



**ALERT**  
AWARENESS AND LOCALIZATION  
OF EXPLOSIVES-RELATED THREATS

Awareness and Localization of Explosives-Related Threats (ALERT)

*ALERT is an emeritus Department of Homeland Security (DHS)  
Science and Technology (S&T) Directorate Center of Excellence*

**Advancing Collaboration for Enhanced Security  
Virtual Workshop**

Session 2

October 6, 2021, 10:00 AM – 2:00 PM ET

## SPEAKER BIOGRAPHIES



**Andreu Badal**

*Food and Drug Administration (FDA)*

Andreu Badal, PhD, is a research physicist and regulatory consultant at the Food and Drug Administration (FDA/CDRH/OSEL/DIDSR), specialized in the conceptual development, implementation, validation, and application of Monte Carlo-based x-ray imaging simulation software. His current research projects include advanced geometric models for computational anatomic phantoms, GPU-accelerated Monte Carlo techniques, real-time dosimetry for interventional fluoroscopy, validation of machine learning algorithms used in radiology, and modeling of breast tomosynthesis imaging systems.

**Simon Bedford**

*TeleSecurity Sciences*

Simon Bedford is VP Business Development at TeleSecurity Sciences and has over 25 years of experience developing security screening systems and technology including X-ray, CT and a range of other NDT technologies. Simon previously led the development of the MVCT air cargo skid screening volumetric CT system for Astrophysics Inc. before joining TeleSecurity Sciences where he currently works with customers including regulators and airports on the development of Common Viewing Workstations and Common Automated Threat Recognition software for CT systems, along with related open architecture screening technology.



**Jack Corrigan**

*Georgetown University's Center for Security and Emerging Technology (CSET)*

Jack Corrigan is a research analyst at Georgetown University's Center for Security and Emerging Technology (CSET), where his work focuses primarily on issues related to STEM talent and national security innovation. Prior to joining CSET, Jack worked as a journalist, covering federal tech and cybersecurity policy for *Nextgov*. He also provided research and writing assistance for *The Raging 2020s*, a book about the growing power of the U.S. private sector and its effects on the country's social contract. Jack holds degrees in journalism and economics from Northwestern University.



**Carl R. Crawford**

*Csuptwo*

Carl Crawford is president of Csuptwo, LLC, a technology development and consulting company in the fields of medical imaging and explosive detection for Homeland Security. He has been a technical innovator in the fields of computerized imaging for more than thirty years. His technology has resulted in 90 U.S. Patents. Dr. Crawford was the Technical Vice President of Corporate Imaging Systems at Analogic Corporation, Peabody, Massachusetts, where he led the application of signal and image processing techniques for medical and security scanners. He developed the reconstruction and explosive detection algorithms for a computerized tomographic (CT) scanner deployed in airports worldwide. He was also employed at General Electric Medical Systems, Milwaukee, Wisconsin, where he invented the enabling technologies for helical scanning for medical CT scanners and physiological motion compensation for projection-based imaging systems. At Elscint, Haifa, Israel, he developed technology for cardiac CT scanners. He also has developed technology for magnetic resonance imaging (MRI), single photon emission tomography (SPECT), positron emission tomography (PET), ultrasound imaging, dual energy imaging and automated threat detection algorithms. He has a PHD in electrical engineering from Purdue University. He is a Fellow of the IEEE and a Fellow of the American Association of Physicists in Medicine (AAPM).



**Richard Dempers**

*Heathrow Airport*

Richard Dempers is a Managing Consultant at Rheinberry carrying out the role of Lead Designer for Security Portfolio projects at Heathrow Airport. Over the last 7-8 years Richard has delivered projects across Hold Baggage, Cabin Baggage and Passenger Security for Heathrow. In his current role of Lead Designer he is providing technical assurance and governance for the replacement of the assets on all of Heathrow's 150+ security lanes. Richard has taken a leading role in the production of the Open Architecture for Airport Security Systems document and is a member of all three workstreams for ACI EUROPE's Open Architecture Working Group. Additionally, Richard has presented on this subject to organisations including ICAO, IATA, ECAC and the IET. Richard's experience in IT spans 20 years and he has worked in a variety of industries including aviation, telecommunications, pharmaceuticals, engineering and utilities. Richard graduated from Imperial College, London in 1993 with a BEng in Materials Science and Engineering before returning to Imperial to complete a MSc in Advanced Mechanical Engineering and a PhD in Mechanical Engineering during which time he was co-funded by the Ministry of Defence, Department for Trade & Industry and European Gas Turbines to analyse and model the mechanical properties of gamma-Titanium Aluminide under multi-axial creep conditions.



