ELECTRONIC INDUSTRY WEEK
CENTRAL AND SOUTH- EASTERN EUROPE

2nd SUMMIT OF IEEE EPS & NTC STUDENT BRANCH CHAPTERS
17 October 2023

IEEE 29th INTERNATIONAL SYMPOSIUM FOR DESIGN AND TECHNOLOGY IN ELECTRONICS PACKAGING
CONFERENCE AND EXHIBITION
18 – 21 October 2023

32nd INTERCONNECTION TECHNIQUES IN ELECTRONICS (TIE)
PROFESSIONAL STUDENT CONTEST
20 – 21 October 2023

University of Craiova

Organized by:

National University of Science and Technology POLITEHNICA Bucharest, Romania
http://www.upb.ro

Faculty of Electronics, Telecommunications and Information Technology
https://etti.upb.ro/
Faculty of Mechanical Engineering and Mechatronics
http://www.mecanica.pub.ro

University of Craiova, Romania
https://www.ucv.ro/
Faculty of Automation, Computers and Electronics
https://ace.ucv.ro/

Association for Promoting Electronics Technology APTE, IMAPS Chapter Romania
http://www.apte.org.ro

Continental Automotive Systems Sibiu, Romania
https://www.continental.com/

MIELE Tehnica Romania
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Center for Technological Electronics and Interconnection Techniques
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and supported by:

EPETRUN (Electronics Packaging Education Training and Research University Network)

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CENTRAL AND SOUTH - EASTERN EUROPE

2nd SUMMIT OF IEEE EPS & NTC STUDENT BRANCH CHAPTERS
October 17, 2023

IEEE 29th INTERNATIONAL SYMPOSIUM FOR DESIGN AND TECHNOLOGY IN ELECTRONICS PACKAGING
- CONFERENCE AND EXHIBITION -
October, 18 – 21, 2023

32nd INTERCONNECTION TECHNIQUES IN ELECTRONICS (TIE) PROFESSIONAL STUDENT CONTEST
October, 20 – 21, 2023

University of Craiova, October, 17 – 21, 2023

THE ELECTRONIC WEEK OF ELECTRONICS PACKAGING COMMUNITY 2023

Program Brochure

Welcome to the Fall Convention of the Electronic Packaging Community

In the era defined by technological advancements and rapid digital transformation, the role of electronics packaging has never been more crucial. Electronics packaging not only safeguards the integrity of electronic components but also plays a pivotal role in the miniaturization, reliability, and performance of electronic devices that have become integral to our daily lives.

The Electronic Week of Electronics Packaging Community, SIITME 2023, provides a unique platform for professionals, representatives from industry and academia, and students to come together and explore the latest developments, share insights, and forge new connections. This event is an example of our geographical region's commitment to fostering innovation and growth in the electronics packaging sector.

Throughout the week, attendees will have the opportunity to engage in a diverse array of activities, including the second IEEE EPS-NTC, Student Branch Chapters Summit, TIE and TIE-M contest, keynote presentations, technical sessions, workshops, and networking events. All these activities being merged with an exhibition of significant electronic industry companies. These activities promise to delve into cutting-edge technologies, emerging trends, and sustainable practices in electronics packaging. It is our hope that the discussions and collaborations fostered during this week will lead to groundbreaking advancements and solutions that will shape the future of the field.

At a time where the semiconductor industry in Europe becomes more and more visible, when the European Commission highlights the importance of the digitalization and accordingly has lunched the European Chips Act, the SIITME 2023 organizers, have consider to be necessary to offer, to the participants, a clear view for the electronic industry future. Topics like digital twin, electrical, mechanical, and thermal modeling, and simulations, chiplets technology, together with proper education and training environment, will be presented to the participants.

As a important remark, the Electronic Week of Electronics Packaging Community, SIITME 2023 is more than just an event; it is a testament to the spirit of innovation,

collaboration, and progress. We are most confident that the knowledge shared, and connections forged during this week will have an important impact on the electronics packaging community in our geographical area and beyond.

We extend our deepest gratitude to the organizers, sponsors, speakers, and participants for making this event possible. Together, we are shaping the future of electronics packaging, and we are excited to witness the remarkable achievements that will undoubtedly emerge from this gathering.

Our host, the University of Craiova, did a tremendous effort to assure excellent condition for our events and please allow us to thank, also in your name, to the university management, for the whole pleasant, created atmospheres for all participants, the student Summit, the educational workshop, PDC, oral, industry, and poster sessions and for the well-established student contest TIE. Special thanks we must address to Prof. Catalin Constantinescu, Vice Dean the Faculty of Automation, Computers and Electronics, for his entire activity in organizing our events.

We wish you all a fruitful, inspiring, and memorable Electronic Week of Electronics Packaging Community 2023 and a pleasant stay in Craiova, Romania.

Sincerely,

Prof. D.H.C. mult. Paul SVASTA, Ph.D.
UNSTPB- National University of Science and Technology
POLITEHNICA of Bucharest, Romania
APTE-Association for Promoting Electronics Technology
EIWCSE General Chair

Prof. Ovidiu Pop, Ph.D.
Technical university of Cluj-Napoca
EIWCSE General Co-Chair

Welcome to the 29th edition of the International Symposium for Design and Technology in Electronic Packaging

The 29th edition of SIITME will be hosted for the first time at the University of Craiova, Romania. I hope that the rich history of Oltenia's capital city in the field of electrotechnics and electronics (both in academia and industry) to be an excellent opportunity to strengthen and to renew the scientific and research contacts between traditional participants or between them and companies.

I am sure that SIITME will continue the 28 years of tradition, being together with another important IEEE EPS events, TIE and TIM, and thus constituting a major reunion of the specialists and juniors involved in the activity of Electronic Packaging but also in related areas.

Since 1995, the SIITME topics were continuously evolved, and now, at the 29th edition, we have twelve topics that approach the most actual and relevant trends of the electronics industry. Thus, the researchers will present and discuss their findings in hot areas such as Emerging Topics in Advanced Packaging, Sensors, Actuators and Microsystems, Nanomaterials, Nanoelectronics and Nanotechnology, Embedded Systems, Robotics and Artificial Intelligence, Smart Grid and Renewable Energy, to mention only some of them. Also, an actual topic in academia and industry is dedicated to Challenges in Digitalisation and Global Education for Electronics.

The evolution and the impact of the SIITME Conference has been strongly connected with the progress of the industry and in particular of the electronics and all its related fields. SIITME Conference benefited by the contacts with ISSE Conference and their distinguished promoters (Prof. Zsolt Illefalvi-Vitéz, Prof. Paul Mach, Prof. Johann Nicolics, Prof. Klaus Wolter, Dr. Heinz Wohlrabe). Of course, the prestige of our conference is furthered by the permanent support of the IEEE EPS society (former CPMT Society). A milestone was the establishment in 1999 of the IEEE CPMT Hu&Ro Joint Chapter. Since nowadays the visibility and the impact of the research depend on the broad access of the researchers to publications, the indexing of SIITME papers in IEEE Xplore since 2008 is of paramount importance.

I would like to express here our gratitude to all colleagues from the partner Universities in Romania who have hosted SIITME over the years: Alba lulia, Baia Mare, Brașov, București,

Cluj-Napoca, Galați, Iași, Pitești, Timișoara. A special edition was organized abroad in Gyula, Hungary, in 2009.

I would like to take this opportunity to thanks our Keynote Speakers, Professional Development Courses and Industrial Invited Speakers, their contribution to SIITME success is essential. Also, many thanks to the organizers and to our sponsors.

Finally, I wish you productive discussions, successful presentations and I hope that your stay in Craiova will be enjoyable and fruitful.

On behalf of the Organising Committee of SIITME 2023 I look forward to meet you in Craiova for an exciting and pleasant conference.

Welcome to SIITME 2023!

Assoc. Prof. Eng. Dan Selişteanu, PhD
University of Craiova, Romania
Vice-rector (Research and liaison with business environment)

Tuesday, October 17

2nd SUMMIT OF IEEE EPS & NTC STUDENT BRANCH CHAPTERS
(**Casa Universitarilor** - Nicolae Romanescu Room, first floor)

08:30 – 09:00	**Registration**
09:00 – 09:30	**Opening ceremony**
09:30 – 10:30	**Oral session**
10:30 – 10:45	*Coffee break*
10:45 – 12:45	**Chiplets technology - Panel discussion**
12:45 – 13:30	*Lunch*
13:30 – 14:30	**SBCs activity report, common future cooperation**
14:30 – 15:00	**Transfer to Hella**
15:00 – 15:30	**HELLA presentation**
15:30 – 17:30	**HELLA visit**
17:30 – 18:00	**Closing ceremony**
18:00 – 18:30	**Transfer back**
18:30	*Networking Dinner*

Wednesday, October 18

08:30	**Registration for PDC** (**Casa Universitarilor**)	
09:00 – 10:45	**PDC A** (Casa Universitarilor - Nicolae Iorga Room, first floor)	**PDC B** (Casa Universitarilor – Mihai Eminescu Room, first floor)
10:45 – 11.15	*Coffee break*	*Coffee break*
11:15 – 12:30	**PDC A** (Casa Universitarilor - Nicolae Iorga Room, first floor)	**PDC B** (Casa Universitarilor – Mihai Eminescu Room, first floor)
12:45	**Registration for Education Workshop** (Casa Universitarilor)	
13:00 – 15:30	**Strategic Partnership for Education Workshop** (Casa Universitarilor - Nicolae Romanescu Room, first floor)	
15:00 – 18:00	**Registration SIITME 2023** (University of Craiova main building - Ground floor)	
16:00 – 16:30	**SIITME 2023 Opening ceremony** (**University of Craiova main building** - Aula MIHAI I)	
16:30 – 18:05	**Plenary Oral Session 1**	
18:15 – 18:30	*Coffee break*	
18:30 – 19:30	**Industrial Session 1**	
20:00 – 21.30	*Welcome to SIITME dinner* (**Casa Universitarilor**)	
21:30 –	**IEEE – Hu&Ro EPS&NTC Joint Chapter Meeting – members & guests**	

Thursday, October 19 (SIITME)
(University of Craiova main building - Aula MIHAI I)

08:30 – 12:30	Registration
09:00 – 11:00	Plenary Oral Session 2
11:00 – 11:20	*Coffee Break*
11:20 – 12:20	Industrial Session 2
12:20 – 13:10	*Conference Lunch*
13:10 – 15:10	Poster Session 1
15:10 – 15:30	*Coffee Break*
15:30 – 17:30	Plenary Oral Session 3
17:30 – 19:30	*City tour**
19:30 -	*Conference dinner*
	(Casa Ghincea Restaurant - Str. Madona Dudu, nr. 31, Craiova**)**

Friday, October 20 (SIITME)
(University of Craiova main building - Aula MIHAI I)

09:00 – 11:00	Poster Session 2
11:00 – 11:30	*Coffee Break*
11:30 – 13:30	Plenary Oral Session 4
13:30 – 14:30	*Conference Lunch*
14:30– 16:30	Poster Session 3
16:30 – 17:30	Industrial Session 3
17:30 – 18:00	*Coffee Break*
18:00 – 19:00	Networking Session
18:00 – 19:00	Steering Committee Meeting
19:00 – 20:00	*Awarding ceremony; Welcome to SIITME 2024*
20:30 – 22:00	*Dinner* **(University of Craiova main building - Aula MIHAI I)**

Friday, October 20 (TIE_M)
(Casa Universitarilor – Mihai Eminescu Room, first floor)

07:30 – 08:00	TIE_M 2023 contest preliminary activities
08:00 – 12:30	TIE_M 2023 CONTEST
12:30 – 13:30	*Lunch Break*
13:30 – 17:45	TIE_M Assessment of the projects; litigations
17:45 – 18:45	TIE_M 2023 subject demystification (relevant for TIE participants)
17:45 – 18:45	Steering Committee Meeting

19:00 – 20:00	**Awarding ceremony for TIE_M contest (University of Craiova main building - Aula MIHAI I)**
20:30 - 22:00	*Dinner* **(University of Craiova main building - Aula MIHAI I)**

