

# smartsystemsintegration

16<sup>th</sup>-18<sup>th</sup> April 2024 in Hamburg, Germany



## CineMaxx Dammtor, Hamburg

April 16<sup>th</sup> - 18<sup>th</sup>, 2024

More information at

[smartsystemsintegration.com](http://smartsystemsintegration.com) &

[apcm-europe.eu](http://apcm-europe.eu)

We thank our Sponsors!



Jointly organized by



## Conference program – Tuesday, 16<sup>th</sup> April 2024

Pre-Programme		
09:00 – 12:00	<b>EPoSS Pre-Event</b> <i>Meeting of the EPoSS Working groups</i>	Registration open
12:30 – 13:30	Registration open	
13:30 – 15:00	Opening Session	
13:30	<b>Opening &amp; Welcome</b> <i>Stefan Finkbeiner, Harald Kuhn, and Holger Kapels</i>	
13:50	<b>Keynote by</b> <i>Jari Kinareth, Executive Director, Chips Joint Undertaking</i>	
14:20	<b>Keynote by</b> <i>Lars Reger, executive vice president and chief technology officer</i>	
15:00 – 16:00	<b>Coffee break</b> – time for discussions with keynote speakers –	
16:00 – 16:45 & 17:00 – 17:45	<b>Poster &amp; Exhibitor Pitches</b> Exhibitors & posters	
17:45 – open end	<b>Poster session incl. dinner</b>	

## Exhibitor pitches

Presenter	Company	Title
Tba.		

## Posters and Poster pitches

\*posters eligible to the pitch session are highlighted

Track	Presenter	Company	Title
1	Mario Gschwandl	Ottronic E-Systems	Towards Digitizing the Harsh Environment by a Novel Robust and Reliable IIoT Sensor-Platform
1	Shaista Andleeb	Fraunhofer ENAS	DESIGN AND MODELING OF MESOSCALE POLYMER BASED ACOUSTIC LENSES FOR MINIATURIZED ULTRASONIC TRANSDUCERS
1	Dominic Richter	Fraunhofer ENAS / TU Chemnitz	Plasma activated bonding of the heterogeneous material combinations LiTaO <sub>3</sub> /Si and LiTaO <sub>3</sub> /SiO <sub>2</sub>
1	didier floriot	united monolithic semiconductors	SMART3 – A FO-WLP platform for Heterogeneous integration applied to mixed RF Digital Front-End
1*	Thomas Werner	Chipmetrics OY	Improving measurement accuracy in conformal thin film metrology for 3D semiconductor devices
1*	Karman Frances Raj George Maria Selvam	Fraunhofer ENAS	PRELIMINARY INVESTIGATION OF USING PERMINEX RESIST FOR LOW TEMPERATURE ADHESIVE BONDING
1*	Georg Brunnhofer	AVL List GmbH	Proof-of-Concept of a combined Smart Illuminance and Precipitation Sensor
1*	Paddy French	TU Delft	A lamb wave based liquid sensor for biomedical applications