**John M. Fortune**

*DHS Science and Technology (S&T) Directorate, Department of Homeland Security*

Dr. John M. Fortune is the Screening at Speed Program Manager in the DHS Science and Technology (S&T) Directorate. The Screening at Speed Program is pursuing transformative R&D activities that support a future vision for increasing aviation security effectiveness and improving the passenger experience. He also leads the Screening Program Management Team in S&T's Office of Mission Capability and Support. Previously, Dr. Fortune was a Branch Chief in S&T's Resilient Systems Division, where he focused on enhancing resilience of the Nation's most critical infrastructure sectors, such as energy, transportation, water, and communications. He managed



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the Resilient Tunnel Project, which developed inflatable plugs to protect subway tunnels from flooding. He also oversaw several projects to assess vulnerability and design countermeasures for critical transportation infrastructure, including development of a blast protection strategy that was purchased and installed by a major U.S. mass transit agency. In his earlier work at S&T, Dr. Fortune served in the Emerging Threats Portfolio, where he oversaw a nationwide assessment of underwater subway tunnels, a high priority effort requested by the TSA Administrator, and he worked closely with the intelligence community to understand potentially disruptive threats to the Nation's security. Dr. Fortune came to DHS in 2005 as a Science and Technology Policy Fellow with the American Association for the Advancement of Science. Prior to joining DHS, Dr. Fortune was a researcher at the National Institute of Environmental Health Sciences. He holds a Ph.D. in biochemistry from Vanderbilt University and a B.S. in chemistry from Duke University.



**Ben Herbig**

*American Airlines*

Ben is a Program Manager on the Security Innovation team at American Airlines, where he identifies and implements products and services critical to meeting American's security objectives. In this role, Ben serves as subject matter expert on a wide array of security technology systems, regulations, and programs, while developing and leading various internal innovation teams on enterprise programs and initiatives. Ben also serves as American's primary contact and liaison with technology solution producers and innovation teams at DHS, including TSA and CBP, on employee, passenger, and cargo screening/vetting, and facilitation initiatives.



**Eugene Kramer**

*Heathrow Airport*

Eugene is the 'Head of Cybersecurity for Passenger, AVSEC and Borders' - Security Strategy and Cyber Defence at Heathrow Airport. He is responsible for Identity, Biometrics, Automation and Security Transformation programmes including driving forward the concept of Open Architecture globally working closely with airports, airlines, industry bodies and regulators. Previously, he was the Principle Architect at Heathrow Airport responsible for the Identity, Automation and Biometrics programmes and successful rollout of large-scale projects across Security, Engineering and Commercial domains. He has experience working in diverse organisations in Fortune500 companies, consultancies, media and venture capital backed start-ups.



**Tim Lorenzen**

*American Airlines*

Tim Lorenzen is the Manager of Security Innovation at American Airlines where he leads a team of dedicated professionals that research and implement technology solutions to the security challenges American faces. Over his 21 year career that began with America West Airlines, he has held numerous roles in the airline, including airport customer service and ground operations management, customer service policies and procedures, international facilitation, and alliance and partnerships project management.



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**Harry E. Martz**

*Lawrence Livermore National Laboratory*

Harry Martz is the Director for Non-destructive Characterization Institute and a distinguished member of the technical staff at Lawrence Livermore National Laboratory. He is also Principal Investigator (PI) on Department of Homeland Security, Science and Technology, Homemade Explosives Identification, Detection and Mitigation (*HEIDM*) program. Harry joined the Laboratory to develop the area of X-ray imaging and proton energy loss computed tomography for the non-destructive inspection of materials, components, and assemblies. He received his M.S. and Ph.D. in Nuclear Physics/Inorganic Chemistry from Florida State University, and his B.S. in Chemistry from Siena Collage. Harry has applied CT to inspect one-millimeter sized laser

targets, automobile and aircraft components, reactor-fuel tubes, new production reactor target particles, high explosives, explosive shape charges, dinosaur eggs, concrete and for non-destructive radioactive assay of waste drum contents. Recent R&D efforts include CT imaging for conventional and homemade explosives detection in luggage and radiographic imaging of cargo to detect special nuclear materials and radiological dispersal devices.



**Laura Parker**

*Department of Homeland Security*

Laura Parker is the Senior Advisor for Sensors in the Science and Technology Directorate at the Department of Homeland Security. She is also the Program Manager for the ALERT Center of Excellence, a DHS-sponsored consortium of universities led by Northeastern University to perform research that address explosive threats. Laura, most recently, was the Program Manager for the Next Generation Explosives Trace Detection Program focused on developing advanced explosives trace detectors for use at checkpoints and other DHS operational environments. Laura has worked on a variety of research projects focused on explosives screening technologies to include algorithm and hardware development and interfacing with

DHS components such as Transportation Security Administration, Customs and Border Protection, US Secret Service, the US Coast Guard and other government agencies. Previously, Laura worked as a contractor providing technical and programmatic support of chemical and biological defense and explosives programs for several Department of Defense (DoD) offices. She also performed research in several US Navy laboratories in the field of energetic materials. She obtained her Ph.D. in chemistry from the Pennsylvania State University.