Friday, October 20 (TIE)
(Casa Universitarilor - Nicolae Romanescu Room, first floor)

07:30 – 08:00	**TIE 2023 contest preliminary activities**
08:00 – 12:30	**TIE 2023 CONTEST**
12:30 – 13:30	*Lunch Break*
13:30 – 17:45	**Assessment of the projects; litigations**
17:45 – 18:45	**TIE Plus 2024 There are things to discover**
17:45 – 18:45	**Steering Committee Meeting**
19:00 – 20:00	**Awarding ceremony for TIE 2023 contest (University of Craiova - Aula MIHAI I)**
20:30 – 22:00	*Dinner* **(University of Craiova main building - Aula MIHAI I)**

Saturday, October 21 (TIE)

09:00 – 11:00	**Event retrospective**

***City tour** guided by professors from University of Craiova, Faculty of Sciences, Department of Geography:*

- ➢ *Assoc. Prof. Alina VLĂDUȚ, Ph.D.*
- ➢ *Lecturer Liliana POPESCU, Ph.D.*
- ➢ *Lecturer Mihaela LICURICI, Ph.D.*
- ➢ *Lecturer Cristina ȘOȘEA, Ph.D.*

Wednesday, October 18

08:30 – 16:00   Registration (Casa Universitarilor)

09:00 – 10:45	**PDC A** (Casa Universitarilor - Nicolae Iorga Room, first floor)	**PDC B** (Casa Universitarilor – Mihai Eminescu Room, first floor)
10:45 – 11.15	*Coffee break*	*Coffee break*
11:15 – 12:30	**PDC A** (Casa Universitarilor - Nicolae Iorga Room, first floor)	**PDC B** (Casa Universitarilor – Mihai Eminescu Room, first floor)

Name:	**Rajen MURUGAN**
Job position:	**Engineering Manager, Multiphysics Modeling Team, TMG-SCP**
Company:	**Texas Instruments, Inc.**
e-mail:	**rajenm@ieee.org**
Presentation:	**"System-Level Predictive EMI/EMC Modeling – A Tutorial"**

Dr. Rajen MURUGAN specializes in developing multiphysics simulation and modeling methodologies for advanced semiconductor IC packaging and systems. He is currently a Distinguished Member of the Technical Staff (DMTS) with Texas Instruments, Inc. He has 24 patents (68 pending) and has published over 75 papers in peer-reviewed IEEE journals and conferences.

Summary

This tutorial covers predictive modeling methodologies in designing semiconductor IC products to meet stringent electromagnetic compatibility (EMC) regulatory standards for critical safety end applications (e.g., automotive, space, and industrial). The material is delivered by leveraging the pedagogical approach of the 3W's (Why, When, and What) to 1H (How). Whenever appropriate, the impact of predictive modeling will be demonstrated on real-world IC and package/system designs. The learning objectives are multifold — a comprehensive understanding of EMC modeling fundamentals, selecting the optimal modeling approach based on the problem at hand, and the ability to interpret the modeling result. Finally, the benefits of system-level EMC predictive modeling will be discussed when implemented early in the design flow to achieve high-performance, cost-effective EMC- compliant products.

Course Outline

- Basic EMI/EMC definitions and concepts
- EMI/EMC specifications and regulatory standards
- Noise sources, coupling, and propagation mechanisms
- Fundamentals and governing equations of EMC modeling
- Signal and power integrity components of EMC
- System co-design components (IC + Package + PCB system) of EMC
- CEM Modeling techniques – strengths and gaps
- EMC modeling, simulation, analysis, and validation
- Passives modeling
- System-level EMI/EMC methodologies
- Driving guidelines through modeling and silicon validation
- EMC best practices and lessons learned.

Name:	**Mark D. POLIKS**
Job position:	**Distinguished Professor of Materials Science and Engineering and Systems Science and Industrial Engineering**
Company:	**Thomas J. Watson College of Engineering and Applied Science, Binghamton University, State University of New York**
e-mail:	**mpoliks@binghamton.edu**
Presentation:	**"Flexible and Hybrid Electronics – A Tutorial"**

Mark POLIKS is the founding director of the Center for Advanced Microelectronics Manufacturing (CAMM), a New York State Center of Advanced Technology and home to the New York Node of the federally supported NextFlex Manufacturing USA. Poliks has made sustained contributions to the fields of electronics packaging, flexible and hybrid electronics that are relevant to a variety of medical and industrial applications. He has had significant experience in the electronics industry serving as a senior technical manager at the IBM Corporation and as director of R&D at Endicott Interconnect Technologies, Inc. He was the General Chair of the 69th IEEE Electronic Components and Technology Conference (ECTC). He is an elected member of the IEEE Electronics Packaging Society (EPS) Board of Governors, serves as the director of student programs and is an IEEE EPS Distinguished Lecturer.

Abstract:

Flexible and hybrid electronics (FHE) combine additively printed electronics on bendable, flexible, or stretchable substrates with the performance of silicon-based semiconductors to enable applications that include wearable medical devices and industry sensors. This tutorial will review the design and fabrication challenges associated with interfacing hard and soft electronic components, materials selection, printing, processing, and testing of FHE systems. Applications to medical and industrial sensors will be incorporated throughout this presentation and their "concepts of operation" will guide the evaluation of performance and reliability. Outcomes from this work are expected to inform the eventual scale-up to large- area, roll-to-roll manufacturing or integration on complex, non-planar surfaces, and solids.

The lecture topics will be selected from the following:
• Flexible Hybrid Electronics (FHE) and heterogeneous integration
• Equipment, tools, and facilities: printing methods and more

- Substrate materials and handling for 2D and 3D applications
- Conductive inks and sintering
- Electromechanical testing of printed interconnects
- Challenges to interface hard and soft electronic components
- Interconnecting in the z direction – printed vias
- Printed discrete components: resistors, capacitors, inductors, etc.
- Highly stretchable conductive inks
- Multilayer printed and laminated structures
- Printed RF components, devices, and systems
- Device and component placement and assembly
- Approaches to assess the reliability of FHE components and systems
- Unexpected outcomes: application to high power and high temperature systems

13:00 – 15:30   Strategic Partnership for Education Workshop
(Casa Universitarilor –
Nicolae Romanescu Room, first floor)

Welcome
Ovidiu Aurel POP, *Technical University of Cluj-Napoca, Romania*
Aurelian KOTLAR, *Eberspaecher Controls Romania*

Moderators:
Vlad CEHAN, Gheorghe Asachi Technical University of Iaşi, Romania
Bálint MEDGYES, Budapest University of Technology and Economics, Hungary

"Strategic Partnership for Education – How will the digital workplace 2030 look like?"
Aurelia Florea, Miele Tehnica Brasov, Romania, Organizational Development & People Experience Director

"Multiphysics for 3D IC Design Optimization"
Iyad RAYANE, Altair, Senior Technical Specialist ESD

"Semiconductor Packaging Performance – Early Semiconductor Packaging Validation & Optimization",
Domenica IERO, EUROMED SIMULIA Industry Process Consultant Senior Specialist

"Think Outside the Package using a Multiphysics Design Environment"
Răzvan STANCA, INAS SA, MBU Technical Services

"Virtual Prototyping Using Preliminary Data"
Călin NEMEŞ, Continental Automotive Systems Sibiu, Senior Hardware Design Engineer

IPCEI
on Microelectronics

Name:	**Aurelia FLOREA**
Job position:	**Organizational Development & People Experience Director**
Company:	**Miele Tehnica Brasov**
e-mail:	**aurelia.florea@miele.com**
Presentation:	**"Strategic Partnership for Education – How will the digital workplace 2030 look like?"**

Since 2009 - **Aurelia FLOREA** coordinates the Human Resources and Organizational Development department of Miele in Brasov, the company has over 400 employees in 2 divisions: Software Development Center and the Production Plant that produces electronic sub-assemblies for appliance. She has over 25 years of Strategic and Operational Leadership experience in Human Resources and Development and Organizational Transformation.

She is the initiator and coordinator of the project ,,Strategic Partner for Education'' launched in 2015 which aims to prepare and support the education system to adapt to the real needs of the labour market in order to create functional generations for 2030.

In Brasov, Miele has gained as an employer brand and a healthy, strong organizational culture based on trust, transparency and care for employees.

Abstract:

How will the digital workplace 2030 look like? What can we do today for a better future? In my intervention I will approach how we as an industry, can contribute and sustain the development of young generations with the workforce competencies for 2030. Our aim is to contribute through extra curriculum activities to the development of competencies for future workforce generations, aligned with industry requirements by 2030.

Miele is constantly involved and supports the academic environment in order to align the concept of education with the requirements of industry.

Starting with 2015, Miele Brasov, together with academic and economic representatives, we have defined the strategy for education that has three directions:

• Quality & Quantity necessary of Human Resources
• Live Partnership between Academic & Industry
• Financing.

Miele contributes actively to by supporting Extracurricular projects with focus on STEAM, like Robotor or Infotron. Through those projects we create contexts for young generation, to discover and follow their passions to performance.

We are pleased to see the constant care and motivation of the SIITME participants for research and innovation.

Only through mutual support we can reach solutions, so that the future generation can have the possibility of developing a professional career in any industry.

Name:	**Domenica IERO**
Job position:	**Industry Process Consultant Senior Specialist**
Company:	**EUROMED SIMULIA**
e-mail:	**Domenica.IERO@3ds.com**
Presentation:	**"Semiconductor Packaging Performance – Early Semiconductor Packaging Validation & Optimization"**

Domenica IERO holds a PhD in Computational Electromagnetics. During her academic career, her main research activities were focused on the development of antenna array synthesis techniques for satellite and biomedical application (Hyperthermia), the design of wireless power transfer systems and the evaluation of their interaction with the human body.

Then Domenica faced new industrial challenges from the electromagnetic prospective, such as Autonomous Driving and Powertrain Electrification in the automotive industry, while working as Infotainment & Antenna/EMC Consultant at FCA - Fiat Chrysler Automobiles (nowdays Stellantis Group), EMC Simulation Consultant at Ferrari and, later, as EMC Senior Engineer at Eldor Corporation.

As SIMULIA Industry Process Consultant Senior Specialist at Dassault Systemes, Domenica supports companies from various industries in improving their design and validation process though the electromagnetic simulation.

Abstract:
As the cost associated with smaller technology nodes increases substantially, semiconductor companies are increasingly turning to advanced package designs for performance improvement, functional integration and cost reduction. In this respect, this presentation will provide a comprehensive overview of Dassault Systemes Semiconductor Packaging Reliability tools based on

➢ 3D Multiphysics simulation for comprehensive virtual test coverage which ensures all aspects of product performance and reliability are assessed thoroughly (thermal, mechanical and electromagnetic);
➢ Process automation and optimization in order to converge to best designs faster and reduce time to market;
➢ Design Collaboration on the 3DEXPERIENCE platform which facilitates collaboration between different teams.

Name:	**Răzvan STANCA**
Job position:	**MBU Technical Services**
Company:	**INAS SA**
e-mail:	**rstanca@inas.ro**
Presentation:	**"Think Outside the Package using a Multiphysics Design Environment"**

Razvan Stanca - 52 years old, Mechanical Engineer, graduated in 1998 the Technical University of Craiova, Mechanical Faculty. He works in simulation industry, as FEA engineer on structural and thermal field, with 10 years exeprience. Since 2004 is employee of INAS S.A.

From 10 years his activity is focused mostly on technical support for sales department, including technical presentations, webinars and pilot projects with ANSYS products.

Also he supports customers using ANSYS products during their projects development to achieve their goals.

Abstract:

Over time, electronic packages have become more and more efficient by reducing their sizes but not necessarily without increasing the amount of heat dissipated during operation. As a result, the chips end up generating the same amount of heat, but this is now concentrated in a smaller area, increasing therefore the heat flow.

Thus engineers are faced with real challenges from an interdisciplinary point of view - how can they optimize the design of the electronic packages to allow optimal performance from an electronic point of view, but at the same time optimizing heat dissipation?

