

2nd NIST Big Data Public Working Group Workshop
 June 1 & 2, 2017, Gaithersburg, Maryland
Program Schedule

| Time | NBDIF Day-1 (June 1, 2017) - Green Auditorium |
|---------------|--|
| 08:00 - 08:30 | Registration / Logistics |
| 08:30 - 08:35 | <p align="center"><i>Welcome + General Logistics</i> Mr. James St Pierre Deputy Director of Information Technology Laboratory, NIST</p> |
| 08:35 - 08:45 | <p align="center"><i>Welcome Address</i> Dr. Charles Romine Director of Information Technology Laboratory, NIST</p> |
| 08:45 - 09:05 | <p align="center"><u>NSF Big Data Program and Activities (1)</u> <u>Dr. Chaitan Baru</u> Senior Advisor for Data Science, CISE Directorate, NSF</p> |
| 09:05 - 09:15 | <p align="center"><u>NIST Big Data Interoperability Framework (NBDIF) Overview (2)</u> <u>Mr. Wo Chang</u> Digital Data Advisor of Information Technology Laboratory, NIST</p> |
| 09:15 - 09:30 | <p align="center"><u>NBDIF Volume 1 - Big Data Definitions (3)</u> <u>Dr. Nancy Grady</u> Chief Data Scientist, SAIC</p> |
| 09:30 - 09:45 | <p align="center"><u>NBDIF Volume 2 - Big Data Taxonomies (4)</u> <u>Dr. Nancy Grady</u> Chief Data Scientist, SAIC</p> |
| 09:45 - 10:00 | <p align="center"><u>NBDIF Volume 3 - Big Data Use Case and Requirements (5)</u> <u>Prof. Geoffrey Charles Fox</u> Distinguished Professor of Computer Science and Informatics, Indiana University <u>Dr. Piyush Mehrotra</u> Chief, NASA Advanced Supercomputing Division, NASA</p> |
| 10:00 - 10:15 | <p align="center"><u>NBDIF Volume 6 - Big Data Reference Architecture (6)</u> <u>Mr. David Boyd</u> Vice-President of Data Solutions, InCadence Strategic Solutions</p> |
| 10:15 - 10:35 | Break |
| 10:35 - 10:50 | <p align="center"><u>NBDIF Volume 4: Big Data Security and Privacy (7)</u> <u>Dr. Arnab Roy</u> Research Manager, Fujitsu Laboratories of America <u>Mr. Mark Underwood</u> AVP, Strategic Initiatives, Controls and Countermeasures</p> |
| 10:50 - 11:05 | <p align="center"><u>NBDIF Volume 8: Big Data Reference Architecture Interface (8)</u> <u>Dr. Gregor von Laszewski</u> Editor of NBDIF Volume 8</p> |

| | |
|---------------|---|
| | Assistant Director of Community Grids Lab, Adjunct Associate Professor Indiana University |
| 11:05 - 11:20 | <u>Big Data Reference Architecture Software and Demonstration (9)</u> <u>Dr. Gregor von Laszewski</u> Editor of NBDIF Volume 8 Assistant Director of Community Grids Lab, Adjunct Associate Professor Indiana University |
| 11:20 - 11:35 | <u>NBDIF Volume 7 - Big Data Standards Roadmap (10)</u> <u>Mr. Russell Reinsch</u> Analyst, Center for Government Interoperability |
| 11:35 - 11:50 | <u>NBDIF Volume 9 - Big Data Adoption and Modernization (11)</u> <u>Mr. Russell Reinsch</u> Analyst, Center for Government Interoperability |
| 11:50 - 13:00 | Lunch (on your own) |
| 13:00 - 13:15 | <u>Big Data at the Department of Energy's Office of Science (12)</u> <u>Dr. Laura Biven</u> Senior Science and Technology Advisor, DOE |
| 13:15 - 13:30 | <u>Big Data Applications and Challenges at Census (13)</u> <u>Mr. Cavan Capps</u> Big Data Lead, Census |
| 13:30 - 13:45 | <u>Big Data Application / Program / Initiative Challenges at NASA (14)</u> <u>Mr. John Sprague</u> Deputy Associate CIO, Technology & Innovation Division, NASA |
| 13:45 - 14:00 | <u>Data Revolution to Zero Hunger (15)</u> <u>Ms. Jaime Adams</u> Senior Advisor for International Affairs, Office of the Chief Scientist, USDA |
| 14:00 - 14:20 | <i>Panel Discussion (16)</i> <u>Mr. Wo Chang</u> , Moderator <u>Dr. Chaitan Baru</u> , <u>Dr. Laura Biven</u> , <u>Mr. John Sprague</u> , <u>Mr. Cavan Capps</u> , <u>Ms. Jaime Adams</u> |
| 14:20 - 15:00 | Break |
| 15:00 - 17:00 | <i>Breakout by Subgroups</i> Ref. Arch. and Ref. Arch. Interface - Lecture Room A Use Case and Requirements & Security and Privacy - Lecture Room B Definitions and Taxonomies - Lecture Room C Standards Roadmap, Adoption and Modernization - Lecture Room D |
| Time | NBDIF Day-2 (June 2, 2017) - Green Auditorium |
| 08:30 - 08:35 | <i>Welcome Back + General Logistics</i> Mr. Wo Chang Digital Data Advisor of Information Technology Laboratory, NIST |