# smartsystemsintegration

16<sup>th</sup>-18<sup>th</sup> April 2024 in Hamburg, Germany

1*	Pierre Gasnier	Univ. Grenoble Alpes, CEA-LETI	Magnetolectric Energy Harvester and its Power Management Circuit to Regulate Indoor Air Quality
1*	Thomas Lisec	Fraunhofer ISIT	Enabling Innovative Smart System Components with Wafer-Level Integrated PowderMEMS Micromagnets*
2	Carsten Brockmann	Fraunhofer-IZM	HARDWARE-SOFTWARE-CODESIGN METHODOLOGY FOR ENERGY EFFICIENT IOT DEVICES
2	Kevin Diex	Fraunhofer ENAS / TU Chemnitz	Investigations on low-temperature thermocompression bonding of passivated aluminum for enhanced wafer-level packaging and heterogeneous integration
2	Piotr Kowalczewski	XTPL SA	High-Resolution Additive Manufacturing for Reliable and Sustainable Smart Systems
2*	Frank Henkel	IMST GmbH	Efficient System-aware Development Strategy for Security-relevant Analog Communication IPs in Smart Systems
2*	Eoin Ahern	Tyndall National Institute	Power Optimization of a Photovoltaic Energy driven Inter-modal Dry Container tracking system via a Simulation Tool
2*	Stefan Karanovic	AVL List GmbH	FLOW RATE MEASUREMENT SENSOR SYSTEM ENABLED BY ADDITIVE MANUFACTURING OF MAGNETIC MATERIALS
3	Luca Bongiovanni	Ideas and motion s.r.l.	Smart city pilots
3	Brendan O'Flynn	Tyndall National Institute, University College Cork	SAFETYBOT - SAFETY SYSTEMS FOR COLLABORATIVE ROBOTICS IN INDUSTRY
3	Jorge Velasco	CIDAUT	VEHICLE DETECTION, CLASSIFICATION AND TRACKING IN URBAN ENVIRONMENTS USING COMPUTER VISION
3	Giancarlo Degli Esposti	Orchestra srl	AI on the EDGE for real time monitoring of performance drifting in tool machines
3	Meghana Vishwanatha	Fraunhofer ENAS	Object detection using Capacitive Micromachined Ultrasonic Transducers(CMUTs)
3*	Alper Şişman, Alperen Yücel	Delft University of Technology (TU Delft) / Netherlands	SAW BASED BIOSENSOR FOR CELL GROWTH ANALYSIS
3*	David Araújo		A flexible and low-power IoT controller for agri-food field sensing applications
3*	Marieke Stapf	TU Bergakademie Freiberg, Institute for Electronic and Sensor Materials	Integration of Lignin Hydrogel on Suspended Gate FET Structures for a New Type of Chemical Sensor
3*	Christopher Bickmann	Technische Universität Chemnitz	Evaluation of Thin Pd Layers for a Sensor System to Monitoring Anode-Side Hydrogen Concentration in a Fuel Cell
3*	Matteo Menolotto	Tyndall National Institute, University College Cork	Assessing Latency Cascades: Quantify Time-to-Respond Dynamics in Human-Robot Collaboration for Speed and Separation Monitoring
3*	René Gastmeier	Fraunhofer IIS-EAS -	Development and Testing of a Modular IoT Device for Industrial Condition Monitoring Applications
5	Edgar Luhulima, Filip Sabo	TU/e University of Technology Eindhoven	MULTIMODAL SENSOR AND IMAGE PROCESSING WITH DIGITAL OSCILLATORY NEURAL NETWORKS
5*	Mike Hayes	edacentrum GmbH	LONG LIFE POWER PLATFORMS FOR INTERNET OF THINGS
5*	Nahas Hassan Annacot	Infineon Technologies	SUPPORTING ENERGY MANAGEMENT AT IFX USING ARTIFICIAL INTELLIGENCE
5*	Mathieu Guerin	IM2NP	EMBEDDED NGD ALGORITHM FOR LOW POWER REAL-TIME SIGNAL ANTICIPATION
5*	Stefan Bosse	Universität Bremen	Virtualization and Distributed Machine Learning For Material-integrated Embedded Sensor Networks: Mastering the Challenges with a Holistic Principle

Jointly organized by



# smartsystemsintegration

16<sup>th</sup>-18<sup>th</sup> April 2024 in Hamburg, Germany

5*	Paul Fourcade	CEA LETI	Autonomous, Connected and AI-embedded Multi-Sensor System for Wildlife Monitoring
5*	Yousef Alnaser	Fraunhofer ENAS	EFFICIENT IMPLEMENTATION OF THRESHOLD-BASED VNG DEMOSAICING WITH REDUCED CALCULATIONS
5*	Ahmed Shaaban	Infineon Technologies AG Munich	RESONATE-AND-FIRE SPIKING NEURONS FOR TARGET DETECTION AND HAND GESTURE RECOGNITION: A HYBRID APPROACH
5*	Marcus Stierner , Sven Lange	Fraunhofer ENAS	Enhancing Information Extraction in EMC Measurements through Artificial Intelligence
5*	Inessa Seifert		Towards a roadmap for Edge AI
5*	LU MINSHAN	Nanyang Technological University	LIDAR-ASSISTED SELF-SUPERVISING RADAR IMAGE ENHANCEMENT MODEL
5*	Jinsheng Ji	Nanyang Technological University	Towards Robust Partial Discharge Detection and Classification Under Low Signal-to-noise Ratio Environment

