



# PROGRAMME

HFM-MSG-375

10-12 December 2024

For the HUMAN FACTORS AND MEDICINE (HFM) PANEL and  
NATO MODELLING & SIMULATION GROUP (NMSG)

Research Specialists' Meeting (HFM-MSG-375-RSM) on

## HUMAN DIGITAL TWIN IN THE MILITARY: FINDINGS AND PERSPECTIVE

Day 1 – 10 December 2024

Topic	Presenter	Time
<b>Welcome</b>	Dr. Michael Miller	9:00 am
<b>Welcome to TechGrove</b>	CarolAnn Dykes Logue	9:15 am
<b>Introduction</b>	TBD	9:30 am
<b>Coffee Break</b>		10:15 am
<b>Session 1: Human Digital Twin Use Cases</b>		
<b>Chair:</b> William Glascoe		
(1) Human Digital Twin Research at USARIEM: Past, Present, Future	Dr. Gary Zientara	10:30 am
(2) The impact of digital twins in Military Intelligence: Perspectives and Opportunities	Dr. Ciro Sbailò	10:50 am
(3) Digital-Twin-Mediated Estimation and Prediction	Dr. Virginia Pasour	11:10 am
(4) Human Digital Twin Instructors in the Metaverse for a Lifetime of On-time Training using Individualized Measures: A Future Perspective	Dr. Valarie Yerdon	11:30 am
Panel Discussion	All Presenters	11:50 am
<b>Lunch</b>		<b>12:10 pm</b>
<b>Keynote</b>	<b>Dr. Carolina Cruz-Neira</b>	<b>1:30 pm</b>
<b>Coffee Break</b>		<b>2:10 pm</b>
<b>Session 2: Biomechanical Human Digital Twins</b>		
<b>Chair:</b> Pinata Sessoms		
(5) CAN-SSPOT: A Human Digital Twin Solution	Dr. Ryan Graham	2:20 pm



**Science and Technology Organization  
Collaboration Support Office**

Neuilly-sur-Seine – France

<b>Topic</b>	<b>Presenter</b>	<b>Time</b>
(6) Santos GruntSim, a Load Configuration and Task Execution Assessment tool using a physics-based Human Digital Twin	Dr. Rajan Bhatt	2:40 pm
(7) Warfighter Digital Twins for Mission Simulation and Personalized Prediction of Performance and Injury Risk	Dr. Nathan Pickle	3:00 pm
(8) Digital Twins of Dismounted Infantry Biomechanics	Dr. John Rasmussen	3:20 pm
Panel Discussion		3:40 pm
<b>Coffee Break</b>		<b>4:00 pm</b>
<b>Summary and Closing Discussion</b>		<b>4:20 pm</b>
<b>Evening Gathering</b>		<b>7:00 pm</b>



## Day 2 – 11 December 2024

Topic	Presenter	Time
<b>Welcome</b>	Dr. Casey Pirnstill	9:00 am
<b>Keynote</b>	<b>Elizabeth Baron</b>	9:15 am
<b>Coffee Break</b>		10:00 am
<b>Session 3: Real-time Physiological Status Modeling</b>		
<b>Co-Chairs:</b> Kaj Gijbertse and Paolo Proietti		
(9) Human digital twin applications in Special Operations Forces	Mr. Matthew Canham	10:20 am
(10) Fieldable real-time system for full-body human motion capture: feasibility, evaluation and application	Dr. Thomas Bohne	10:40 am
(11) Digital Twin Approach for Individualized Real-time Health State Prediction and Squad Readiness Assessment	Mr. Mark Buller	11:00 am
(12) Santos as Integrated Human Digital Twin, a Case Study: US Army Combat Fitness Test	Dr. Karim Abdel-Malek	11:20 am
Panel Discussion	All Presenters	11:40 am
<b>Lunch</b>		<b>12:00 pm</b>
<b>Presentation</b>	<b>Dr. Bochenek</b>	<b>1:30 pm</b>
<b>Coffee Break</b>		<b>2:10 pm</b>
<b>Session 4: Cognitive Human Digital Twins</b>		
<b>Co-Chairs:</b> Susanna Fontana and Fabio Bisogni		
(13) An AI framework for real-time flight performance forecasting and assessment	Dr. Xiaomin Yue	2:20 pm
(14) Electrocortical Neuromorphic Augmented Cognition Transmission (ENACT) for Human Digital Twin Communication	Dr. Don Tucker	2:40 pm
(15) SUPER: Augmenting human-machine teaming in defence with biofeedback-enhanced brain-computer interfaces	Mr. David King	3:00 pm
(16) Implementing Computational Theory of Mind into Machines for Enhanced, Empathetic Human Support	Ms. Michelle Lim	3:20 pm
Panel Discussion		3:40 pm
<b>Coffee Break</b>		<b>4:00 pm</b>
<b>Summary and Closing Discussion</b>		<b>4:20 pm</b>
<b>Evening Gathering</b>		<b>7:00 pm</b>



## Day 3 – 12 December 2024

Topic	Presenter	Time
<b>Welcome Back Agenda Review</b>	Dr. Michael E. Miller	9:00 am
<b>Keynote</b>	<b>Prof Giovanni Saggio</b>	9:10 am
<b>Session 5: Holistic System</b>		
<b>Chair: Dr. Crystal Maraj</b>		
(17) Warfighter Digital Twin -Digital Engineering Process from Conceptual Design to Certification by Analysis Using Human Body Models	Dr. Gerardo Olivares	9:50 am
(18) Foundational research gaps and future directions for digital twins	Mr. Conrad Grant	10:10 am
<b>Coffee Break</b>		<b>10:30 am</b>
<b>Session 6: Medical Human Digital Twins</b>		
<b>Chair: Dr. Crystal Maraj</b>		
(19) Digital humans for the evaluation of medical devices: from stochastic humans, to in silico trials and digital twins	Dr. Aldo Badano	10:50 am
(20) An EU perspective and proposal for the development of a Virtual Human Twin ecosystem	Mr. Mirco De Malde	11:10 am
(21) The Digital Twin in tertiary and reconstructive health	Prof Gunther Paul	11:30 am
Panel Discussion		12:00 pm
<b>Lunch</b>		<b>12:20 pm</b>
<b>Wrapup Discussion</b>	Dr. Casey Pirnstill	<b>1:40 pm</b>
<b>Lab Tours</b>		<b>2:10 pm</b>
<b>Final Committee Wrapup Discussion</b>		<b>TBD</b>