| | |
|---------------|---|
| 08:35 - 08:45 | <p><i>Welcome Address</i> Mr. James St Pierre Deputy Director of Information Technology Laboratory, NIST</p> |
| 08:45 - 09:05 | <p><u>Interoperability: The Key to Big Data Value (1)</u> <u>Dr. George Strawn</u> Director of Board on Research Data and Information National Academies of Sciences, Engineering, and Medicine</p> |
| 09:05 - 09:15 | <p><u>Breakout Report on Definitions and Taxonomies (2) [All Breakout Report]</u> <u>Dr. Nancy Grady</u></p> |
| 09:15 - 09:25 | <p><u>Breakout Report on Use Cases and Requirements (3) [All Breakout Report]</u> <u>Dr. Geoffrey Charles Fox</u> <u>Dr. Piyush Mehrotra</u></p> |
| 09:25 - 09:35 | <p><u>Breakout Report on Security and Privacy (4) [All Breakout Report]</u> <u>Dr. Arnab Roy</u> <u>Mr. Mark Underwood</u></p> |
| 09:35 - 09:45 | <p><u>Breakout Report on Reference Architecture (5) [All Breakout Report]</u> <u>Mr. David Boyd</u></p> |
| 09:45 - 09:55 | <p><u>Breakout Report on Reference Architecture Interface (6) [All Breakout Report]</u> <u>Dr. Gregor von Laszewski</u></p> |
| 09:55 - 10:05 | <p><u>Breakout Report on Standards Roadmap, Adoption and Modernization (7) [All Breakout Report]</u> <u>Mr. Russell Reinsch</u></p> |
| 10:05 - 10:30 | Break |
| 10:30 - 10:45 | <p><u>Improving Access to Open Data through NOAA's Big Data Project (8)</u> <u>Dr. Edward Kearns</u> Chief Data Officer, NOAA</p> |
| 10:45 - 11:00 | <p><u>Big Data Opportunities in Transportation (9)</u> <u>Mr. Daniel Morgan</u> Chief Data Officer, DOT</p> |
| 11:00 - 11:15 | <p><u>Big Data Analytic Challenges at FRB (10)</u> <u>Mr. Mike Kraemer</u> Chief Data Officer, Board of Governors of the Federal Reserve System, FRB</p> |
| 11:15 - 11:30 | <p><u>Talking About Big Data (11)</u> <u>Dr. Robert Whetsel</u> Technical Director and Chief Data Architect, DoD/NBIB</p> |
| 11:30 - 12:00 | <p><i>Panel Discussion (12)</i> <u>Mr. Wo Chang</u>, Moderator <u>Dr. George Strawn</u>, <u>Dr. Edward Kearns</u>, <u>Mr. Daniel Morgan</u>, <u>Mr. Mike Kraemer</u>, <u>Dr. Robert Whetsel</u></p> |
| 12:00 - 13:20 | Lunch (on your own) |

