

Workshop on Harmonization of Connectivity of the Digital Citizen Series

The IEEE Standards Association (IEEE-SA) Harmonization of Connectivity of the Digital Citizen Workshop will be a 1-day event with an emphasis on wearable devices (hardware, software, analytics, mobility, and security), intended for both industry and academic researchers from the United States and Europe. As part of the IEEE-SA Industry Connections "Harmonization of Connectivity of the Digital Citizen" program, the goal of the event is to identify working group members and task leaders to develop and implement a Wearable Wireless Testbed.

Date:

Wednesday, 13 February 2019

Time:

07:30 – 18:00

Venue:

Swiss Federal Institute of Technology (ETH) Zurich, Department of Information Technology and Electrical Engineering (D-ITET), Building ETZ, Gloriastrasse 35, 8092 Zurich
[Get Directions](#)

Putting theory into practice for Wearables and Personal Area Networks

Paralleling the rapid, global advancement of wireless networks and technologies, a ubiquitous ecosystem of connected sensors, sensor systems, and internet-of-things (IoT) is being developed. As a result, we are all becoming Digital Citizens with a connected relationship to devices and networks.

Soon enough, any electronic devices we wear on body, carry in body or keep near us will interact with one another and our surroundings forming personal area networks. Seamless and secure interaction among these devices will require connectivity via local area networks of internet access points (fixed or mobile) to metropolitan area networks.

As part of this workshop you will:

- Hear experts address key challenges and opportunities related to the interoperability, data protection and security of personal area networks.
- Participate in the launch of a groundbreaking Wearable Wireless Test Bed that will drive the reality of a seamless personal area network.
- Directly engage, learn and network with industry and academic experts on key discussion topics.

About the Wireless Wearable Testbed

The Wearable Wireless Testbed will be established to provide a common platform for the development, testing, and certification of wearable and medical-grade wireless sensor systems. The platform will be available to industry and academic organizations. Initially, three platforms will be established in Europe, United States and Israel. The platform is intended to be harmonized with other 5G testbed initiatives.

IEEE-SA, ETH Zurich, the ITIS Foundation, and the Wireless Research Center of North Carolina will lead the effort. In addition to representation from the ITIS Foundation, the initial list of interested participants includes researchers from Europe, Scotland, France, Israel, and the United States as well as industry representatives from France, Germany, and the United States.

Research areas include wireless systems, sensor technologies, and bioelectromagnetics. Industry representatives include device manufacturers and test equipment developers.

Registration Fee: \$199 USD

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Who Should Attend?

- Micro-Electro-Mechanical Systems (MEMS) — product design or engineering
- Sensor Development
- Communications Network Engineering
- Personal Device Manufacturing – product design or engineering
- Personal Device Software – design or engineering
- Personal Area Network (PAN) Systems – innovation and data
- Health Wearable Start-Ups
- Blockchain/DLT Technologists: Blockchain/DLTs
- Clinical Trials Design and Operations
- Government/Regulatory
- Research: Academia or Industry

Related Article

Get Ready: All Our Devices Will Be Able to Talk to One Another Soon

Soon enough, all our devices will be talking to one another. Whether it's your refrigerator asking your personal digital assistant to place an order with an online grocer or your car getting traffic updates from stoplight sensors, everything and everyone are going to be connected... [Read More >](#)

Sponsors



Workshop Agenda

Workshop Agenda: 13 February 2019		
07:30 – 08:15	Check-in and Breakfast	
08:15 – 08:30	Opening Remarks and Welcome	
08:30 – 10:00	Session 1: Personal Area Electronics	
08:30 – 09:00	1.1 (Keynote) Trends for Wearable and Medical Devices	Subhas Mukhopadhyay: School of Engineering, Macquarie University
09:00 – 09:20	1.2 (Presentation) Bio-Sensor and Bio-Sensor System Trends	Prof. Dr. János Vörös: Associate Professor in the Institute for Biomedical Engineering of the University and ETH Zurich
09:20 – 09:40	1.3 (Presentation) Performance, Technology Trends and Current state of Interoperability	Dr. Ulf Blanke: Co-Founder of the startup TwoSense in New York and the ETH-Zurich spin-off antavi GmbH
09:40 – 10:00	1.4 Panel (Session 1)	
10:00 – 10:30	Coffee Break	
10:30 – 12:00	Session 2: Interoperability and HW/SW	