The answer to this challenge lies in the complex interaction between the fields of electronic engineering (EE), mechanical engineering (ME) and materials science (MS). And what might appear to be the best answer from the electronics engineer's perspective may not necessarily be the best answer from the mechanical engineer's perspective or or from the point of view of the specialist in the materials used. None of these individual answers is the best answer.

Simulation with Ansys software helps specialists from various fields to better understand the functioning of packages from an electronic, mechanical and thermal point of view, as well as understanding the interaction of various parameters from various physical domains.

Moreover, they have available within Ansys' portfolio, also tools for evaluating the reliability of electronic products subjected to various cycles of thermal and or mechanical stress (shocks, random vibrations, etc.).

Name:	**Iyad RAYANE**
Job position:	**Senior Technical Specialist ESD**
Company:	**Altair**
e-mail:	**irayane@altair.com**
Presentation:	**"Multiphysics for 3D IC Design Optimization. Thermal, thermal stress and solder fatigue analysis for upfront system level floorplan fast decision"**

Iyad RAYANE is a senior technical specialist at Altair focusing on electronic systems design and simulation. He has 25 years of experience in the semiconductor field where he worked for different semiconductors (ST Microelectronics) and EDA companies (Mentor Graphics, Zuken). Iyad started his career in a startup in Grenoble area specialized in the Mems design and modeling.

He is author and co-author of many scientific publications in international conferences.

Abstract:

By stacking multiple dies, 2.5D/3D ICs offer enhanced functionality, reduced form factor, and improved interconnect density. However, these advancements come with several challenges, prominently including thermal management issues.

The stacking of dies in 3D ICs introduces thermal stress causing mechanical failures, including delamination, warpage, and cracking, impairing the reliability of the system.

Multiphysics suites from Altair assist designers to optimize thermal management strategies, minimize thermal stress-induced failures, and enhance the reliability of interconnects and solder joints, ultimately facilitating the successful implementation of 2.5D/3D IC technologies in advanced electronic systems. stress (shocks, random vibrations, etc.).

Industrial Invited Speaker

Name:	**Călin NEMEŞ**
Job position:	**Senior Hardware Design Engineer**
Company:	**Continental Automotive Systems Sibiu**
e-mail:	**calin.nemes@gmail.com**
Presentation:	**"Virtual Prototyping Using Preliminary Data"**

With a B.Sc. in Applied Electronics and an M.Sc. in Embedded Systems, **Călin NEMEŞ** has 14 years of design experience with sensor and communication interfaces for automotive safety systems. Combine this with lean design and organizational approaches, an active background in teaching and training and an interest in modeling analog and digital circuitry. His research interests include design and integration of hardware and software through electrical and behavioral modelling and simulation, over worst-case and failure conditions.

Abstract:

This presentation will cover a virtual prototyping process. The proposed solution is a structured systematic and systemic extrapolation process, applied to EE interfaces (any piece of circuit and software that connects one system component to another). We will discuss the definition of a system of interest and data gathering. Then cover aggregation of the virtual components to build either a full system or just a functional slice of interest. We will cover running a worst-case normal operation simulation, then a single failure one, then maybe add further failure injection, if applicable. All will lead to possible solution generation (the virtual prototype) and a pre-validation of customer requirements, scenarios, and use cases. The proposed virtual prototype is not yet a digital twin, but a prediction based on known facts, previous experience, and intuition. And finally, report generation allowing focused communication with supporting data will be discussed. To support the process, the foundation blocks are Spice models and simulations, tool integration and automation, and industry expertise.

At the end, besides obtaining a virtual prototype (and maybe a real one) the proposed process can also facilitate the analysis, implementation, and validation of the mature/final requirements when they are available. This allows data and result-based decision making, while pushing product development forward.

SIITME 2023

IEEE 29th International Symposium for Design and Technology in Electronic Packaging

CONFERENCE & EXHIBITION

18th – 21st of October 2023

SIITME History

1995 - Utilizarea calculatoarelor în Tehnologia Subansamblelor electronice CAE-CAD-CAM, UPB, Bucureşti, România

SIITME'96, Al II-lea Seminar Internaţional de Informatică Tehnologică în domeniul Fabricaţiei Modulelor electronice, 23-24 Octombrie 1996, Bucureşti, România

SIITME'97, The 3rd International Seminar for Informatics and Technology in the domain of Electronic modules, 22-23 October 1997, Bucharest, Romania

SIITME'98, The 4th International Symposium for Informatics and Technology in Electronic Modules Domain, September 22-24 1998, Bucharest, Romania

SIITME'99, The 5th International Symposium for Design and Technology in Electronic Modules, September 23-26 1999, Bucharest, Romania

SIITME 2000, The 6th International Symposium for Design and Technology for Electronic Modules, September 21-24, 2000, Bucharest, Romania

SIITME 2001, The 7th International Symposium for Design and Technology of Electronic Modules, September 20-23, 2001, Bucharest, Romania

SIITME 2002, The 8th International Symposium for Design and Technology of Electronic Modules, September 19-22, 2002, Cluj-Napoca, Romania

SIITME 2003, The 6th International Symposium for Design and Technology of Electronic Packages, September 18-21, 2003, Timişoara, Romania

SIITME 2004, The 10th International Symposium for Design and Technology for Electronic Modules, September 23-26 2004, Bucharest, Romania

SIITME 2005, International Symposium for Design and Technology of Electronic Packaging, 11th Edition, September 22-25, 2005, Cluj-Napoca, Romania

SIITME 2006, International Symposium for Design and Technology of Electronic Packaging, 12th Edition, September 21-24, 2006, Iaşi, Romania

SIITME 2007, International Symposium for Design and Technology of Electronic Packaging, 13th Edition, September 20-23, 2007, Baia Mare, Romania

SIITME 2008, International Symposium for Design and Technology of Electronic Packaging, 14th Edition, September 18-21, 2008, Predeal, Romania

SIITME 2009, 15th International Symposium for Design and Technology of Electronic Packages, 17-20 September 2009, Gyula, Hungary

SIITME 2010, 16th International Symposium for Design and Technology in Electronic Packaging, September 23-26, 2010, Piteşti, Romania.

SIITME 2011, IEEE 17th International Symposium for Design and Technology in Electronic Packaging, October 20-23, 2011, Timişoara, Romania.

SIITME 2012, IEEE 18th International Symposium for Design and Technology in Electronic Packaging, Alba Iulia, Romania

SIITME 2013, IEEE 19th International Symposium for Design and Technology in Electronic Packaging, Galati, Romania

SIITME 2014 IEEE 20th International Symposium for Design and Technology in Electronic Packaging, October 23–26, 2014, Bucharest, Romania

SIITME 2015 IEEE 21st International Symposium for Design and Technology in Electronic Packaging, October 22-25, 2015, Brasov, Romania

SIITME 2016 IEEE 22nd International Symposium for Design and Technology in Electronic Packaging, October 20-23, 2016, Oradea, Romania

SIITME 2017 IEEE 23rd International Symposium for Design and Technology in Electronic Packaging - October 26-29, 2017, Constanta, Romania

SIITME 2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging - October 25–28, 2018, Iași, Romania

SIITME 2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging - October 23–26, 2019, Cluj-Napoca, Romania

SIITME 2020 IEEE 26th International Symposium for Design and Technology in Electronic Packaging - October 21–24, 2020, Pitești, Romania – On-line edition

SIITME 2021 IEEE 27th International Symposium for Design and Technology in Electronic Packaging - October 27–29, 2021, Timişoara, Romania – On-line edition

SIITME 2022 IEEE 28th International Symposium for Design and Technology in Electronic Packaging, October 26–29, 2022, Bucharest, Romania

Wednesday, October 18

15:00 – 18:00	**Registration** (University of Craiova - Ground floor)
16:00 – 16:30	**SIITME 2023 Opening ceremony** (**University of Craiova** - Aula MIHAI I)
16:30 – 18:05	**Plenary Oral Session 1**
18:15 – 18:30	*Coffee break*
18:30 – 19:30	**Industrial Session 1**
20:00 – 21.30	*Welcome to SIITME dinner* (**Casa Universitarilor**)
21:30 –	**IEEE – Hu&Ro EPS&NTC Joint Chapter Meeting – members & guests**

Thursday, October 19 (University of Craiova - Aula MIHAI I)

08:30 – 12:30	**Registration**
09:00 – 11:00	**Plenary Oral Session 2**
11:00 – 11:20	*Coffee Break*
11:20 – 12:20	**Industrial Session 2**
12:20 – 13:10	*Conference Lunch*
13:10 – 15:10	**Poster Session 1**
15:10 – 15:30	*Coffee Break*
15:30 – 17:30	**Plenary Oral Session 3**
17:30 – 19:30	*City tour*
19:30 -	*Conference dinner* (**Casa Ghincea Restaurant -** Str. Madona Dudu, nr. 31, Craiova**)**

Friday, October 20 (University of Craiova - Aula MIHAI I)

09:00 – 11:00	**Poster Session 2**
11:00 – 11:30	*Coffee Break*
11:30 – 13:30	**Plenary Oral Session 4**
13:30 – 14:30	*Conference Lunch*
14:30– 16:30	**Poster Session 3**
16:30 – 17:30	**Industrial Session 3**
17:30 – 18:00	*Coffee Break*
18:00 – 19:00	**Networking Session**
18:00 – 19:00	**Steering Committee Meeting**
19:00 – 20:00	*Awarding ceremony; Welcome to SIITME 2024*
20:30 – 22:00	*Dinner* (University of Craiova - Aula MIHAI I)

SIITME 2023 Keynote speakers

(in alphabetical order)

Name:	**Kemal AYGÜN**
Job position:	**Distinguished INTEL Fellow**
Company:	**Intel Corporation**
e-mail:	**kemal.aygun@intel.com**
Presentation:	**"High Speed Signaling Challenges and Solutions for Electronic Packaging"**

Kemal Aygün received the Ph.D. degree in electrical and computer engineering from the University of Illinois at Urbana-Champaign, Urbana, IL, USA, in 2002. In 2003, he joined the Intel Corporation, Chandler, AZ, USA, where he is currently an Intel Fellow and manages the High Speed I/O (HSIO) team in the Electrical Core Competency group. He has co-authored five book chapters, more than 90 journal and conference publications, and holds 84 U.S. patents. His research interests include novel technologies along with electrical modelling and characterization techniques for microelectronic packaging. Dr. Aygün was a recipient of the Semiconductor Research Corporation (SRC) Global Research Collaboration (GRC) Mahboob Khan Outstanding Mentor Award in 2008 and 2015 for his contributions in mentoring SRC GRC academic research projects. He was the General Chair of the 2020 IEEE Electrical Performance of Electronic Packaging and Systems Conference. He is an IEEE Fellow and has been acting as a Distinguished Lecturer for the IEEE Electronics Packaging Society (EPS); a co-chair of the EPS Technical Committee on Electrical Design, Modelling, and Simulation; and an associate editor for the IEEE Transactions on Components Packaging, and Manufacturing Technology.

Abstract:

With the emergence of new applications such as artificial intelligence, corresponding electronic systems need to provide increasingly improved performance. One area where the performance demand has been scaling very aggressively is that for connecting different components in an electronic system using high speed signalling. To address this demand, the pace of innovation in electronic packaging has also increased greatly in recent years, bringing with it a new set of challenges for electrical design, analysis, and validation. This presentation will review some of the recent developments in electronic packaging from scaling of traditional technologies to new advanced packaging technologies. It will also summarize some of the key challenges and solutions for the corresponding electrical methodologies and metrologies, that can be used for design, analysis, and validation of such packages. Some specific topics that will be covered include impact of use conditions on dielectric and conductor models, uncertainty quantification for package interconnect measurement-to-modelling correlation, and advances on high-frequency characterization of sockets and ball grid array package connections.

Name:	**Jonathan CHURCH**
Job position:	**Director of Product**
Company:	**Frenetic**
e-mail:	**jonathan.church@frenetic.ai**
Presentation:	**"The Journey of Optimization for Complex Magnetics"**

After graduating from the University of Newcastle Upon Tyne with a BEng in Electrical & Electronic Engineering, **Jonathan Church** spent over a decade working with novel power converter applications for underwater vehicle systems. Working for numerous ROV (Remotely Operated Vehicle) manufacturers in the UK, he has been a key player for the industry in its transition from low frequency AC to high-frequency DC converter-based systems.