| | |
|---------------|---|
| 13:20 - 13:30 | <p align="center"><u>Explore Exascale Big Data Analytics and Systems (13)</u> <u>Mr. Wo Chang</u> Digital Data Advisor of Information Technology Laboratory, NIST</p> |
| 13:30 - 13:40 | <p align="center"><u>IEEE Big Data Initiative (14)</u> <u>Dr. David Belanger</u> Chair of IEEE Big Data Initiative Senior Research Fellow, Stevens Institute of Technology</p> |
| 13:40 - 13:50 | <p align="center"><u>NIST Big Data Reference Architecture for Analytics and Beyond (15)</u> <u>Mr. Wo Chang</u> Digital Data Advisor of Information Technology Laboratory, NIST</p> |
| 13:50 - 14:00 | <p align="center"><u>IEEE Big Data Governance and Metadata Management (BDGMM) (16)</u> <u>Prof. Mahmoud Daneshmand</u> Vice-Chair of BDGMM Co-Founder and Chair of Steering Committee of IEEE IoT Journal Industry Professor, Steven Institute of Technology</p> |
| 14:00 - 14:10 | <p align="center"><u>IEEE Future Big Data Analytics and Systems Direction (17)</u> <u>Ms. Kathy Grise</u> Senior Program Director, Future Directions, IEEE</p> |
| 14:10 - 14:30 | <p align="center"><i>Panel Discussion (18)</i> <u>Ms. Joan Woolery</u>, Moderator Senior Project Manager, Industry Connections, IEEE Standards Association <u>Dr. David Belanger</u>, <u>Prof. Mahmoud Daneshmand</u>, <u>Ms. Kathy Grise</u>, <u>Mr. Wo Chang</u></p> |
| 14:30 - 14:35 | Next Steps + Final Announcement |
| 14:35 - 15:00 | Break |
| Time | IEEE BDGMM (June 2, 2017) - Green Auditorium |
| 15:00 - 17:00 | <u>Meeting Agenda</u> |

Speaker Bios

Keynote: Dr. Chaitan Baru, Senior Advisor for Data Science, CISE Directorate, NSF

Dr. Baru, is Senior Advisor for Data Science in the Computer and Information Science and Engineering Directorate at the US National Science Foundation. He co-chairs the NSF working group on Harnessing the Data Revolution Big Idea; serves as advisor to the NSF Big Data Regional Innovation Hubs and Spokes program (BD Hubs/Spokes); manages the cross-Foundation NSF BIGDATA program; and, is a member of the NSF Transdisciplinary Research in Principles of Data Science (TRIPODS) program. He also co-chairs the Big Data Inter-agency Working Group of the Networking and IT R&D program (NITRD) of the White House Office of Science and Technology Policy. He is one of the primary co-authors of the Federal Big Data R&D

Strategic Plan, released May 2016. He is also a member of the NITRD Data Science Interagency Working Group and represents NSF on the Federal Data Cabinet. He was General Chair for the 33rd IEEE International Conference on Data Engineering (ICDE 2017) held on April 19-22, 2017, in San Diego, California. He is on assignment at NSF from the San Diego Supercomputer Center, University of California San Diego, where he is Associate Director for Data Initiatives and directs the Center for Large-scale Data Systems Research (clds.sdsc.edu) and the Advanced Cyberinfrastructure Development Group (acid.sdsc.edu).

Keynote: Dr. George Strawn, Director of the Board on Research Data and Information (BRDI), National Academies of Sciences, Engineering, and Medicine.

Dr. Strawn is the director of the Board on Research Data and Information (BRDI) at the National Academies of Sciences, Engineering, and Medicine. Prior to joining the Academies, Dr. Strawn was the director of the National Coordination Office (NCO) for the Networking and Information Technology Research and Development (NITRD) Program, where he also served as the co-chair of the NITRD Subcommittee of the National Science and Technology Council. Dr. Strawn held these positions while on detail from the National Science Foundation (NSF) to the Executive Office of the President, Office of Science and Technology Policy. Prior to this assignment, Dr. Strawn was the NSF Chief Information Officer (CIO). As the CIO for NSF, he guided the agency in the development and design of innovative information technology, working to enable the NSF staff and the international community of scientists, engineers, and educators to pursue new methods of scientific communication, collaboration, and decision-making. Prior to his appointment as NSF CIO, Dr. Strawn served as the executive officer of the NSF directorate for Computer and Information Science and Engineering (CISE) and as acting assistant director for CISE. Previously, Dr. Strawn served as the director of the CISE Division of Advanced Networking Infrastructure and Research, where he led NSF's efforts in the Presidential Next Generation Internet Initiative. Prior to coming to NSF, Dr. Strawn was a Computer Science faculty member at Iowa State University (ISU). He also served there as director of the ISU Computation Center and chair of the ISU Computer Science Department. Dr. Strawn received his Ph.D. in Mathematics from Iowa State University and his B.A. Magna Cum Laude in Mathematics and Physics from Cornell College. He is a fellow of the American Association of the Advancement of Science and a member of the Cosmos Club.