10:30 – 11:00	2.1 (Keynote) HW/SW Interoperability Challenges	Dr. Bruno Michel: Manager Smart System Integration at IBM Research - Zurich
11:20 – 11:40	2.2 (Presentation) Device Manufacturer Perspective	Dr. Ivo Locher: Senior Program Manager Hardware at Ava Women
11:40 – 12:00	2.3 (Presentation) Distributed ledger technologies for Enabling trust for the IoT Ecosystem	Konstantinos Votis: Information Technologies Institute (ITI) at the Centre for Research and Technology Hellas (CERTH) Researcher Grade C, Information Technologies Institute (ITI) at the Centre for Research and Technology Hellas (CERTH)
12:00 – 13:30	Lunch	
13:30 – 15:00	Session 3: Interoperability and Data	
13:30 – 14:00	3.1 (Keynote) Data and System Interoperability Challenges	Sergio Guillen Barrionuevo: Chief Innovation Officer at MYSOPHERA SL, Deputy Project Coordinator of H2020 LSP ACTIVAGE
14:00 – 14:20	3.2 (Presentation) System Provider Perspective	Regina Geierhofer: Internal Lead Auditor for Europe - Cerner Corporation
14:20 – 14:40	3.3 (Presentation) Customer or IEEE Perspective	FH-Prof. DI Dr. Stefan Sauer mann: University of Applied Sciences Technikum Wien
14:40 – 15:00	3.4 Panel (Sessions 2 and 3)	
15:00 – 15:30	Coffee Break	
15:30 – 17:00	Session 4: Development of a Personal Area Network (PAN) Testbed	
15:30 – 16:00	4.1 (Keynote) IEEE IC Program and Workstreams	Dr. Gerard Hayes: Wireless Research Center of North Carolina (U.S.)
16:00 – 16:20	4.2 (Presentation) Test Equipment Opportunities and Expectations	Lars Jacob Foged: Scientific Director, Microwave Vision Group (Italy)
16:20 – 16:40	4.3 (Presentation) Device Manufacturer Opportunities and Expectations	Dr. Andreas Caduff: Founder of Biovotion
16:40 – 17:00	4.4 (Presentation) Academic Opportunities and Expectations	Vikass Monebhurrn: Chair of the IEEE AP-S Standards Committee (France)
17:00 – 17:15	Closing Remarks and Actions	
17:15 – 18:00	Networking Social	

Workshop Speakers



Dr. Ulf Blanke

Co-Founder of the startup TwoSense in New York and the ETH-Zurich spin-off antavi GmbH

Dr. Ulf Blanke has a background in machine learning for understanding crowd behavior at city scale events. He obtained his PhD at TU Darmstadt and has held positions as a senior researcher at the Max Planck Institute, AGT international (R&D), and the ETH-Zurich. He has been actively in driving the research agenda in the mobile and IoT research communities in his various roles as editor and program committee member. In recent years, Ulf co-founded the startup TwoSense in New York and the ETH-Zurich spin-off antavi GmbH, which helps crowd managers, police forces, and emergency teams to communicate better and gain data-driven insights for better management of crowded spaces. Incubated in the pioneer fellowship program of the ETH-Zurich and selected with 30 other startups for the accelerator program Kickstart, antavis solutions are used on all major events in Zürich, and recently at the world-famous Oktoberfest in Munich.



Andreas Caduff, PhD

Founder of Biovotion

Andreas Caduff has held various positions in the pharmaceutical and medical device industry. In his previous position, he served as the CTO of Solianis, where he orchestrated the overall technology and product development, clinical study strategies, regulatory considerations, and interaction with the industrial/scientific community. He holds expertise in physiological monitoring techniques and the involved metabolic processes relevant to the industrialization and commercialization of such offerings. He is frequently invited as a speaker on digital health and related subjects and has secured numerous patents for inventions and has co-authored several dozen scientific publications in peer-reviewed journals. In 2011, he founded Biovotion, an organization that develops and offers a user-centric, analytics-driven ecosystem, powered by wearable medical technology. With his team, he has received several international awards and high-calibre endorsements, including an award from the XPrize Foundation. Today, he also advises international organizations on digital health – working at the interface of medical technology, physiological monitoring, data science, AI, and cloud ecosystems – as well serves as a board member in several entities.



