineer, Army
Aviation Development
Directorate

9:00 – 10:00 am

INTELLIGENT SYSTEMS

ROOM 150 A/B

Generative Adversarial Networks for Thermal Imagery Data Augmentation

Dr. Lance E. Besaw

Senior Robotics Researcher, Neya Systems

Deep Learning for Future Army Systems

Dr. Michael Lee

Team Lead, Army Research Laboratory

Tactical Short-range Radar for Personnel Tracking with Split Brain Autoencoders

Rory McHenry

Engineer, Alion Science and Technology

10:00 – 10:30 am

NETWORKING BREAK

PREFUNCTION OF ROOM 146

CONCURRENT BREAKOUT SESSIONS

10:30 – 11:30 am

FORCE PROTECTION SURVIVABILITY

ROOM 152 A/B

Advanced Ceramics for Future Soldier Protection Technologies

Dr. Kristopher D. Behler

Senior Material Scientist, Army Research Lab

Materials and Manufacturing Advancements to Demonstrate Objective Underbody Protection

Dr. Bryan Cheeseman

Rapid Technology Transition Team Leader, Army Research Laboratory

Forward Looking Synthetic Aperture Radar (FLSAR) Concept for Landing in Degraded Visual Environments (DVE)

Dr. Traian Dogaru

Electronics Engineer, Army Research Laboratory

10:30 – 11:30 am

POINT OF NEED MANUFACTURING

ROOM 151 A/B

Material Recycling in 3D Printing/Material Sustainability in Additive Manufacturing

Lynn Ahrens

Student, Ursuline Academy

Army Additive Manufacturing: Expediting Material to Materiel

Dr. William Benard

Senior Campaign Scientist for Materials Research, Army Research Laboratory

Systematic Development of Framework for Validation and Performance Quantification of Additively Manufactured (AM) Replacement Parts for Structural Steel Applications

Thomas Gallmeyer

Ph.D. Student, Colorado School of Mines

Extrusion Based Additively Printed Magnets Outperforming Traditional Injection Molded Magnets

Dr. Mariappan P. Paranthaman

Corporate Fellow and Group Leader, Oak Ridge National Laboratory

10:30 – 11:30 am

PANEL: ELECTROMAGNETIC SPECTRUM DOMINANCE

ROOM 150 A/B

Gary Cox

Senior Business Development
Director, Textron Systems

Dr. Ellen L. Holthoff

Chemist, Army Research
Laboratory

Peter B. Houser

Technical Fellow, Northrop
Grumman Mission Systems

11:30 am

SYMPOSIUM CONCLUDES

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.