Ms. Jaime Adams, Senior Advisor for International Affairs, Office of the Chief Scientist, Office of the Secretary, USDA

Ms. Adams is the Senior Advisor for International Affairs for the USDA Chief Scientist. In this capacity, Ms. Adams manages the international portfolio for the USDA Chief Scientist which includes cross-functional international agricultural science and technology collaboration with government and non-governmental organizations. Ms. Adams is responsible for negotiation and management of numerous international bilateral and multilateral agricultural science and technology relationships. Ms. Adams manages the U.S. Government participation in the Global Open Data for Agriculture and Nutrition (GODAN) initiative. Ms. Adams has presented on the topic of open data and food security in numerous high-level venues and her advocacy of open data has been featured in publications including Fast Company, BBC, and Reuters. Ms. Adams has worked on international agricultural issues for over 15 years, including serving in Afghanistan for over a year, and has supported high-level USG leadership including members of Congress, U.S. Ambassadors, and U.S. Cabinet officials. Ms. Adams has a Master of Science degree in Agricultural Economics from the University of Illinois at Urbana-Champaign.

Dr. David Belanger, Chair of IEEE Big Data Initiative, Senior Research Fellow, Stevens Institute of Technology

Dr. Belanger retired as AT&T Labs Chief Scientist. For 15 years, he was V. P. of Information, Software, & Systems Research at AT&T Labs, leading research in topics ranging from computer science and data management, to analysis and visualization of data, and applications among areas such as: fraud, service/network operations, marketing, and mobility. This role included

creation of the AT&T Research InfoLab for the exploration of creating more value from data. His career includes 17 years at Bell Labs, much of it as head of research in software systems and engineering; faculty of Mathematics/Statistics/Computer Science at University of South Alabama; a variety of consulting engagements; and founding of a small data services company. He is currently co-chair of the IEEE Big Data Initiative.

Dr. Laura Biven, Senior Science and Technology Advisor, Office of the Deputy Director for Science Programs, DOE

Dr. Biven joined the Department of Energy's Office of Science in 2008 as Science and Technology Advisor in the Office of the Deputy Director for Science Programs. She has recently taken a new role as program manager in the Advanced Scientific Computing Research Office with responsibilities for a computer science research portfolio focused on data management, analysis, and visualization. She continues to serve as the Office of Science lead and point of contact for policy issues related to research data. From 2005 to 2008 she was AAAS Science and Technology Policy Fellow, serving first as Commodity Import Analyst at the US Department of Agriculture and then as Science and Technology Analyst at the US Department of State. She has also served as member of the mathematics faculty at Bard High School Early College in New York City; postdoctoral fellow at the Max Planck Institute for the Study of Complex Physics in Dresden, Germany; and visiting scientist to the Abdus Salam International Center for Theoretical Physics in Trieste, Italy. She received a first class M.Sci. degree in Mathematics and Physics from the University of Bristol and a Ph.D. in Applied Mathematics from the University of Warwick, both in the UK. Laura's scientific research focused on the study of wave turbulence.

Mr. David Boyd, Co-Chair of NBD-PWG Reference Architecture Subgroup, Chair ANSI/INCITS TC Big Data, Vice-President of Data Solutions, InCadence Strategic Solutions

Mr. Boyd has over 35 years' experience in developing, integrating, and deploying complex data intensive systems for a wide range of users and applications. Mr. Boyd's focus is on transitioning technology into operational capabilities for users. Mr. Boyd is a leading expert in Big Data systems and architectures having architected, designed and implemented multiple systems leveraging HADOOP, ACCUMULO, HIVE, R, and other technologies. Mr. Boyd is currently leading the development of an Operational Environment (OE) Ontology which can be leveraged to model real world environments for simulation and training. Mr. Boyd as the chair for the ANSI/INCITS Big Data technical committee and as contributor and editor for several parts of ISO/IEC 20547 Information Technology – Big Data: Reference Architecture standard. Mr. Boyd was also a contributing author and editor for NIST Special Publications 1500-6 Big Data Interoperability Framework: Reference Architecture and 1500-7 Big Data Interoperability Framework: Standards Roadmap. Mr. Boyd has an extensive background in software development and has over 15 years of experience developing, integrating, and fielding geospatial systems. Mr. Boyd holds a B.S. in Computer Science from the University of Maryland and an M.S. Information Technology from Capella University. Mr. Boyd serves as on the board of the US STEM foundation, a non-profit focused on developing a community based model to give young people access to Science, Technology, Engineering, and Mathematics activities and encourage future education and careers in related disciplines.