Lars Jacob Foged

Scientific Director, Microwave Vision Group (Italy)

received his B.S. from Aarhus Teknikum, Denmark in 1988 and M.S. in Electrical Engineering from California Institute of Technology, USA in 1990.

He was a "graduate trainee" of the European Space Agency, ESTEC and in the following ten years, designed communication and navigation antennas in the satellite industry. He led the antenna design effort on the recently launched GALILEO space segment and performed the multi-physics design of shaped reflectors for the EUTELSAT W satellites, still serving European users. Following his passion to rationalize the multi-disciplinary antenna design process, including measurements and simulations, he joined MVG (formerly SATIMO) in 2001 and founded the Italian branch office.

In MVG, he initiated close collaborations with universities and research institutions on measurements with focus on antennas and techniques for analysis/post-processing. He has held different technical leadership positions in MVG and is currently the Scientific Director of the Microwave Vision Group, and Associate Director of Microwave Vision Italy.

He contributed to the European network of excellence "ACE" as an Activity Leader on "Antenna Measurements and Facility sharing" from 2004 to 2008. He was member of the EURAAP Delegate Assembly and responsible for the Working Group on Antenna Measurements from 2009 to 2012. He was Vice-Chair of the EUCAP conference in 2011, Industrial Chair of EUCAP conferences in 2012, 2014, 2017, and Technical Program Chair of EUCAP in 2016.

Since 2004, he is secretary of the IEEE Antenna Standards Committee and has contributed to the development of

different standards on antennas and measurements. He is board member of the European School of Antennas (ESOA), and technical responsible and teacher in Antenna Measurement courses in Europe and Asia since 2006. He is involved in the evolution of IEC standards on Human Exposure to Electromagnetic Fields since 2010. In 2016 and 2017, he led the Industry Initiatives Committee (IIC), a standing committee of IEEE APS.

He is an Edmond S. Gillespie Fellow of AMTA and received the Distinguished Achievement Award from AMTA in 2017. In 2015, he contributed to the foundation of the AMTA Italian node. He has authored or co-authored more than 200 journal and conference papers on antenna design and measurement topics and received the "Best Technical Paper Award" from AMTA in 2013. He has contributed to five books and standards, and holds four patents.



Regina Geierhofer

Internal Lead Auditor for Europe – Cerner Corporation

Mrs Geierhofer is at the moment the internal lead auditor for Europe in the Cerner Corporation. Cerner is one of companies worldwide, providing solutions for hospital information and public health management. She worked before for Siemens Healthcare, today's Healthineers, in the roles of regulatory affairs manager and product risk manager in the same area and in the area of picture archiving and communication solutions. Her involvement and active participation in the development and assessment of standards started earlier. Already in the 90ies of the last century in her time at the Institute for Medical Informatics, Statistics and Documentation at the university hospital in Graz. After receiving her master's degree in applied mathematics, she started her career first as developer for routine systems, at the technical implementation level, and worked later as manager for the development of information systems and lector at the university. Her scientific interest lied on the information retrieval especially from structured, but un-coded text. She is an active member of the Joint Working Group 7 of IEC and ISO focusing on the safe, effective and secure use of health software and health IT systems. She also works in the standardization area of data security related to health software and health IT systems.