Critical to the ROV industry's success over the last decade has been the adoption of both wide bandgap technologies and the ability to significantly reduce the size of magnetics, all whilst maintaining reliability and keeping costs to a minimum. After working on many different design challenges with conventional methods, Jonathan is no stranger to the perils and pitfalls in the optimization processes of complex magnetics. In more recent years, Jonathan found great value in the use of Frenetic's digital platform to help in his pursuit for better magnetics. Following a few years as a customer, he joined the team at Frenetic to help work on a better future for the power electronics industry and is now their Director of Product.

Abstract:

In the advent of Wide Bandgap (WBG) maturity, predominantly devices with faster switching speeds and higher blocking voltages have allowed for rapid growth in power converter innovation, yielding solutions with greater power densities and efficiencies and transforming numerous expanding markets around the world.

Whilst this revolution has provided a step change in the potential for converter optimization it has created challenges, and an awareness of opportunities for enhancement in the field of magnetics. Sometimes being referred to as the "bottleneck" of the converter, it's acknowledged that in fact a prudent design of the magnetic has the greatest potential to impact the converter size, weight, and performance.

However, to prudently design magnetics in these increasingly challenging contexts, and to get the best solution, one must be aware of the impacts/impositions their high-level design objectives have on the degrees of freedom in design and how these steer the process itself. In 'The Journey of Optimization for Complex Magnetics' - Jonathan will present an overview of the challenges involved with magnetics design optimization post WBG advent.

Where does the optimization journey really begin? How can we ensure we start the process in the right way? How do we close the gap between design and production? And how can we avoid trapping ourselves with poorly defined constraints? Amongst others, these are some of the questions tackled in the presentation.

Name: **Rajen MURUGAN**

Job position: **Engineering Manager**

Company: **Texas Instruments, Inc.**

e-mail: **rajenm@ieee.org**

Presentation: **„Multiphysics Modeling of Semiconductor IC Packaging and Systems"**

 Dr. Rajen Murugan specializes in developing multiphysics simulation and modeling methodologies for advanced semiconductor IC packaging and systems. He is currently a Distinguished Member of the Technical Staff (DMTS) with Texas Instruments, Inc. He has 24 patents (68 pending) and has published over 75 papers in peer-reviewed IEEE journals and conferences. Dr. Murugan holds a Ph.D. in Applied Electromagnetics from the University of Manitoba, Canada. He is an Affiliate Assistant Professor with the University of Washington EE Department, a Distinguished Lecturer for the IEEE Electronics Packaging Society (EPS), an Associate Editor for the IEEE Transactions on CPMT journal, a Senior Member of IEEE, the founder of the IEEE EPS Dallas Chapter, and the Chair of the IEEE Dallas Section.

Abstract:

Transistor/chip scaling has reached the point of diminishing returns and is becoming more complex and expensive at each node. Advanced packaging technologies show promise by bridging the gap in the "More than Moore" Era. However, advanced packaging technologies challenge traditional package design verification tools and methodologies. Complex miniaturization and integration exacerbate coupled interactions with multiphysics (e.g., electrical, thermal, mechanical) and multidomain (chip-package-PCB system). As such, without a paradigm shift in the traditional design verification modeling approach, potential business impacts are highly likely (viz costly re-spins, increased design cycle time, and time-to-market). Coupled multiphysics and system co-design (MSC-D) is emerging as the renewed modeling methodology to ensure first-pass design success.

This presentation reviews developing and implementing a multiphysics system co-design methodology for designing high-performance, cost-effective IC packaging solutions. The methodology is validated against silicon laboratory measurements on two IC current sensor types - a precision shunt resistor sensor and a high-precision, high-voltage (600V) Hall-Effect current sensor. State-of-the-art challenges and opportunities in multiphysics system co-design are also discussed.

Name:	**Mark D. POLIKS**
Job position:	**Distinguished Professor of Materials Science and Engineering and Systems Science and Industrial Engineering**
Company:	**Thomas J. Watson College of Engineering and Applied Science, Binghamton University, State University of New York**
e-mail:	**mpoliks@binghamton.edu**
Presentation:	**"Flexible and Hybrid Electronics – A Tutorial"**

Mark POLIKS is the founding director of the Center for Advanced Microelectronics Manufacturing (CAMM), a New York State Center of Advanced Technology and home to the New York Node of the federally supported NextFlex Manufacturing USA. Poliks has made sustained contributions to the fields of electronics packaging, flexible and hybrid electronics that are relevant to a variety of medical and industrial applications. He has had significant experience in the electronics industry serving as a senior technical manager at the IBM Corporation and as director of R&D at Endicott Interconnect Technologies, Inc. He was the General Chair of the 69th IEEE Electronic Components and Technology Conference (ECTC). He is an elected member of the IEEE Electronics Packaging Society (EPS) Board of Governors, serves as the director of student programs and is an IEEE EPS Distinguished Lecturer.

Abstract:

Flexible, hybrid and additive electronics enable the design and fabrication of sensors, data acquisition and analysis systems, communication and power systems that are consistent with applications that operate at the edge of the Cloud. Many such applications require thin, soft, conformal, or stretchable attributes for "wearability" in human healthcare or implantability in industrial or infrastructure systems that must survive extreme conditions. In this talk a selection of devices will be described that demonstrate that additive printing methods can offer reliable performance from low-cost manufacturing solutions for potentially high-volume applications.

Industrial Invited Speaker

Name:	**Nicolae GROSS**
Job position:	**Test engineer and hardware development engineer**
Company:	**Continental Automotive Systems Sibiu**
e-mail:	**nicolae.gross@continental.com**
Presentation:	**„Impact of package technology differences in power MOSFETs application"**

 Nicolae Gross – 50 years old, Electronic engineer, graduated in 1996 the Technical University of Cluj-Napoca, Applied Electronics. He works in automotive industry, as test engineer and hardware development engineer, with more than 19 years experience. Since 2006 is employee of **Continental Automotive Systems Sibiu**. His activity was focused mostly on test equipment development, from concept definition to final assembly and delivery to the customer. He is in charge of coordinating a team of development engineers which develop not only the hardware equipment, but also the automation sequences for prototype testing and production line test equipment.

Abstract:

Since the introduction of so-called Copper clip package (or clip bond package) in the early 2000s, the influence of packaging technology on overall resistance and inductance of the power MOSFET device is significantly reduced. Moreover, higher power density is available and better current spreading avoids the hotspot formation. This packaging technology is known as LFPAK and it was developed by NXP and Hitachi starting 2002.

We are currently seeing a trend to migrate from older DPAK/D2PAK technology to newer LFPAK in the Automotive industry. In a way this is understandable, due to a global miniaturization trend, seen in all industries. But, for specific products which are constrained by other driving forces, a change in transistor packaging is not needed. Therefore, we will try to explain what are the various motivations that push the adoption of LFPAK technology, which currently has a higher price. We will compare the two competing technologies, from business point of view.

Several dimensions shall be touched upon:
-       PCB complexity and surface impact,
-       design impact (e.g. schematic changes),
-       thermal regime and thermal modeling and solutions,
-       soldering and inspection processes,
-       software adaption (e.g. change of control strategy)
-       and last but not least the economic impact, in short and long term.

 At the end of this presentation there should be a better understanding of the interrelations and interactions that drive today's choices, affecting more than one industry.

Industrial Invited Speaker

Name:	**Alessio GRECI**
Job position:	**Sales Manager**
Company:	**AMX Automatrix**
e-mail:	**alessio.greci@amx-automatrix.it**
Presentation:	**„Architecture of E-Vehicle main power train inverter, Ag/Cu Pressure Sintering Technology for Power Semiconductors"**

Alessio Greci: After the Diploma in marketing at IULM univ. Milano and international Masters degree in marketing and finance at Yale (USA), 24Ore Business School (I), Bocconi Uni. (I). He started his working career in 2004 at IBM in Business innovation Center EMEA, and has long experience trading electronic devices. He is Head of sales at AMX Automatrix Italy handling pressure sintering global business and holding worldwide networking.

Abstract:

Electric and hybrid electric vehicles (EVs and HEVs) are creating an increasing demand for power modules. They are also demanding lots from the modules, such as the ability to switch high voltages at high frequencies into loads that draw hundreds of Amps. Reliability is a must and at the same time to increase the power density is nowadays priority and main goal for all the manufacturers including: batteries, fuel cells, inverters, motors, power supply units etc. Tier1, OEMs and Semiconductor industries are running different main power train inverter architectures. Increase power density require the use of modern materials (including the transaction from Si standard Chips to SiC or GaN). Pressure assisted bonding method show more reliable joint, higher lifetime and are considered first choice for SiC and also Si main powertrain inverter die attach (lower electrical resistivity ~2 µΩcm and higher thermal conductivity >250 W/m∘K).

Compared with soldering or other standard methods, Ag or Cu pressure sintering shows outstanding results on all the previous application boosting the performances and avoiding re-melting problems.

Also the complexity of power module design is increasing: Semiconductor industries and SATs are producing advance packages including different components: Si IGBT and Diodes, SiC Mosfet, passive components like Sensors and gate resistors, but also Clips, copper foils, power contacts. High performance package architecture, like 3D structures (DSC), are becoming more and more popular; this request more than one sintering process on the same module assembling layers after layers (frames, Spacers and second DBC on top DSC, other elements. On the other hand of the supply chain Tier1 and OEMs are also using pressure sintering at second level: large area pressure sintering of the package on the cooler can provide better thermal performances and increase the joint lifetime. The AMX Automatrix Patented Micro Punch System is nowadays considered the most advanced method to guarantee better production Yield percentage and to assure to the entire package best performances, longer lifetime and outstanding reliability. New higher characterization parameters are necessary to deeply check the wright functioning of the mechanical joint. Higher repeatability methods capable to assure best bonding condition, no die lost and no cosmetic defect are worldwide R&D and production priority.

Programme in detail

16:00 – 16:30	**SIITME 2023 Opening ceremony**
EEST | GMT +3h	(University of Craiova - Aula MIHAI I)

Dorin Gheorghe ȘENDRESCU, *University of Craiova, Romania*
Ovidiu Aurel POP, *Technical University of Cluj-Napoca, Romania*

Wednesday, October 18

16:30 – 18:15	**Plenary Oral Session 1**
EEST | GMT +3h	

Session Chair: Heinz WOHLRABE, Dresden University of Technology, Germany
Session Co-Chair: Attila BONYAR*,* Budapest University of Technology and Economics, Hungary

16:30 KN1.1 Electronics at the Edge: Flexible, Hybrid and Additive Approaches to Medical and Industrial Devices
Mark D. POLIKS, Thomas J. Watson College of Engineering and Applied Science, Binghamton University, State University of New York

17:15 Industrial Invited Speaker - Impact of package technology differences in power MOSFETs application
Nicolae Gross,
Continental Automotive Systems Sibiu, Romania

17:50 OS 1.1-43 Thermoelectrical Parameters of SiC PiN Diodes with New Die Attachment Ag Paste
Corina Ruxandra Mitulescu [1]; Bogdan Mihailescu [1]; Ryszard Kisiel[2]; Moise Vasile Madalin[1]; Florin Draghici[1]; Paul Svasta[1],
[1] National University of Science and Technology POLITEHNICA of Bucharest, Romania
[2] Warsaw University of Technology, Poland

Wednesday, October 18

18:30 – 19:30   Industrial Session 1
EEST | GMT +3h

Session Chair: Rodica CONSTANTINESCU, UNST POLITEHNICA of Bucharest, Romania
Session Co-Chair: Liviu VIMAN, Technical University of Cluj-Napoca, Romania

Continental Automotive Systems Sibiu	**MIELE TEHNICA**
Caelynx Europe	**APTE, IMAPS Romania**

Thursday, October 19

09:00 - 11:00   Plenary Oral Session 2
EEST | GMT +3h

Session Chair: Dorin PETREUȘ, Technical University of Cluj-Napoca, Romania
Session Co-Chair: Detlef BONFERT, Fraunhofer Institute for Electronic Microsystems and Solid State Technologies EMFT, Munich

09:00 KN2.1 The Journey of Optimization for Complex Magnetics
Jonathan CHURCH, Frenetic

09.45 OS2.1-14 Investigation of the Accuracy of Thermographic Inspections of Photovoltaic Modules
Boris I Evstatiev; Nikolay Valov; Katerina Gabrovska-Evstatieva and Nicolay Mihailov, University of Ruse Angel Kanchev

10:10 OS2.2-46 Mechanical Response of Type 2 Multi-Layer Ceramic Capacitors Under Different Electric Loads
Coanda Philip Gh; Vasile Madalin Moise; Comeaga Daniel; Svasta Paul, National University of Science and Technology POLITEHNICA of Bucharest, Romania

10:35 OS2.3- 47 Evaluation of Usage of Solid State MOSFET Switches in Test Equipment for PSI5 Automotive Sensors
Nicolae Gross, National University of Science and Technology POLITEHNICA of Bucharest, Romania

Thursday, October 19

11:20 – 12:20   Industrial Session 2
EEST | GMT +3h

Session Chair: Ioan LIȚĂ, UNST POLITEHNICA of Bucharest, University Center of Piteşti, Romania
Session Co-Chair: Mihai DĂRĂBAN, Technical University of Cluj-Napoca, Romania

BOSCH	**SEGULA TECHNOLOGIES ROMANIA**
SiMART 3D	**ICCO EMT**

Thursday, October 19

13:10 – 15:10 Poster Session 1 (Start with a pitching session*)
EEST | GMT +3h.