Mr. Cavan Capps, Big Data Lead, U.S. Census Bureau

Mr. Capps is the U.S. Census Bureau's Big Data Lead. In that role he is focuses on new Big Data sources for use in official statistics, machine learning, analytics, parallel processing, best practice private sector processing techniques and software/hardware configurations that may be used to improve statistical processes and products. Mr. Capps has expertise in distributed processing across geographically dispersed and heterogeneous database platforms. Previously, he designed and managed the implementation of the DataWeb platform, which is now being used as the official Census engine to deliver public-use aggregate data, micro-data, and time series data to

researchers and the public. Mr. Capps current focus is on big data processing, data integration and security and confidentiality in a world of big data.

Mr. Wo Chang, Digital Data Advisor, NIST Information Technology Laboratory (ITL), Convenor of ISO/IEC JTC 1/WG9 Working Group on Big Data, Chair of IEEE Big Data Governance and Metadata Management (BDGMM), and Chair of ISO/IEC JTC/1 SC29 WG11 (MPEG) Multimedia Preservation AHG

Mr. Chang is Digital Data Advisor for the NIST Information Technology Laboratory (ITL). His responsibilities include, but are not limited to, promoting a vital and growing Big Data community at NIST with external stakeholders in commercial, academic, and government sectors. Mr. Chang currently chairs the ISO/IEC JTC 1/WG 9 Working Group on Big Data, IEEE Big Data Governance and Metadata Management, and ISO/IEC JTC/1 SC29 WG11 (MPEG) Multimedia Preservation AHG. Prior to joining ITL Office, Mr. Chang was manager of the Digital Media Group in ITL and his duties included overseeing several key projects including digital data, long-term preservation and management of EHRs, motion image quality, and multimedia standards. In the past, Mr. Chang was the Deputy Chair for the US National Body for MPEG (INCITS L3.1) and chaired several other key projects for MPEG, including MPQF, MAF, MPEG-7 Profiles and Levels, and co-chaired the JPEG Search project. Mr. Chang was one of the original members of the W3C's SMIL WG and developed one of the SMIL reference software. Furthermore, Mr. Chang also participated in the HL7 and ISO/IEC TC215 for health informatics and IETF for the protocols development of SIP, RTP/RTCP, RTSP, and RSVP networking protocols. Mr. Chang's research interests include, big data analytics, high performance and cloud computing, content metadata description, digital file formats, multimedia synchronization, digital data preservation, and Internet protocols.

Prof. Mahmoud Daneshmand, Vice-Chair of BDGMM, Co-Founder and Chair of Steering Committee of IEEE IoT Journal, Industry Professor, Steven Institute of Technology

Prof. Daneshmand is Professor of Business Intelligence & Analytics at Howe School of Technology Management as well as Computer Science at School of Engineering and Science, Stevens Institute of Technology. He has more than 35 years of teaching, research & publications, consultation, and management experience in academia & industry including: Bell Laboratories, AT&T Shannon Labs – Research, University of California at Berkeley, University of Texas at Austin, Sharif University of Technology, University of Tehran, New York University, and Stevens Institute of Technology. He has served as Distinguished Member of Technical Staff (DMTS) at Bell Labs as well as AT&T Shannon Labs -Research; Assistant Chief Scientist of AT&T Labs; Founder and Executive Director of the AT&T Labs university collaborations program. He is an Industry Professor at the School of Business and department of Computer Science, Co-Founder of the Business Intelligence & Analytics MS program at Stevens Institute of Technology. He is an expert in Big Data Analytics, Internet of Things (IoT)/Sensor & RFID Data Streams Analytics, Data Mining Algorithms, Machine Learning, Probability & Stochastic Processes, and Statistics. He is experienced in Risk Management, Quality and Reliability of IP-Based Services and Applications. Mahmoud is well recognized within the academia and industry. He has published more than 95 Journal and conference papers; authored/co-authored three books; Holds two patents (2009 and 2010); Chair of New IEEE Journal of Internet of Things;

Prof. Geoffrey Charles Fox, Co-Chair of NBD-PWG Use Cases and Requirements Subgroup, Distinguished Professor of Computer Science and Informatics, Indiana University

Dr. Fox received a Ph.D. in Theoretical Physics from Cambridge University and is now distinguished professor of Engineering, Computing, and Physics at Indiana University where he is director of the Digital Science Center, and Chair of Department of Intelligent Systems Engineering at the School of Informatics and Computing. He previously held positions at Caltech, Syracuse University and Florida State University after being a postdoc at the Institute of Advanced Study at Princeton, Lawrence Berkeley Laboratory and Peterhouse College Cambridge. He has supervised the PhD of 70 students and published around 1200 papers in physics and computer science with

an hindex of 74 and over 30000 citations. He currently works in applying computer science from infrastructure to analytics in Biology, Pathology, Sensor Clouds, Earthquake and Ice-sheet Science, Image processing, Deep Learning, Manufacturing, Network Science and Particle Physics. The infrastructure work is built around Software Defined Systems on Clouds and Clusters. The analytics focuses on scalable parallelism. He is involved in several projects to enhance the capabilities of Minority Serving Institutions. He has experience in online education and its use in MOOCs for areas like Data and Computational Science. He is a Fellow of APS (Physics) and ACM (Computing).