Dr. Sergio Guillen Barrionuevo

**Chief Innovation Officer at MYSPHERA SL
Deputy Project Coordinator of H2020 LSP ACTIVAGE**

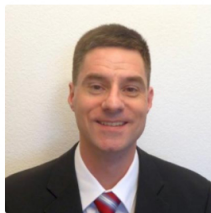
Dr. Sergio Guillen Barrionuevo is Graduate in Electronic Engineering (1976) and Doctor of Telecommunications (Polytechnic University in Valencia, UPV, 1988). He worked for more than 10 years as Research Fellow of the National Scientific Council (CONICET) of Argentina and as Assistant Professor in the University of Tucumán (Argentina) in the field of Biomedical Engineering and Medical Instrumentation. Since the beginning of his professional career he as combined both, academic and research activities and entrepreneurial undertakings. In 1998, he created the TSB Research Group, "Tecnologías para la Salud y el Bienestar" at the UPV. He has participated in EU funded projects within the V, VI and VII Framework Programme in the e-Health and e-Inclusion fields. Worth to mention are PIPS (IP VI FP project), My HEART (IP VI FP project) and SENSATION (IP VI FP Project). He has been technical coordinator of the PERSONA (IST- VI FP project) and Technical Manager of universAAL (IP VII project). He has been member of the management board in HEART CYCLE, OASIS, METABO and VAALID (all VII FP projects) as well as member of the advisory board in Heartways (Research for SMEs – VII FP Project) and MOSAIC (ICT – VII FP project). Currently, he is Chief Innovation Officer at MYSPHERA SL and deputy Project Coordinator of H2020 LSP ACTIVAGE.



Dr. Gerard Hayes

**President & CEO, Wireless Research Center (WRC)
Chair, of IEEE Connectivity Harmonization of the Digital Citizen Industry Connections Program**

Dr. Hayes has nearly three decades of experience in government and commercial electromagnetic research and design. Prior to working with the Town of Wake Forest to establish the WRCNC in 2010, Dr. Hayes was the Director of Engineering at GreenWave Scientific where he led the development of antenna and RF circuit designs for a diverse range of DoD applications. At Sony Ericsson Mobile Communications (USA) Inc., Dr. Hayes provided global technical leadership in the Technology and Research organization with contributions to handset antenna design, technology, and radiated performance optimization. At Lockheed Martin (formerly Lockheed Missiles and Space Co.), Dr. Hayes supported research and development efforts for space-based, phased array applications. The scope of his experience encompasses electromagnetic theory, bioelectromagnetics, antenna design, RF circuit analysis, and material engineering. He has participated in the development of international standards for OTA, HAC, and SAR evaluation (including IEEE, IEC, CTIA, and C63 standards). With over 70 US patents, Dr. Hayes has maintained a prominent technical role in the wireless industry.



Dr. Ivo Locher

Senior Program Manager Hardware at Ava Women

Dr. Ivo Locher graduated with a degree in Electrical Engineering from the Wearable Computing Lab of the ETH Zurich in 2006. Currently, he works at Ava Ag as the Senior Hardware Program Manager. In his role, he is responsible for the roadmap, hardware and software development, testing, and production transfer of Ava's medical device sensor bracelet. Prior to that, Ivo Locher has successfully lead several medical device development projects, starting from requirements engineering up to market clearance while working at Altran AG. His expertise covers project management, strategic management, e-health, medical devices, risk management, human factors engineering, wearable devices, signal processing, electrical circuits, and instrumentation.



Dr. Bruno Michel

Manager Smart System Integration at IBM Research – Zurich

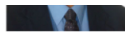
Bruno Michel earned a Ph.D. degree in biochemistry and computer engineering from the University of Zurich and joined IBM Research to work on scanning probe microscopy and soft lithography. Later he improved thermal interfaces and miniaturized convective cooling and demonstrated improved efficiency and energy re-use in datacenters, and photovoltaic thermal solar concentrators. He has developed microfluidics, 3D packaging with interlayer cooling, and an electrochemical chip power supply to trigger a density roadmap to replace Moore's law. Most recently, he is focusing on the integration of IoT and wearable devices with efforts ranging from sensing principles and miniaturized compute platforms to multi-sensor data fusion and cognitive computing. He is an IEEE Fellow as well as a member of the US National Academy of Engineering and the IBM Academy of Technology.



Vikass Monebhurrn

Chair of the IEEE Antennas & Propagation Society Standards Committee

Vikass Monebhurrn (SM'07) received the PhD degree in electronics in 1994 and the Habilitation à Diriger des Recherches (HDR) in physics in 2010 from Université Pierre et Marie Curie (Paris VI) and Université Paris-Sud (Paris XI), respectively. He was engaged in research on electromagnetic non-destructive testing for nuclear power and aeronautical applications until 1998, following which he joined the Department of Electromagnetics at Supélec



(CentraleSupélec since 2015). His research interests encompass time domain numerical modeling as well as radio frequency measurements. He actively participated in French National Research Programs on electromagnetic dosimetry since 1998, namely COMOBIO (1999-2002 on 2G systems), ADONIS (2003-2005 on 3G systems) and MULTIPASS (2007-2010 on 4G systems). His research contributed to international standardization committees of CENELEC, IEC, and IEEE.