## Conference program – Wednesday, 17<sup>th</sup> April 2024

09:00 – 10:00	<b>Opening session</b>	
09:00	<b>Local Keynote by</b> <i>Holger Kapels, Institute Director Fraunhofer ISIT</i>	
09:30	<b>Keynote by</b> <i>Klaus Beetz, CEO EIT Manufacturing</i>	
10:00 – 10:30	<b>Coffee break</b>	
10:30 – 12:15	<b>Session</b> <i>Track 4: International collaboration for smart systems integration: today and tomorrow!</i>	<b>Session</b> <i>Track 1: MEMS and Micro fluidics</i>
10:30	<b>Paul Carey, MSIG, USA (invited, tbc.)</b>	<b>Ole Behrmann, Fraunhofer ISIT</b> <i>Organic-free hydrophobic porous protection caps for wafer-level packaging of MEMS environmental sensors</i>
10:50	<b>Terence Gan, A*Star IME, Singapore (invited)</b>	<b>James Rohan, Tyndall National Institute &amp; University College Cork</b> <i>Micro Energy Storage for the Internet of Things</i>
11:10	Tba.	<b>Paddy French, TU Delft</b> <i>A Love-Mode Surface Acoustic Wave Based Sensor for Biosensing Applications in Liquid Samples</i>
11:30	Tba.	<b>Emre Can Durmaz IHP GmbH, Leibniz-Institut für innovative Mikroelektronik</b> <i>Advancements in the Cu Pillar based PCB Microfluidic System Integration with SiGe BiCMOS Technology</i>
11:50	Tba.	<b>Tom Enderlein (Best Paper 2023), Center for Microtechnologies Chemnitz</b> <i>Hollow microneedle fabrication and characterization for interstitial fluid extraction in minimally invasive sensors</i>
12:10 – 13:10	<b>Lunch break</b>	
13:10 – 14:50	<b>Session</b> <i>Track 4: Augmented and Virtual Reality from a Smart Systems Perspective</i>	<b>Session</b> <i>Track 3: Medical, health and automotive application of smart systems</i>
13:10	Tba.	<b>Marco Ottella, Xtremion Technology</b> <i>Towards a made-in-Europe ecosystem for multisport training, healthy lifestyle and remote patient monitoring based on cloud-edge continuum of AI-featured body sensors</i>
13:30	Tba.	<b>Sajina Tinku, Fraunhofer EMFT</b> <i>High density traces on several meters long film stripes by roll-to-roll digital lithography for medical applications</i>
13:50	Tba.	<b>Franz Selbmann, Fraunhofer ENAS</b> <i>Investigation of the Biocompatibility of Parylene-based Encapsulations for Medical Implants</i>
14:10	Tba.	<b>Shanshan Gu-Stoppel, Fraunhofer-ISIT</b> <i>MEMS based smart LIDAR system for human-machine cooperation</i>
14:30	Tba.	<b>Emilie Boulay, Maurizio Tranchero, Ideas and motion</b> <i>Design of a Smart Actuation for a Fully Electrified Suspension System</i>
14:50 – 15:20	<b>Coffee break</b>	