Dr. Nancy W. Grady, Co-Chair of NBD-PWG Big Data Definitions and Taxonomies Subgroup, Chief Data Scientist and Technical Fellow, SAIC

Dr. Grady has 35 years of experience specializing in data mining and data analytics. Her expertise includes data and text mining for credit card bankruptcy, and patent search, and end-to-end biosurveillance analytics solutions for CDC and DHS. Dr. Grady has done big data and data science consulting for a county HR department, a State CIO, a NASA strategic safety analytics roadmap, and for the Office of the CIO, Department of Defense. She leads SAIC's Internal Research and Development (IR&D) to develop big data analytics applications including Deep Learning and GPU computing for cyber and IoT. Dr. Grady is the lead editor for the ISO standard 20546 *Information Technology - Big Data - Overview and Vocabulary*. She served on the senior industry track program committee for ACM's Knowledge Discovery in Data conference, and is on the IEEE Big Data Conference Industrial Track Program Committee. Dr. Grady was a Wigner at Oak Ridge National Laboratory, and her PhD is in physics from the University of Virginia.

Ms. Kathy Grise, Senior Program Director - Future Directions, IEEE

Ms. Grise, Senior Program Director - IEEE Future Directions, supports new technology initiatives, and is the IEEE staff program director for the Big Data Initiative, Smart Materials Initiative, the IEEE Technology Navigator, Future Directions and Industry Advisory Board Committees, manages the digital presence team for Future Directions, and serves as the Technical Program Chair of COMPSAC 2017 Symposium - Data Sciences, Analytics, & Technologies (DSAT). Prior to joining the IEEE staff, Ms. Grise held numerous positions at IBM, and most recently was a Senior Engineering Manager for Process Design Kit Enablement in the IBM Semiconductor Research and Development Center. Ms. Grise led the overall IT infrastructure implementation, and software development in support of semiconductor device modeling verification, packaging, and delivery; device measurement and characterization data collection and management, and automation for device modeling engineers. Ms. Grise is a graduate of Washington and Jefferson College, and an IEEE Senior member.

Dr. Edward Kearns, Chief Data Officer, NOAA

Dr. Kearns is NOAA's first Chief Data Officer (CDO) and the director for NOAA's Big Data Project. Ed earned B.S. degrees in Physics & Marine Science from the University of Miami (1990) and his Ph.D. in Physical Oceanography from the University of Rhode Island (1996). As a professor at the University of Miami, Ed worked on satellite sensor characterization and calibration for ocean products from NASA's satellites, and led the development of regional integrated ocean observing and data management systems. In 2005, he joined the National Park Service to lead the evaluation of coastal ecosystem restoration project plans and guide Everglades coastal restoration efforts. Ed joined NOAA and moved to Asheville, NC in 2008 to lead work on satellite climate data records, big data, archive and data stewardship issues.

Mr. Michael Kraemer, Chief Data Officer, Board of Governors of the Federal Reserve System

Mr. Kraemer was recently named the Chief Data Officer (CDO) for the Federal Reserve Board. He has been with the Board for over twenty years during which time he had responsibilities for different aspects of data collections and data management. Prior to joining the Board, Mr. Kraemer worked at the Federal Reserve Bank of St. Louis in the Banking Supervision and

Regulation department managing data and information. Michael is most closely associated with the Federal Reserve's National Information Center (NIC) being involved from the formation of critical data and information assets. His career was spent building, managing, and enhancing the NIC repositories and information services.

Dr. Piyush Mehrotra, Co-Chair of NBD-PWG Use Cases and Requirements Subgroup, Division Chief, NASA Advanced Supercomputing Division, NASA Ames Research Center

Dr. Mehrotra, Division Chief of the NASA Advanced Supercomputing (NAS) Division at NASA Ames Research Center, oversees the full range of high-performance computing services for NASA's premier Supercomputing center. The Division focuses on the advanced computing needs of the NASA scientists and engineers, including in the areas of accelerator technologies, collaborative computing, Data Analytics and Quantum Computing. He also manages NAS's large-scale modeling and simulation research and development efforts, which are critical for numerous agency missions. Dr. Mehrotra has over 35 years of R&D experience in parallel programming languages, including compilers and runtime systems for shared- and distributed-memory systems, and middleware infrastructure for grid environments. Recently his research focus has been on performance characterization, benchmarking and effective utilization of parallel systems including HPC clouds along with developing a data analytics platform for analysis of large-scale scientific data. He has published over 100 articles in journals and conferences, edited two books, and served as editor for several special issues of international computer science journals.