He is author and co-author of more than 100 peer-reviewed international conference and journal papers. He also holds three international patents on antennas for mobile communications. He is an active contributor to international standardization committees of IEC 62209, IEC 62232, IEC/IEEE 62704 and IEEE1528. He is currently a member of the European COST Action BM 1309.

Dr. Monebhurrin serves as member of the Editorial Board of the IEEE COMPUMAG and IEEE CEFC conferences, and IEEE Transactions on Magnetics special issues since 1998. He is the founder of the IEEE Radio and Antenna Days of the Indian Ocean (RADIO) international conference and he served as General Chair for all six editions since 2012. In 2013, he initiated the Radio Society (Mauritius) for which he serves as President. He is currently the Chair of the international committees of IEC/IEEE 62704-3 and IEEE Antennas and Propagation Standards. He serves as Associate-Editor for the IEEE Antennas and Propagation Transactions and Magazine, and Editor of the IOP Conference Series: Materials Science and Engineering. He was the recipient of the Union Radio-Scientifique Internationale (URSI) Young Scientist Award in 1996. Following the publication of the dual/logo IEC/IEEE 62704-3 international standard on computational dosimetry in 2017, he was awarded the IEEE Standards Association International Working Group Chair Award. He was recipient of the IEC 1906 Award in 2018.

Subhas Mukhopadhyay



School of Engineering, Macquarie University

Prof. Subhas Mukhopadhyay is a professor of Mechanical/Electronics Engineering at Macquarie University in Sydney, Australia, where he is the Discipline Leader of the Mechatronics Engineering Degree Programme. His fields of interest include smart sensors and sensing technology, instrumentation techniques, wireless sensors and networks (WSN), the Internet-of-Things (IoT), wearable sensors, numerical field calculation, and electromagnetics, etc. He has supervised over 40 postgraduate students and over 100 honors students, and has examined over 50 postgraduate theses. Subhas has published over 400 papers in various international journals and conference proceedings, written 7 books and 42 book chapters, and edited 17 conference proceedings. He has also edited 30 books with Springer-Verlag and 24 journal special issues. He has been involved in the organization of over 20 international conferences, and has delivered 324 presentations including keynote, invited, tutorial, and special lectures. He is a fellow of the IEEE (USA), IET (UK), and IETE (India), a topical editor of IEEE Sensors journal, and an associate editor of IEEE Transactions on Instrumentation and Measurements. He is a distinguished lecturer of the IEEE Sensors Council from 2017 to 2019 and is the founding chair of the IEEE IMS New South Wales Chapter.



FH-Prof. DI Dr. Stefan Sauer mann

University of Applied Sciences Technikum Wien

FH-Prof. DI Dr. Stefan Sauer mann started as a researcher at the Medical University of Vienna, Austria (Department for Biomedical Engineering and Physics). He published on acquisition, analysis, reporting and management of biosignals in the field of electrostimulation.

In 1999 he started as a lecturer at University of Applied Sciences Technikum Wien (UAS TW) and in 2011 as Program Director of the Biomedical Engineering Sciences Master degree study program. He is Key Researcher in the Research Focus „Secure Services, eHealth & Mobility“ at UAS TW. He is active in national and international projects, connected to the implementation of the electronic healthcare record in Austria (ELGA), and generally in the fields of interoperability and standards for telemonitoring and eHealth.

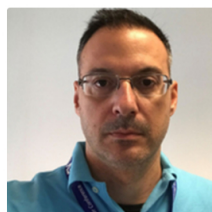
From 2003 to 2015 he was chair of the “Austrian Standards Institute” committee „Medical Informatics“, a mirror to ISO TC215 and CEN TC 251. He is also contributing to standardization within IEEE, HL7 and as founding member of IHE Austria. As moderator of the workgroup “Interoperability – Standards” in the Austrian e-Health Initiative (eHI) of the Austrian Ministry of Health he contributed to the recommendations on IT interoperability for the Austrian healthcare system from 2005 on.