Session Chair: Radu Gabriel BOZOMITU, Ghe Asachi Technical University of Iaşi, Romania
Session Co-Chair: Mihaela PANTAZICĂ, National University of Science and Technology POLITEHNICA of Bucharest, Romania

P1.1-51 Virtual Prototyping and Validation of a System for Flood and Fire Risk Mitigation in Wetlands

E. C. Popovici, A. Vulpe, L. Boicescu, C. A. Conțu, and G. Suciu Jr.1)
Telecom Department, UNST POLITEHNICA of Bucharest, ETTI Faculty, Bucharest, Romania 1) R&D Department, BEIA Consult International, Bucharest, Romania

P1.2-71 Capacitor Discharging Module for Electric Discharge Machining

A. Drumea and C. I. Marghescu
Department of Electronics Technology, UNST POLITEHNICA of Bucharest, Romania

P1.3-70 Implementing power resistors on Aluminium Core Printed Circuit Boards

A. Drumea and C. I. Marghescu
Department of Electronics Technology, UNST POLITEHNICA of Bucharest, Romania

P1.4-90 Speed Control Model of DC Motor Based on a Parameter Investigation Prototype

I. Ciocan, C. Fărcaş, M. Szekely and A. Tulbure1)
Department of Applied Electronics, Technical University of Cluj-Napoca, Romania
1) Department of Precise and Engineering Sciences, 1 Decembrie 1918 University of Alba Iulia, Romania

P1.5-64 VR environment to build simulators for records in control plan

N. Ionescu1), L.-M. Ionescu2), and A.-G. Mazare2)
Department of Manufacturing and Industrial Management, UNST POLITEHNICA of Bucharest, University Center of Piteşti, Romania

2) Department of Electronics, Computer and Electrical Engineering, UNST POLITEHNICA of Bucharest, University Center of Piteşti, Romania

P1.6-9 Improved Flying Probe-Inspired In-Circuit Tester for Practical Laboratory Activities

R. Rotar, S.L. Jurj1), N.C. Rohatinovici2), R. Brîncovan3), F. Opriţoiu4) and M. Vlăduţiu5)
1) Department of Computer Science, Politehnica University, Timisoara, Romania
2) Technological Highschool of Electronics and Automation "Caius Iacob", Arad, Romania
3), 4), 5) Department of Computer Science, Politehnica University, Timisoara, Romania

P1.7-11 Exploring the Transformative Potential of Blockchain Technology in the Financial Sector: Addressing Challenges and Opportunities

A. Petcu, I.R. Petcu1)
Polytechnic University of Bucharest, Bucharest, Romania
1) Bucharest University of Economic Studies, Bucharest, Romania

P1.8-34 Implementing Boolean Four-Input Functions with Multiplexers when Applying Project-Based Learning in the Digital Electronics Course

A. N. Borodzhieva
Department of Telecommunications, University of Ruse "Angel Kanchev", Ruse, Bulgaria

P1.9-35 A Methodology for Designing Phase-Correction Sections Using an Active Implementation with an Operational Amplifier

A. N. Borodzhieva
Department of Telecommunications, University of Ruse "Angel Kanchev", Ruse, Bulgaria

P1.10-49 TIE-M Plus: Promoting Thermal Management Analysis Learning with Competition

C. Popescu5), P. Coandă3)6), A. Botau2)6), I. – E.Ţinca1)5), T. Krausz2)6), I. – I. Ailinei2)6), I. – D. Verzeş5), and P. M. Svasta4)
1)Dept. of Mechatronics, University Politehnica Timişoara
2) Dept. of Mechanics and Strength of Materials, University Politehnica Timişoara
3) Dept. of Mechatronics and Precision Mechanics, UNST POLITEHNICA of Bucharest, Romania
4)Center for Electronics Technology and Interconnection Techniques, UNST POLITEHNICA of Bucharest, Romania
5) Continental Autonomous Mobility Romania, Timişoara
6) Continental Automotive Romania, Timişoara

P1.11-56 Investigating Optimal Feedback Functions of Degree 2 for Nonlinear Feedback Shift Registers Using Computer-Based Tools

A. N. Borodzhieva
Department of Telecommunications, University of Ruse "Angel Kanchev", Ruse, Bulgaria

P1.12-61 Status Report of Training Development in the METIS Project Focusing on Test and Validation

B. Medgyes1), B. Illés1), O. Krammer1) and M. Afsar 2)
1) Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Department of Electronics Technology, Budapest/Hungary

2) SEMI Europe, Brussels/Belgium

P1.13-62 Database for E-Learning Platform of Digital Clothing

I. R. Radulescu, M. Jomir, E. Visileanu1), S. Odhiambo2), T.H. Do, X. Tao and X. Zeng3)
1) INCDTP – Bucharest, Romania
2) FTILAB, HOGENT, Ghent, Belgium
3) ENSAIT, Roubaix, France

P1.14-66 Design of a Laboratory Platform for Buck-Boost Converter Characterization

I.-A. Uţă, C. Marghescu, A. Drumea. R.Negroiu
Faculty of Electronics, Telecommunication and Information Technology, UNST POLITEHNICA of Bucharest, Romania

P1.15-76 Guidelines for Reducing Conductive Coupling Noise in Electronic Systems

R. C. Cavache and M. Pantazică1)
SP1, Infineon Romania, Bucharest, Romania
1) Department of Electronic Technology and Reliability, Faculty of Electronics, Telecommunications and Information Technology, UNST POLITEHNICA of Bucharest, Romania

P1.16-86 New Custom Boards for Teaching Digital Design

A. Gontean, E. Ilies, and M. Marinca
Applied Electronics, Politehnica University Timisoara, Romania

P1.17-23 High Efficiency Perovskite Solar Cells Optimization

I. Vlad, A. Drăgulinescu1)
Energy Generation and Use Department, UNST POLITEHNICA of Bucharest, Romania
1) Electronic Technology and Reliability Department, UNST POLITEHNICA of Bucharest, Romania

P1.18-59 Implementation of a Temperature Sensor Made With "Linqstat" for Automotive Applications

C. O. Opriș, A. Drăgulinescu, I. B. Bacîș
Electronic Technology and Reliability Department, UNST POLITEHNICA of Bucharest, Romania

P1.19-27 Control of the Energy Conversion in Radial Microactuators Using Conductive Polymers

D. Ionescu1), and G. Apreotesei2)
"Gh. Asachi" Technical University of Iasi, Romania
1) Department of Telecommunications and Information Technologies
2) Department of Physics

P1.20-72 Comparison between the Electrical Parameters of High Voltage Supercapacitor Cells

R. Negroiu, I. M. Burcea, P. Svasta, C.-I. Marghescu, M. R. Buga1), A. Spinu Zaulet1), C. Ungureanu1)
1)Centre of Technological Electronics and Interconnection Techniques, UNST POLITEHNICA of Bucharest, Romania
2)The National Research and Development Institute for Cryogenic and Isotopic Technologies – ICSI, Râmnicu Vâlcea

P1.21-65 Comparative analysis of two types of filaments with COMSOL for electrothermal process

S. Cadar1), D. Petreuş2), T. Patarau2), E. Szilagyi2)
1) Department of Analytical Instrumentation Research, INCDO-INOE2000, Research Institute for Analytical Instrumentation, Cluj-Napoca, Romania
2) Department of Applied Electronics, Technical University of Cluj-Napoca, Romania

P1.22-26 Stochastic Dynamic Programming Based Optimal Energy Management for an Islanded Microgrid

E. Szilagyi, D. Petreus, T. Patarau and N.A. Sarbu
Department of Applied Electronics, Technical University of Cluj-Napoca, Romania

P1.23-12 Energy efficient monitoring solution for lighting systems of hazardous areas

D. L. Buretea, V. Iordache, M. Minea, and R. A. Gheorghiu
Telematics and Electronics for Transport Department, UNST POLITEHNICA of Bucharest, Romania

P1.24-13 Bi-positional remote object reliable control using resistor analogue coding on microcontroller input

M. Minea, D. L. Buretea, V. Iordache, A. C. Cormos, and R. A. Gheorghiu
Telematics and Electronics for Transport Department, UNST POLITEHNICA of Bucharest, Romania

P1.25-14 Increasing data transmission reliability using pseudo-spread-spectrum short range radio networks

V. Iordache, R. A. Gheorghiu, M. Minea, D. L. Buretea and L. G. Obreja
Telematics and Electronics for Transport Department, UNST POLITEHNICA of Bucharest, Romania

P1.26-16 Textile and Plastic Materials Study for Radiofrequency Structure Fabrication

M. Călin, B. Mihăilescu, P. Svasta
Center for Technological Electronics and Interconnection Techniques, UNST POLITEHNICA of Bucharest, Romania

Thursday, October 19

15:30 – 17:30   Plenary Oral Session 3
EEST | GMT +3h

Session Chair: Vlad CEHAN, Gheorghe Asachi Technical University, Iaşi, Romania
Session Co-Chair: Gabriel CHINDRIŞ, Technical University of Cluj-Napoca, Romania

15.30 KN3.1 High Speed Signalling Challenges and Solutions for Electronic Packaging

Kemal AYGÜN, Intel Corporation

16.15 OS3.1- 52 Chiplets and Next-gen Packaging Technologies in University Education

Jajaie Anda[1]; Puscasu Alexandru; Ailenei Ioana; Ciobanu Catalin; Svasta Paul[1],
[1] National University of Science and Technology POLITEHNICA of Bucharest, Romania
[2] Transilvania University of Brasov, Romania

16.40 OS3.2-30 Electrochemical Corrosion Assessment of Low-Ag SAC Lead-Free Solder Alloys

Ali Gharaibeh; Bálint Medgyes,

Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Hungary

17.05 OS3.3-32 Improving the Properties of Conducting Polymers in Self-Doping Variant

Daniela Ionescu[1]; Gabriela Apreotesei[2]

[1] Department of Telecommunications and Informational Technologies, "Gh. Asachi" Technical University of Iasi, Romania

[2] Department of Physics, "Gh. Asachi" Technical University of Iasi, Romania

Friday, October 20

09:00 – 11:00   **Poster Session 2 (Start with a pitching session*)**
EEST | GMT +3h

Session Chair: Boris EVSTATIEV, University of Ruse Angel Kanchev, Bulgary
Session Co-Chair: Viorel NICOLAU, Dunărea de Jos University of Galaţi, Romania

P2.1-91 Advanced Investigations of On-board Interconnection Structures using 2D/3D Electromagnetic Field Analysis Methods

Ş. Petrescu1), N. Codreanu2), R. Vlăduţă 1), and D. Manolescu1)