Mr. Daniel Morgan, Chief Data Officer, U.S. Department of Transportation

Mr. Morgan is the first Chief Data Officer of the United States Department of Transportation. As the CDO, he has overall responsibility for the Departmental data program and data compliance across the Department. He is responsible for establishing a clear vision of the data managed in DOT and the application of DOT data for decision-making. He serves as data strategist and adviser, steward for improving data quality, liaison for data sharing and developer of new data products. Prior to assuming this role, Mr. Morgan spent 15 years as a management consultant, providing services to public and private sector clients in a variety of areas, including: open government, information technology governance, capital planning and investment control, enterprise architecture, and human capital planning. Mr. Morgan holds a Bachelor's Degree in Mechanical Engineering from the University of Illinois at Urbana-Champaign.

Dr. Gregor von Laszewski, Assistant Director of Community Grids Lab, Adjunct Associate Professor, Indiana University

Dr. Laszewski is an Assistant Director DSC in the School of Informatics and Computing at Indiana University. He holds also a position as Adjunct Professor in the Intelligent Systems Engineering Department. Previously he held Adjunct Professor positions at the Computer Science Department at Indiana University and University of North Texas, he has taught on voluntary basis at Illinois Institute of Technology. He received his Master Degree in 1990 from the University of Bonn, Germany, and a Ph.D in 1996 from Syracuse University in computer science. He served as the architect of the the FutureGrid project. Dr. Laszewski held a position at Argonne National Laboratory from Nov. 1996 – Aug. 2009 where he was last a scientist and a fellow of the Computation Institute at University of Chicago. During the last two years of that appointment he was on sabbatical was also an Associate Professor and the Director of a Lab at Rochester Institute of Technology focusing on Cyberinfrastructure. He is working tightly with SDSC on virtual clusters for XSEDE comet. He initiated the Cloudmesh project which is a toolkit to enable cloud computing across various Cloud and Container IaaS such as OpenStack, AWS, Azure, Docker, and Kubernetes. Previously, he was the architect of FutureGrid, one of the first successful clouds in US academia. He was involved in Grid computing since the term was coined. He has been the lead of the Java Commodity Grid Kit which provides till today a basis for many Grid related projects including the Globus toolkit.

Mr. Russell Reinsch, Co-Chair of NBD-PWG Standards Roadmap Subgroup, Analyst for Center for Government Interoperability

Mr. Reinsch serves as an Analyst with the Center for Government Interoperability. He is responsible for examining and coordinating project plans and championing CFGIO to government and university offices. Prior to his current role Russell was a Project Manager on the Student Programmers project. From 2012 to 2014 Russell was an Analyst and core team member of a DC startup building a link analysis technology similar to Quid and Deltasight. Working on both design and business aspects of the project, Russell provided extensive competitive intelligence and market understanding as well as user research for organizational strategy. He was also instrumental in developing the information architecture for the product interface. Russell's experience also includes SREDIM, PEST factoring, and project feasibility and scoping analysis. He has twenty years of diagnostics experience in a variety of industries ranging from military communications to automotive and facilities maintenance. Russell holds a Bachelor of Science degree in Science and Technology Studies from Arizona State University. His most recent continued education credits were earned in Challenges of Big Data through Massachusetts Institute of Technology.

Dr. Arnab Roy, Co-Chair of NBD-PWG Security and Privacy Subgroup, Research Manager, Fujitsu Laboratories of America

Dr. Roy is a Research Manager at Fujitsu Laboratories of America. Before joining Fujitsu, he was a post-doctoral researcher at the IBM Thomas J. Watson Research Center. Arnab obtained his PhD in Computer Science from Stanford University in 2009, where he was a Siebel Scholar. He completed undergraduate studies from Indian Institute of Technology Kharagpur in 2004, where he was awarded the Prime Minister of India Gold Medal for academic excellence. His primary research interest is in the construction and formal analysis of cryptographic protocols and primitives. He has published several papers in this field, received the Best Paper Award at Asiacrypt 2013, and served on the Program Committee of Eurocrypt 2016. He was also awarded a Certificate of Recognition by NIST for outstanding volunteer contributions to the development of the NIST Cloud Computing Security Reference Architecture.