**Greg Pompelli**

*Cross-Border Threat Screening and Supply Chain Defense (CBTS)*

Dr. Greg Pompelli is the Director of the Center of Excellence for Cross-Border Threat Screening and Supply Chain Defense (CBTS), a Department of Homeland Security Science and Technology Center of Excellence. Prior to joining CBTS in January 2020, Pompelli served as the Associate Administrator of the USDA Economic Research Service (ERS) where he directed operations of an \$86 million research agency. Before his federal experience, he was an Associate and Assistant Professor in the Department of Agricultural Economics and Rural Sociology at the University of Tennessee. He started his career as a Loan Officer for the Sacramento Bank for Cooperatives, then moved to Sunkist Growers as an Economic Analyst. He completed his BS in Agricultural Economics and Rural Sociology at Pennsylvania State University and MS and PhD in Agricultural Economics at University of California Davis.



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**Cameron Ritchie**

*Leidos*

Cameron Ritchie is a recognized leader in the global security industry, having worked for some of the most innovative companies in the field. Cameron joined GE Homeland Protection in 2005 as the Manager, EDS Center of Excellence. He then moved on to the role of VP, Engineering and CTO for Morpho Detection, and then VP, Americas Engineering for Smiths Detection. He is currently the Chief Global Engineering and Technology Officer for Leidos Security Detection and Automation. At GE he was responsible for completely revitalizing the company's explosive detection systems (EDS) offerings and merging medical technologies with security systems. At Morpho Detection, he owned the entire product portfolio consisting of EDS, explosives trace detection, X-ray diffraction, mass spectrometry, and quadrupole resonance. At Smiths, he added expertise in the high energy cargo and vehicle scanning markets. At Leidos, he is responsible for all product and technology development. Cameron has deep experience with product development, technology strategy, team leadership, customer relations, executive management, and people development. He holds a Ph.D. in Bioengineering and a Bachelors in Mechanical Engineering from the University of Washington.



**Michael B. Silevitch**

*Northeastern University*

Michael B. Silevitch is currently the Robert D. Black Professor of Engineering at Northeastern University in Boston, an elected life fellow of the IEEE, the Director of the Homeland Security Center of Excellence for Awareness and Localization of Explosives Related Threats (ALERT), and the Director of the Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS), a graduated National Science Foundation Engineering Research Center (ERC). His training has encompassed both physics and electrical engineering disciplines. An author/co-author of over 65 journal papers, his research interests include laboratory and space plasma dynamics, nonlinear statistical mechanics, and K-12 science and mathematics curriculum implementation. Prof. Silevitch is also the creator of the Gordon Engineering Leadership (GEL) Program at Northeastern University, a graduate curriculum offered through the College of Engineering, with the mission of creating an elite cadre of engineering leaders. He and the current GEL Director, Simon Pitts, were awarded the 2015 Bernard M. Gordon Prize for Engineering Education by the National Academy of Engineering (NAE).



**Andrew Spage**

*CalypsoAI*

Andrew "Andy" Spage is the Director of Solutions Architecture for CalypsoAI and leads CalypsoAI's client delivery team. Andy has over 30 years of experience leading transformation in commercial and government missions. Prior to joining CalypsoAI, Andy spent 10 years at NGA where he led strategic resource planning for the agency and served as the Director of the NGA Corporate Assessment and Program Evaluation (CAPE) office. Andy established NGA's Public Private Partnership office to increase interactions between NGA and the startup community and launched a public facing geospatial data sharing platform called GeoWorks to support AI development. Andy has a bachelor's degree in Mathematics from Elon University and a master's degree in Operations Research from George Mason University.

Andy has 2 grown children and lives in Fairfax Station, Virginia with his wife of over 30 years and their 4 dogs.

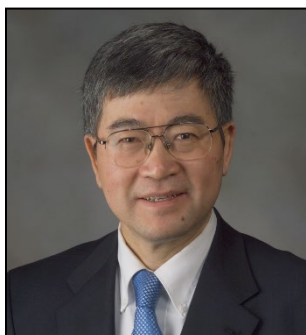


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## **Ge Wang**

*Rensselaer Polytechnic Institute*

Ge Wang is Clark & Crossan Chair Professor and Director of Biomedical Imaging Center, Rensselaer Polytechnic Institute, USA. He published the first spiral cone-beam/multi-slice algorithm in 1991 and many follow-up papers on this topic. Currently, there are ~200 million medical CT scans yearly with a majority in this scanning mode. He wrote 500+ journal papers in IEEE, PNAS, Nature, Nature Machine Intelligence, Nature Communications, etc. He received various awards including the 2021 IEEE EMBS Academic Career Achievement Award and gave many keynotes/plenaries including the 2021 SPIE O+P plenary “X-ray Imaging Meets Deep Learning”. His results were featured in Nature, Science, PNAS, and news media. He is Fellow of IEEE, SPIE, OSA, AIMBE, AAPM, AAAS, and National Academy of Inventors (NAI).