1) Marvell Technologies Romania, Bucharest, Romania, 2) Department of Electronics Technology and Reliability, Center for Technological Electronics and Interconnection Techniques, Faculty of Electronics, Telecommunications and Information Technology, UNST POLITEHNICA of Bucharest, Romania

P2.2-36 Development of Cost Effective and Environmentally Friendly Supercapacitors

I. M. Burcea, R. Negroiu and P. Svasta

Centre of Technological Electronics and Interconnection Techniques, UNST POLITEHNICA of Bucharest, Romania

P2.3-50 Electronic Hive Management System for a Beekeeping Vehicle

G. Florea and N. Codreanu

Department of Electronics Technology and Reliability, Center for Technological Electronics and Interconnection Techniques, Faculty of Electronics, Telecommunications and Information Technology; UNST POLITEHNICA of Bucharest, Romania

P2.4-58 Thermocouple Fabrics for Energy Harvesting in Smart Textiles – Applications and Prototype

I. R. Radulescu, L. Dinca, E. Perdum1), C. Stroe, T. Sarbu and R. A. Aileni2)

1) Department of Materials Research and Investigation, INCDTP – Bucharest, Romania

2) Department of Textile Engineering Materials and Processes, INCDTP - Bucharest, Romania

P2.5-1 From idea to prototype: Designing a CO2 detection sensor for industrial consumers using the Kano model and QFD's House of Quality

S.A. Potra1) 2)*, C. Olenici2), A.P. Pugna1) 2), G. Belgiu1) 2) and L. M. Mihali1)
1)Management Department, Faculty of Management in Production and Transportation, Politehnica University Timisoara, Timisoara, Romania
2) Research Centre in Engineering and Management, Politehnica University Timisoara, Romania

P2.6-10 Reliability enhancements for high-availability systems using distributed event streaming platforms

A.-M. Dincă1), S.-D. Axinte1), and I. C. Bacivarov1)
1)Faculty of Electronics, Telecommunications and Information Technology, UNST POLITEHNICA of Bucharest, Romania

P2.7-45 Fault Detection and Diagnosis of Rotor Broken Bars Using Artificial Intelligence

P. V. Vezeteu and D. I. Năstac
Faculty of Electronics, Telecommunications and Information Technology, UNST POLITEHNICA of Bucharest, Romania

P2.8-15 A survey of the effectiveness of UHF-RFID technology in traffic management systems

I.N. Stăncel1) and C.M. Surugiu2)
1),2) Department of Telematics and Electronics for Transports, UNST POLITEHNICA of Bucharest, Romania

P2.9-6 The Reuse of Food Loss and Waste in the Viticulture Sector

R.Streche, O. Orza, C.S. Bosoc, C. Balaceanu and G. Suciu
R&D Department, BEIA Consult International, Bucharest, Romania

P2.10-25 Modelling, Simulation and Performance Analysis of K-Thermocouples using PSPICE

A. Grama, A. Fodor, C. Davidas, E. Stetco and O. Pop
Applied Electronics Department, Technical University of Cluj-Napoca, Romania

P2.11-29 The Advantages of using IoT technology in Monitoring and Dams Management

A. F. Flutur, S. S. Pop, V. Bande1)
1)Applied Electronics Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P2.12-39 System for Electronic Control Unit Sniffing

S. V. Okishelov1), B. I. Evstatiev1), and S. Y. Kadirova1)
1) Department of Electronics, University of Ruse Angel Kanchev, Ruse 7017, Bulgaria

P2.13-47 Evaluation of Usage of Solid State MOSFET Switches in Test Equipment for SENT Automotive minSensors

N. I. Gross, P. Svasta
Electronics, Telecommunications & Information Technology, UNST POLITEHNICA of Bucharest, Romania

P2.14-51 Real-time Data Analysis Using Industrial Sensors

I. Szabo1) and A. Tulbure2)
1) UNST POLITEHNICA of Bucharest, University Center of Piteşti, Romania
2) Department of Informatics, Mathematics & Electronics, "1 Decembrie 1918" University of Alba Iulia, Romania

P2.15-68 Data Switch in Long Line 1-Wire Networks for Monitoring System of Large Sensor Arrays

B. Olteanu, V. Nicolau, and M. Andrei
Department of Electronics and Telecommunications, "Dunarea de Jos" University of Galati, Galati, Romania

P2.16-79 PCB design for reduced thermal drift for current measurements through shunt resistors

T. Ursutiu, G. Chindris, R. Fizesan, M. Taut and A. Taut
Applied Electronics Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P2.17-87 Vibration measurement system based on a MEMS microphone array

M. Marinca, E. Ilies, A. Gontean, S. Bularka and C. Barbulescu
Applied Electronics Department, Politehnica University, Timisoara, Romania

P2.18-88 Algorithms for Processing Signals of Driver Fatigue Detection Sensors in Traffic

D. Ioana, I. B. Bacis, A. Vasile
National University of Science and Technology POLITEHNICA of Bucharest, Romania

P2.19-2 From Classic Grids to Smart Grids - Evaluating the Energy Consumption of the Public Lighting System in Cluj-Napoca

H. Pop1),3), A. Fodor2), A. Grama2)
1) Cluj-Napoca City-Hall, Cluj-Napoca, Romania
2) Applied Electronics Department, Technical University of Cluj-Napoca, Romania
3) Basis of Electronics Department, Technical University of Cluj-Napoca, Romania

P2.20-4 Intelligent green electricity management system

C. Huţanu, Gh. Marc1)
Department of Informatics, Mathematics and Engineering, Faculty of Informatics and Engineering, "1 Decembrie 1918" University, Alba Iulia, Romania
1) Energy Services providing Company, Polytechnic University of Timisoara, Romania

P2.21-8 Digital Twin Architecture for an Automated PV System with Self-Testing Capabilities

R. Rotar, N. Vârtaci1), M. Bălaș2), F. Opriţoiu3) and M. Vlăduţiu4)
Department of Computer Science, Politehnica University, Timisoara, Romania
1), 2) Department of Automation and Applied Informatics, Aurel Vlaicu University, Arad, Romania
3), 4) Department of Computer Science, Politehnica University, Timisoara, Romania

P2.22-28 The Influence of Temperature on The Efficiency of a Mini Photovoltaic Panel
I. H. Baciu and A. Fodor
Applied Electronics Department, Technical University of Cluj Napoca, Cluj Napoca, Romania

P2.23-31 Comparative Studies of Temperature Influence on Characteristics of Dye Sensitized and Silicon Based Solar Cells
M.-C. Mareș, C. Ionescu, and P. Svasta
Centre for Technological Electronics and Interconnection Techniques, UNST POLITEHNICA of Bucharest, Romania

P2.24-84 Thermal Energy Harvesting from Small Sources Using TEGs
M. V. Popescu, A. I. Molcut, S. Lica and I. Lie
Applied Electronics Department, Politehnica University Timisoara, Romania

Friday, October 20

11:30 – 13:30   **Plenary Oral Session 4**
EEST | GMT +3h

Session Chair: Daniel COMEAGĂ, UNST POLITEHNICA of Bucharest
Session Co-Chair: Cătălin CONSTANTINESCU, University of Craiova, Romania

11.30 KN3.1 Multiphysics Modeling of Semiconductor IC Packaging and Systems
Rajen MURUGAN, Texas Instruments, Inc.

12.15 OS4.1 The Advanced Packaging Master Plan for Europe
Bogdan Mihailescu,
National University of Science and Technology POLITEHNICA of Bucharest, Romania

12.40 OS4.2-41 Innovative HDL Lessons Targeting the terasIC DE10-Lite Intel FPGA Platform
Ioana Ailenei; Dan Nicula; Catalin Ciobanu
Universitatea Transilvania Brasov

13.05 OS4.3-44 TIE-M Plus: Promoting Structural Analysis Learning with Competition
Iulia E Tinca[1]; Philip Gh Coanda[2]; Tamas Krausz[3]; Iulian I Ailinei[3]; Ionut Verzes[4];
Constantin Popescu[4]; Aurelian Botau[1]; Paul Svasta[2],
[1] Continental Automotive, Romania
[2] National University of Science and Technology POLITEHNICA of Bucharest, Romania
[3] Politehnica University of Timisoara, Romania
[4] Continental Autonomous Mobility, Romania

Friday, October 20

14:30– 16:30   **Poster Session 3 (Start with a pitching session*)**
EEST | GMT +3h

Session Chair: Ciprian IONESCU, National University of Science and Technology POLITEHNICA of Bucharest, Romania
Session Co-Chair: Bálint MEDGYES, Budapest University of Technology and Economics, Hungary

P3.1-5 Handwritten letter recognition using mathematical morphology
D. Abrudan, A.M. Drăgulinescu, and N Vizireanu
Telecommunications Department, UNST POLITEHNICA of Bucharest, Romania

P3.2-18 Latency Hiding of Log-Depth Scan and Reduce Networks in Heterogenous Embedded Systems
M. Antonescu[1], M. Maliţa[2], and G.M. Ştefan[1]
1) DCAE, ETTI, UNST POLITEHNICA of Bucharest, Romania
2) Computer Science, Rivier University, Nashua, NH/USA

P3.3-20 Monitoring Hospital Activity Through Petri Nets
C. Corches[1], M. Daraban[2], and L. Miclea[1]
1) Automation Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania
2) Applied Electronics Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P3.4-33 Microcontroller communication using Yagi antenna at 2.4 GHz
N. Nistor, B. Dumitrascu, L. Baicu
Department of Electronics and Telecommunications,University "Dunarea de Jos" of Galati, Romania

P3.5-37 Implementation of a high accuracy pupil detection algorithm using neural networks
G. Bonteanu, P. Bonteanu, A. Cracan and R. G. Bozomitu
Faculty of Electronics, Telecommunications and Information Technology,
"Gheorghe Asachi" Technical University, Iaşi, Romania

P3.6-40 2.4 GHz bandwidth spectrum analyser with frequency change using microcontroller
B. Dumitrascu, L. Baicu, and N. Nistor
Department of Electronics and Telecommunications, University "Dunarea de Jos" of Galati, Galati, Romania

P3.7-55 A green mobile One Health laboratory for infectious disease epidemics
G. Suciu, C. Stalidi, L. Marcu
R&D Department BEIA Consult International Bucharest, Romania

P3.8-60 The Impact of User Navigation Applications in Residential Areas

Y. K. Jawad1), and M. Nitulescu2)

1) Doctoral School, Faculty of Automation, Computers and Electronics / University of Craiova, Craiova, Romania 2) Department of Mechatronics and Robotics, Faculty of Automation, Computers and Electronics / University of Craiova, Craiova, Romania

P3.9-63 Embedded system for charging alkaline batteries

L. Baicu, M. Andrei, B. Dumitrascu

Department of Electronics and Telecommunications, University "Dunarea de Jos" of Galati, Romania

P3.10-69 IoT System for Vine Disease Monitoring

M. Hnatiuc, A.-E. Constantin, R. C. Dumitru, D. Alpetri

Electronic and Telecommunication, Constanta Maritime University

P3.11-75 Rapid Maintenance based improved design for omnidirectional controlled wheels for VirtuSphere system

L.C. Bazavan, D.Coman1), H. Roibu , S.I. Cismaru, A.Petrisor2) and N.G. Bîzdoacă

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1) Department of Engineering and Management of the Technological Systems, Faculty of Mechanics, University of Craiova, Craiova, Romania

2) Department of Electrical, Energy and Aerospace Engineering, Faculty of Electrical Engineering, University of Craiova, Craiova, Romania

P3.12-3 How to improve the scrap rate in data control modules using the DMAIC model and statistical analysis

C. O. Olenici1), A.P. Pugna1) and S.A. Potra1)

1) Management Department, Faculty of Management in Production and Transportation, Politehnica University Timisoara, Timisoara, Romania

P3.13-73 Preemptive Real Time Operating System for Low Power Microcontrollers

T. Cernat1), M. Daraban1), C. Corches2), G. Chindris1)

1) Applied Electronics Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

2) Automation Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P3.14-74 Embedded Scheduler with Task Reset Capabilities

R. Chechisan1), M. Daraban1), C. Corches2), G. Chindris1)

1) Applied Electronics Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

2) Automation Department, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P3.15-77 Implementation of holonomic kinematics in industrial vehicles

C. I. Oprita, L. Viman

XC-HWP/EDX-RO, SC Robert Bosch SRL, Cluj-Napoca, Romania

Applied Electronics, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

P3.16-78 Improving accuracy of ultrasonic distance measurement with microcontroller and adaptive process formula.