## Conference program – Wednesday, 17<sup>th</sup> April 2024 (continued)

15:20 – 17:00	<b>Session</b> <i>Track 2: Reliability and test of smart systems</i>	<b>Session</b> <i>Track 3: Smart for Green – energy management and energy harvesting in application spaces</i>
15:20	<b>Torsten Grawunder, swissbit Germany AG</b> <i>Towards chiplets in harsh environments: challenges from an advanced packaging point of view</i>	<b>Tba.</b> Green ECS context (FMD, invited)
15:40	<b>Jakko Nieuwenkamp Reden B.V.</b> <i>Remaining useful lifetime estimation of electrical component</i>	<b>Kari Mäki, VTT Technical Research Centre of Finland</b> <i>Analysis of economic benefits from load shifting services in energy communities</i>
16:00	<b>Dominik Schröder, Fraunhofer ENAS</b> <i>High precision magnetic field measurement of wafer-level integrated micromagnets using an automated near-field scanner</i>	<b>Alex Rodriguez-Iglesias, Consejo Superior de Investigaciones Científicas (CSIC)</b> <i>Packaged all-silicon based micro-thermoelectric generator</i>
16:20	<b>Julien Magnien, Materials Center Leoben Forschung GmbH</b> <i>In-line Thermal Transient Analysis of LEDs for Power Cycling</i>	<b>Tristan Caroff, CEA LETI</b> <i>Batteryless piezoelectric sensor system for enhanced ski experience</i>
16:40	<b>Alexander May, Michael P. M. Jank, Fraunhofer IISB</b> <i>A 4H-SiC CMOS technology enabling smart sensor integration and circuit operation above 500 °C</i>	<b>Markus Reiter, AVL List GmbH</b> <i>Advancing fuel cell and battery development with fiber optical sensor solutions</i>
17:00 – 19:30	<b>Excursion (tbc.)</b>	
19:30	<b>Conference dinner @ Louisiana star</b>	

## Conference program – Thursday, 18<sup>th</sup> April 2024

09:00 – 10:00	Opening session	
09:00	Keynote by <i>Tba.</i>	
09:30	Thomas Gessner Award <i>Announced during the conference</i>	
10:00 – 10:30	Coffee break	
10:30 – 12:15	Session <i>Track 5: AI of smart systems</i>	
10:30	Frank Schönefeld, Telekom MMS (Keynote) <i>Technologies in Generative AI and the Future of Coding</i>	
11:00	<i>tba. (invited)</i>	
11:20	Prof. Harald Mathis, Fraunhofer application center on AI applications (invited) <i>tba</i>	
11:40	Round table discussion with <i>Frank Schönefeld, Harald Mathis, tba. and Marcus Stiemer</i>	
12:15 – 13:15	Lunch break	
13:15 – 14:45	Session <i>Track 2: System and hetero integration</i>	Session <i>Track 5: Methodological challenges and novel components for AI in smart systems</i>
13:15	Marko E. Leinonen, University of Oulu, Finland <i>Antenna lens integration challenges with 6G sub-THz radios</i>	Marcus Stiemer Helmut-Schmidt-University / University of the Federal Armed Forces Hamburg <i>Mitigation of AI-Inherent Risks in AI-Supported Industrial Development and Scientific Research</i>
13:35	Alexander Kaufmann, Infineon Technologies Dresden GmbH & co. KG <i>Monolithically integrated wireless multisensor solution</i>	Sarah Seifi, Infineon Technologies AG <i>Bridging the Gap: From Post-Hoc Explanations to Intrinsic Interpretability in Sensor Applications Using Rule-Based Systems</i>
13:55	Sebastian Wicht X-FAB MEMS Foundry GmbH <i>Micro-Transfer-Printing: A Technology for Wafer-Level Packaging in a Foundry Environment</i>	Danilo Pau, Technical Director, IEEE and ST Fellow, STMicroelectronics <i>Ultra Tiny Neural Networks for Increased Accuracy of Pressure Sensors under Multiple Thermal Stresses</i>
14:15	Zeba Khan, IMTEK <i>Metal microdroplets magic: additive manufacturing for smart devices with digital traces</i>	Diing Shenp Ang, Nanyang Technological University <i>Silicon FET Reservoir for Dynamic Edge Vision</i>
14:45-15:00	Closing session	
	End of conference	