Mr. John Sprague, Deputy Associate CIO, Technology & Innovation Division, Office of the Chief Information Officer, NASA

Mr. Sprague is the Deputy, Associate Chief Information Officer for the Technology and Innovation Division in the Office of the Chief Information Officer at NASA Headquarters in Washington, DC. He has a Master's Degree in Computer Resource and Information Management; a Bachelor's in Industrial Technology Engineering and is a retired Air Force Officer. He develops new technology infusion, data science and digital innovation projects and prototypes affecting over 60,000 scientists, researchers, and University partners. He co-leads the NASA Big Data Working Group with a representative from the Science Mission Directorate. He is a Fellow of the American Council for Technology/Industry Advisory Council, the Government IT Executive Council Board Member, and an occasional host, speaker and awards judge for the National Capital Region Help Desk Institute (HDI). He also teaches Cybersecurity Masters courses including an online Use and Protection of Space Assets class he developed.

Mr. Mark Underwood, AVP, Strategic Initiatives, Controls and Countermeasures

Mr. Underwood is currently AVP for Strategic Initiatives, Controls and Countermeasures at Synchrony Financial. Since 2013 he has served as President and CEO of Krypton Brothers LLC, a consultancy specializing in Big Data security, rapid intranet exploitation, digital forensics, software quality and domain-specific frameworks. In 2016 he published two chapters in software engineering; they cover the use of social media in intranets and complex event processing for cybersecurity in IoT. Underwood is an advocate for patient-managed health information. Underwood has served as lead engineer or principal investigator on artificial intelligence projects for DARPA and for Army and Air Force research laboratories. Most recently, he is working with standards organizations to foster information assurance and provenance transparency.

Underwood is co-chair of the NIST Big Data Public Working Group's security and privacy subgroup, and was co-chair of the 2015 Ontology Summit focused on the Internet of Things. In 2014, he served on the workshop committee for the IEEE Big Data Conference and moderated several panels, and is currently working on IEEE P2675, P1915.1 and P7000 standards committees. Underwood is an ASQ Certified Software Quality Engineer and holds an ISACA CRISC certificate

Dr. Robert Whetsel, National Background Investigation Bureau (NBIB), DoD

Dr. Whetsel excels at building and maintaining partnerships with academia, private industry within joint federal agency environments. He has the proven ability to achieve innovative results for complex cross-agency initiatives. A Computer Scientist and subject matter expert in complexity sciences and big data. Dr. Whetsel is a thought leader in transforming businesses through emerging technologies; bringing innovative technical and developing the workforce for the future. He has been recognized as an exceptional mentor and entrepreneur who has helped foster technical expertise across the DoD and provided technical support to many in industry. His long career with the DoD has spanned more than 30 years both as a soldier and a Government Civilian. Currently, Dr. Whetsel is the Technical Director and Chief Data Architect for the National Background Information Systems. This is Congressionally visible program encompasses a multitude of systems across a number of Federal, DoD, and Intelligence agencies within a single portfolio for background investigations conducted by the National Background Investigation Bureau (NBIB). In addition Dr. Whetsel military career spanned more than 23 years, both active duty and Reserve. Recently, CPT Whetsel returned from a deployment from the Middle-East supporting Combined Joint Task Force – Operation Inherent Resolve's mission to coordinate military efforts against ISIL, and is composed of US military forces and personnel from over 60 countries. Upon his return to his Army Reserve unit Dr. Whetsel returned to his position as the Chief Science and Technology Officer where he evaluates cyber futures and develops working relationships with industry, academia, and other agencies to support the Army Reserve Cyber for Army Reserve Cyber Operations Group's (ARCOG) Mission; "to support the Army Cyber Command to plan, coordinate, integrate, synchronize, direct, and conduct network operations and defense".

Ms. Joan Woolery, Senior Project Manager, Business Development, IEEE Standards Association

Ms. Woolery supports the Industry Connections Program under the IEEE Standards Association. Ms. Woolery guides individuals and entities in collaborative activities (such as the new IEEE Big Data Governance and Metadata Management project) that lead to innovative technical solutions, white papers, workshops, and proposals for technology standards. Prior to joining the IEEE staff, Ms. Woolery held numerous positions as a computer programmer, systems analyst, systems architect and IT project manager in communications, robotics, and banking. Ms. Woolery has a B.S. in Computer and Systems Engineering from Rensselaer Polytechnic Institute.