S.Epure, N.Nistor, B. Dumitrascu

Department of Electronics and Telecommunications,"Dunarea de Jos" University of Galati

P3.17-80 IoT - Home Management Device for Temperature and Humidity

R. S. Csatlos, A. Taut, G. Chindris, M. Taut

Applied Electronics Department, Technical University of Cluj-Napoca, Romania

P3.18-82 A Method to Control of a Semi-Autonomous Vehicle

A. Taut, G. Chindris, M. Daraban, M. Taut, R. Pop

Applied Electronics Department, Technical University of Cluj-Napoca, Romania

P3.19-83 Cloud based Real-Time Data Acquisition for Industrial Applications

E. M. Olariu[1], C. Vlasin[2], O. Balaj[1] and H. C. Hedesiu[1]

1) Electrical Engineering, Technical University of Cluj Napoca, Cluj Napoca, Romania
2) National Instruments Romania, Cluj Napoca, Romania

P3.20-17 IR-Scanning vs. PSIM-Thermal Simulation concerning πT Stress Factor used in Synchronous Buck's Reliability Calculation

D. Butnicu[1], R. Tristu[2]

 1) Electronics Faculty Technical University of Iasi, Romania
2) Electronics Department Technical College R. Radulet, Brasov, Romania

P3.21-57 Energy Consumption Analysis of a Network of Sensors and Energy Consumption Optimization Methods

L.-M. Fotescu (Burciu), R.-P. Fotescu, R.-C.Constantinescu, P. Svasta and B. Alexandrescu

ETTI, UNST POLITEHNICA of Bucharest, Romania

P3.22-19 Performance of lithium ion cells used in electric vehicles depending on their internal resistance

R.-P. Fotescu (Burciu), L.-M. Fotescu, R.-C.Constantinescu, P. Svasta and B. Alexandrescu

ETTI, UNST POLITEHNICA of Bucharest, Romania

P3.23-42 Condition Monitoring in Inverters for Enhanced Reliability

C. R. Mitulescu[1], B. Mihăilescu[1], M. Moise[1], P. Svasta[1]

1) CETTI, UNST POLITEHNICA of Bucharest, Romania

P3.24-81 Adaptive Battery Management System with Active Cell Balancing

I. Apetroaie, A. Taut, G. Chindris, M. Taut

Applied Electronics Department, Technical University of Cluj-Napoca

P3.25-85 A New Triple-Stacked Step-Up Converter for High Voltage Gain

S. Lica, M. V. Popescu, I. Lie and D. Lascu

Applied Electronics Department, Politehnica University Timișoara, Timișoara, Romania

P3.26-89 Design of a Temperature Controller for an Oven
C. Farcas, I. Ciocan, and A. Tulbure1)
Department of Applied Electronics, Technical University of Cluj-Napoca, Romania
1) Department of Precise and Engineering Sciences, "1 Decembrie 1918" University of Alba Iulia, Romania

Friday, October 20

16:30 – 17:30   Industrial Session 3
EEST | GMT +3h

Session Chair: Bogdan MIHĂILESCU, UNST POLITEHNICA of Bucharest, Romania
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Friday, October 20

(Casa Universitarilor - Nicolae Romanescu Room, first floor)

07:30 – 08:00	**TIE 2023 contest preliminary activities**
08:00 – 12:30	**TIE 2023 CONTEST**
12:30 – 13:30	*Lunch Break**
13:30 – 17:45	**Assessment of the projects; litigations**
17:45 – 18:45	**TIE Plus 2024 There are things to discover**
17:45 – 18:45	**Steering Committee Meeting**
19:00 – 20:00	**Awarding ceremony for TIE 2023 contest**
	(University of Craiova - Aula MIHAI I)
20:30 – 22:00	*Dinner** **(University of Craiova - Aula MIHAI I)**

Saturday, October 21 (TIE)

09:00 – 11:00	**Event retrospective**

*** Sweets offered by: PROMAX ENTERPRISE CO SRL**
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TIE 2023 Co-Chair:
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Dear partners from academic environment, students, and industry fellows,

Welcome to the 32nd edition of TIE, an event that has been meticulously crafted through close collaboration with professionals from both academic and industrial engineering committees in Romania. This thrilling event is currently unfolding in the vibrant city of Craiova. Our primary objective with TIE is to nurture a robust community dedicated to providing young and enthusiastic students with a platform to showcase the skills they have honed through their coursework, internships, and personal interests.

Within the context of the competition, we strive to illuminate captivating facts and industry challenges that can serve as catalysts for students to channel their creativity using cutting-edge PCB layout technologies. The certificate conferred upon participants at the culmination of this intense and demanding competition period carries substantial weight in the eyes of employers, often being seen as a "guarantee" of a prosperous career ahead.

In addition to the competition itself, we are presented with an exceptional networking opportunity. The convergence of academia, industry, and students provides a forum for discourse on the latest developments in electronic packaging, growth areas in the field, and, for employers, the perfect opportunity to find potential talented participants for their future job opportunities.

Through all these endeavors, we aim to give back to the community, recognizing that we, too, once stood in the shoes of these students and cherished the support we received.

Therefore, we come towards our future colleague, you, the TIE competition student with a contest subject that was refined, like a good wine, which will put you in a position to develop a bleeding edge state-of-the-art electronic module used to interconnect the latest technologies from today!

Mihai Marian Cenușă

Continental Automotive Romania (Iasi)

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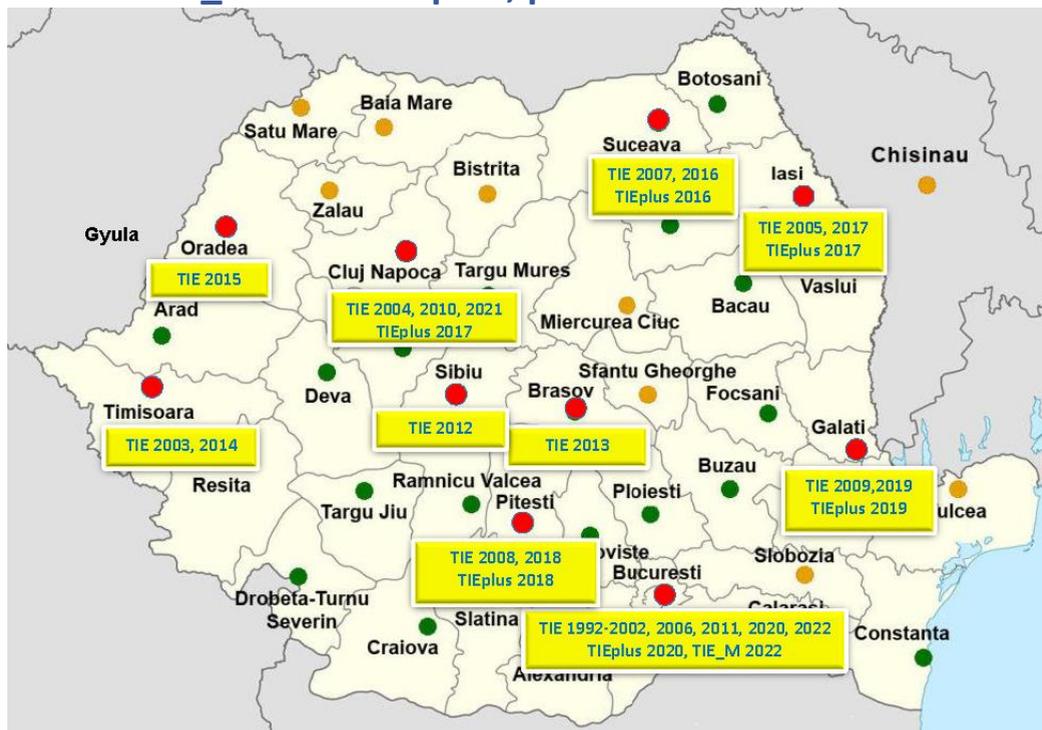
Year	University	Event
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2004	Technical University of Cluj-Napoca	TIE
2005	Gh. Asachi Technical University of Iaşi	TIE
2006	University Politehnica of Bucharest	TIE
2007	Ştefan cel Mare University of Suceava	TIE
2008	University of Piteşti	TIE
2009	Dunărea de Jos University of Galaţi	TIE
2010	Technical University of Cluj-Napoca	TIE
2011	University Politehnica of Bucharest	TIE
2012	Lucian Blaga University of Sibiu	TIE
2013	Transilvania University of Braşov	TIE

2014	Politehnica University of Timişoara	TIE
2015	University of Oradea	TIE, TIE^{Plus} Kick-off
2016	Ştefan cel Mare University of Suceava	TIE, TIE^{Plus}
2017	Gh. Asachi Technical University of Iaşi	TIE, TIE^{Plus}
2018	University of Piteşti	TIE, TIE^{Plus} 1st TIE bootcamp
2019	Dunărea de Jos University of Galaţi	TIE, TIE^{Plus}
2020	University Politehnica of Bucharest - Virtual Event	TIE, TIE^{Plus}
2021	Technical University of Cluj-Napoca - Virtual Event	TIE, TIE^{Plus}
2022	University Politehnica of Bucharest	TIE, TIE_M Kick-off
2023	University of Craiova	TIE, TIE_M
	Politehnica University of Timişoara	TIE^{Plus}, TIE_M^{Plus}
2024	Lucian Blaga University of Sibiu Continental Automotive Sibiu	TIE, TIEplus, TIE_M, TIE_Mplus, TIEμ

TIE Winners

Year	Name	University
2022	Ciucardel Nicolae-Marian	University of Piteşti
2021	Alexandru Ioniță	Technical University of Cluj Napoca
2020	Victor Țurca	Ştefan cel Mare University of Suceava
2019	Ghineț Dragoș	Technical University of Cluj Napoca
	Chiraș Ovidiu Marius	Ştefan cel Mare University of Suceava
2018	Goglea Alexandru Nicolae	University of Piteşti
2017	Cojocariu Gheorghe	Ştefan cel Mare University of Suceava
2016	Voina Radu	Technical University of Cluj Napoca
2015	Luchian Teodor	Ştefan cel Mare University of Suceava
2014	Grigoraş Eduard	Ştefan cel Mare University of Suceava
2013	Bostan Adrian	University Politehnica of Bucharest
2012	Aldea Alin	University of Piteşti
2011	Precup Călin	Politehnica University of Timişoara
2010	Dungă Tudor Dan	Politehnica University of Timişoara
2009	Răducanu Bogdan	University Politehnica of Bucharest

2008	Oşan Adrian	Politehnica University of Timişoara
2007	Tamaş Cosmin Andrei	University Politehnica of Bucharest
2006	Moscalu Dragoş	Gh.Asachi Technical University of Iaşi
2005	Andreiciuc Adrian	Politehnica University of Timişoara
2004	Berceanu Cristian	Politehnica University of Timişoara
2003	Munteanu George	University Politehnica of Bucharest
2002	Rangu Marius	Politehnica University of Timişoara
2001	Toma Corneliu	University Politehnica of Bucharest
2000	Vlad Andrei	University Politehnica of Bucharest
1999	Savu Mihai	University Politehnica of Bucharest
1998	Alexandrescu Dan	University Politehnica of Bucharest
1997	Gavrilaş Cristian	University Politehnica of Bucharest
1996	Vintilă Mihai	University Politehnica of Bucharest
1995	Ştefan Marius Sorin	University Politehnica of Bucharest
1994	Bucioc Mihai	University Politehnica of Bucharest
1993	Teodorescu Tudor	University Politehnica of Bucharest
1992	Teodorescu Tudor	University Politehnica of Bucharest

Recognition by the industry of student competences in PCB design

TIE 2023 Certificate of Competence

The „PCB Designer" certificate is awarded, after evaluation, by the TIE IC (Industrial Committee) to selected contestants, as recognition of their high level of knowledge in the field of EDA and CAD for development of electronic modules/assemblies. The evaluation is based on the worldwide known and accepted IPC standards. The certificate is offered under the "umbrella" of the Association for Promoting Electronics Technology (APTE).