Prof. Dr. János Vörös



Associate Professor in the Institute for Biomedical Engineering of the University and ETH Zurich

János Vörös is an Associate Professor in the Institute for Biomedical Engineering of the University and ETH Zurich (Department for Information Technology and Electrical Engineering) heading the Laboratory for Biosensors and Bioelectronics since 2006. He was previously a member of the BioInterface group in the Laboratory for Surface Science and Technology at the Department of Materials of ETH Zurich as visiting scientist and was the leader of the Dynamic BioInterfaces. Prof. Vörös is also an adjunct professor at the Department of Engineering Science and Mechanics of Pennsylvania State University. His research teaching interests are in the areas of Bioelectronics, Nano-Biotechnology, Biosensors, Biophysics, and Biomaterials with special focus on the understanding, monitoring and controlling of molecular and cellular processes at biological interfaces. His research group focuses on the development of novel microarray-based biosensor techniques for diagnostics and drug discovery in collaboration with academic and industrial partners, as well as on using nanobiotechnology for interfacing neural networks and controlling synapse formation.



Konstantinos Votis

*Information Technologies Institute (ITI) at the Centre for Research and Technology Hellas (CERTH)
Researcher Grade C, Information Technologies Institute (ITI) at the Centre for Research and Technology Hellas (CERTH)*

Dr. Konstantinos Votis, is a researcher Grade C of the Information Technologies Institute (ITI) at the Centre for Research and Technology Hellas (CERTH), and Director of the Visual Analytics Laboratory, Head of the Blockchain Technologies Lab and Member of the European Union Blockchain Observatory and Forum. His research interests include Human Computer Interaction, Information Visualisation and Management of Big Data, Distributed Ledger Technologies, Knowledge engineering and decision support systems, as well as pervasive computing, with major application areas such as m-Health, eHealth, and personalized healthcare.

Workshop Venue

The workshop will be held at the Department of Information Technology and Electrical Engineering (D-ITET) of ETH Zurich, a leading international institution of higher education in technology and the natural sciences. Founded in 1855, the ETH Zurich currently has more than 18,500 students from more than 110 countries, including around 4,000 PhD students, and holds position 9 in the QS and World University Rankings. The D-ITET (building ETZ) is easily reachable from Zurich airport and the Zurich main train station. More information is available at the department and ETH Zurich websites. Find Your Way to the D-ITET



Transportation

To Zurich

Zurich International Airport is a 15 minute train ride from Zurich main station (Zurich Hauptbahnhof, Zurich HB). Trains leave directly from the airport every few minutes. Online timetables and ticketing are available at the Swiss Railway (SBB) website.

The number 10 tramline of the Zurich public transportation network (ZVV) runs from the airport to Zurich main station and stops at the ETH Zentrum (tramstop ETH/Universitätsspital).

In and Around Zurich

The ETH Zurich is easy to reach by public transportation from the airport and main station as well as other locations in the city. Detailed directions are available at the D-ITET website. Online timetables for public transportation are available on the Zurich public transportation (ZVV) website. The ZVV tramline 10 provides direct access from the central railway station to the ETH Zentrum campus (Tram stop ETH-Universitätsspital) and from there is a short walk to D-ITET. Alternatively, you can change there to the ZVV tramline 6 (direction Zoo) and leave at the stop Voltastrasse. The tramline 6 also stops at Zurich main station.

Zurich taxis are available at the airport, in front of the main station, and at numerous other locations in town. Uber is also active in Zurich.

The taxi fare between ETH Zentrum and Zurich airport is about CHF 60. Two possible reliable taxi services are:

- Taxi 444: (0041) 044 444 44 44
- Taxi 7x7: (0041) 044 777 77 77

Important: Please note that tickets cannot be purchased on board the trains and trams. Tickets can be purchased online, at ticket counters or booths (look for the "Hier Tickets" sign), or from ticket machines at stations and tram/bus stops. The ticket machines accept Swiss bank notes and coins and all major credit and debit cards. Travel on public transportation without a valid ticket is subject to a fine of CHF 100. Tickets for the Zurich's public transportation network are valid for travel on all available forms of transport – including trams, buses, trains, boats, and funiculars – within the city limits.

Area Accommodations

- Airport Hotels
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- Lakeside Hotels

Registration

Registration Fee: \$199 USD

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