Please see more details on www.apte.org.ro.

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National University of Science and Technology POLITEHNICA of Bucharest

Technical University of Cluj-Napoca

University of Craiova

Dunărea de Jos University of Galaţi

National University of Science and Technology POLITEHNICA of Bucharest, University Center of Piteşti

Lucian Blaga University of Sibiu

Ştefan cel Mare University of Suceava

Politehnica University of Timişoara

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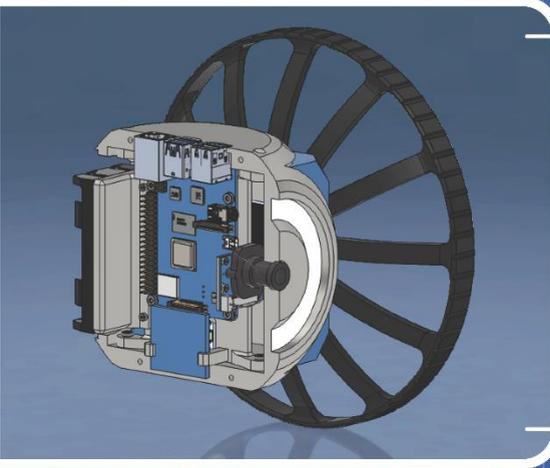
20 October 2023
Craiova

About TIE

SIITME

Friday, October 20

(Casa Universitarilor – Mihai Eminescu Room, first floor)

07:30 – 08:00	**TIE_M 2023 contest preliminary activities**
08:00 – 12:30	**TIE_M 2023 CONTEST**
12:30 – 13:30	*Lunch Break**
13:30 – 17:45	**TIE_M Assessment of the projects; litigations**
17:45 – 18:45	**TIE_M 2023 subject demystification (relevant for TIE participants)**
17:45 – 18:45	**Steering Committee Meeting**
19:00 – 20:00	**Awarding ceremony for TIE_M contest**
	(University of Craiova - Aula MIHAI I)
20:30 - 22:00	*Dinner** **(University of Craiova - Aula MIHAI I)**

* Sweets offered by: PROMAX ENTERPRISE CO SRL
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Discover Continental Sibiu: https://youtu.be/na9HQYdkRUE

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- high power generators for emergency situations;
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ICCO EMT, established in 1997, is a supplier for producers in the electronic industry, offering specialized equipment and service. Over the years, the company collected experience in implementing sophisticated equipment necessary for electronic production process. We set up and supply solutions for turn-key electronic production and complete production lines. ICCO EMT aims to act as a dynamic organization, oriented towards performance and quality, which is why we have implemented the Quality Policy.

Due to the high diversity of the products we offer to our customers, we are now able to configure and provide turn-key solutions for electronic production, fully functional manufacturing lines.

Kulicke & Soffa (NASDAQ: KLIC) is a leading provider of semiconductor and electronics assembly solutions serving the global automotive, consumer, communications, computing, and industrial markets.

AMX offers customized and smart automation solutions for the automotive industry (EV - PHEVs) and strong experience and worldwide patents in power electronic equipment (Sintering Press - Silver Sintering/Copper Sintering and Scanning Acoustic Microscopy).

Miele - Premium brand for more than 120 years.

MIELE BRAȘOV

SOFTWARE TECHNOLOGY AREA

PRODUCTION AREA
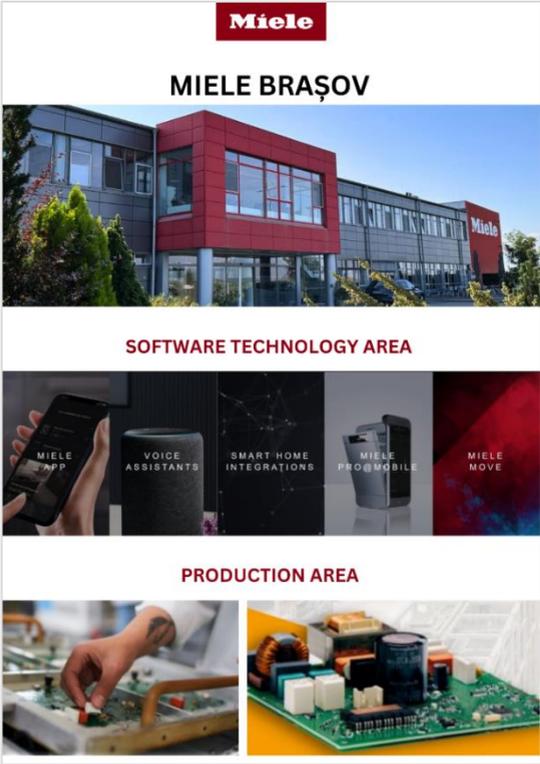
As the world's leading manufacturer of premium domestic appliances, we create delightful experiences – not only regarding the quality of our products, but also in terms of performance, design, technology, and sustainability. Miele Tehnica is part of Miele & Cie. KG, Germany - Smart Home Division.

Miele is present in Brasov since 2009 with two division **Software Technology Area a Production plant, production plant** that provides the group with the necessary electronic components and subassemblies for the control units of the smart home appliances

In our **Software Technology Area**, we have been developing new competencies since 2015, growing our business with the Development Center Area (Electronic Product Development and Digital Product Development) and the Global IT (IT Service Desk, IT Infrastructure, and IT Engineering). Within the Software Technology Area, we create and develop innovative, digital solutions that inspire customers.

Applying Agile methodology in Development Center we transform the product vision into real products, creating top-of-the-range next generation products with flexible designs.

The facility in Brașov is equipped with state-of-the-art technology and all quality requirements are respected according to the Miele Group's standards. The Miele products set the standards for durability, performance, ease of use, energy efficiency, design and service products.

Our philosophy "Immer besser - Always better", determines us to continue to develop and make high quality products. "We at Miele develop ourselves to have a premium experience" - this is our vision in Brasov, a vision that guides us in our daily activity. Miele premium brand has been built on trust and respect, values that recommend us as a desired employer in Romania.

FOLLOW US & DISCOVER OUR WORLD BY YOURSELF!

Str. Carl Miele, nr. 1
Feldioara, Brașov

recrutare@miele.ro

0736.700.681
0738.299.826

Microchip Technology Inc.

is a leading Total System Solution Provider for High-performance standard and specialized Microcontrollers, Digital Signal Controllers and Microprocessors, Mixed-Signal, Analog, Interface and Security solutions, FPGA, connectivity, memories and power management semiconductors.

The company's solutions serve more than 130,000 customers across the industrial, automotive, consumer, aerospace and defense, communications and computing markets.

Headquartered in Chandler, Arizona, Microchip has 75 offices worldwide and over 20,000 employees and has had 123 consecutive quarters of profitability and a Revenue of over $8.3 billion.

Microchip's Romania Design Center (RDC is home to more than 10 different Business Units handling analog, digital and mixed signal product development (design, verification, validation), software development, field technical customer support, 8, 16 and 32 bits microcontrollers and microprocessors design and applications development.

With around 345 employees in our AFI Business Park Office (next to Bucharest Polytechnics University), RDC has a very well-developed internship program with more than 24 openings/year. Many of our engineers have started thru an internship and remained full-time employees over the years. We encourage long term professional development and provide mentorship and guidance to our students.
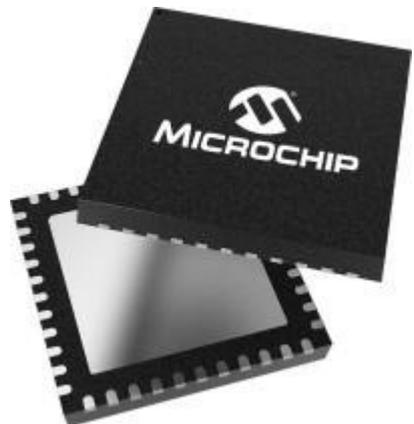
"Accelerate your career with a fast-growing global engineering group.

SEGULA Technologies is a global engineering group, serving the competitiveness of all major industrial sectors: automotive, aeronautics, energy, rail, naval, life sciences and telecommunications. With a presence in more than 30 countries and 140 offices worldwide, the Group favours a close relationship with its clients thanks to the skills of its 13,000 employees. As a leading engineer who places innovation at the heart of its strategy, SEGULA Technologies carries out large-scale projects, from research to industrialization and production.

At SEGULA, you'll be working on exciting projects and helping to shape the future as part of a company where innovation goes hand in hand with engineering. The factory of the future, new forms of mobility, renewable energies, hydrogen, cyber security, and artificial intelligence are all part of the daily lives of our ingenious staff - so why not yours? Whether it's near you or at the other end of the world, at SEGULA Technologies you'll find the opportunity that will give new meaning to your career!"

For more information: www.segulatechnologies.com -
Follow SEGULA Technologies on [Twitter](), [Facebook]() and [LinkedIn]()

ALTAIR
CHANNEL PARTNER
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Changing Tomorrow, Together

When data science meets rocket science, incredible things happen. The innovation our world-changing technology enables may feel like magic to users, but it's the time-tested result of the rigorous application of science, math, and Altair.

Our comprehensive, open-architecture simulation, artificial intelligence (AI), high-performance computing (HPC), and data analytics solutions empower organizations to build better, more efficient, more sustainable products and processes that will usher in the breakthroughs of tomorrow's world. Welcome to the cutting edge of computational intelligence – no magic necessary.

Electronics are a part of our lives – both professionally and personally – with the latest gadgets delivering an immediate gateway to the world. Innovation, time to market and lower cost are the keys to electronics success, and the pressures to quickly deliver innovative products at lower cost is intense. Altair's simulation-driven design delivers a smarter approach to electronics product development.

SiMART3D
engineering software & services
www.simart3d.ro

SiMART mission is to implement in Romania the latest design and engineering software technologies. Our offer consists of one of the most complex CAE, data analysis and HPC platforms.

We offer:
- Full range of Altair software solutions.
- Technical support and specialized trainings
- Finite element models, static and dynamic structural analysis, NVH and Durability.

MARVELL™

Building the Future of Data Infrastructure

Marvell Technology, Inc. (NASDAQ: MRVL) develops and delivers semiconductor solutions that move, store, process and secure the world's data. As a trusted leader in essential data infrastructure semiconductor technology, Marvell's cloud-optimized silicon powers innovation in cloud and AI, carrier infrastructure, automotive and enterprise networking markets. With a comprehensive portfolio of electro-optic, Ethernet, processor, security and storage products and IP, the company offers merchant, semi-custom and fully custom options to address a range of customer requirements.
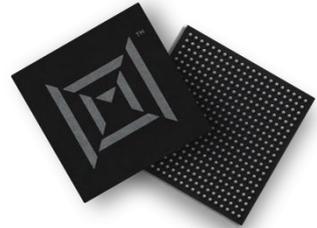
To learn more, please visit us at www.marvell.com.
Scan the QR code to view the Marvell 101 video.

Multi-scale Microscopy in Materials Science
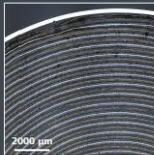Connecting scales: the key to understanding the materials properties of batteries
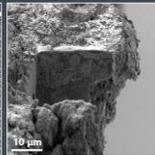
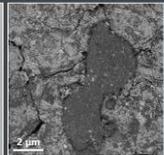| Commercially available batteries | Stereo Microscopy Macroscopic overview of cross section | X-ray Microscopy Non-destructive tracking of microstructure | Light Microscopy Architecture of electrodes | FIB-SEM Ion beam cross section | FE-SEM Material contrast detail image |
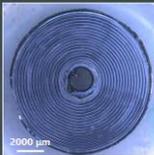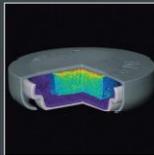
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microscopy@zeiss.com
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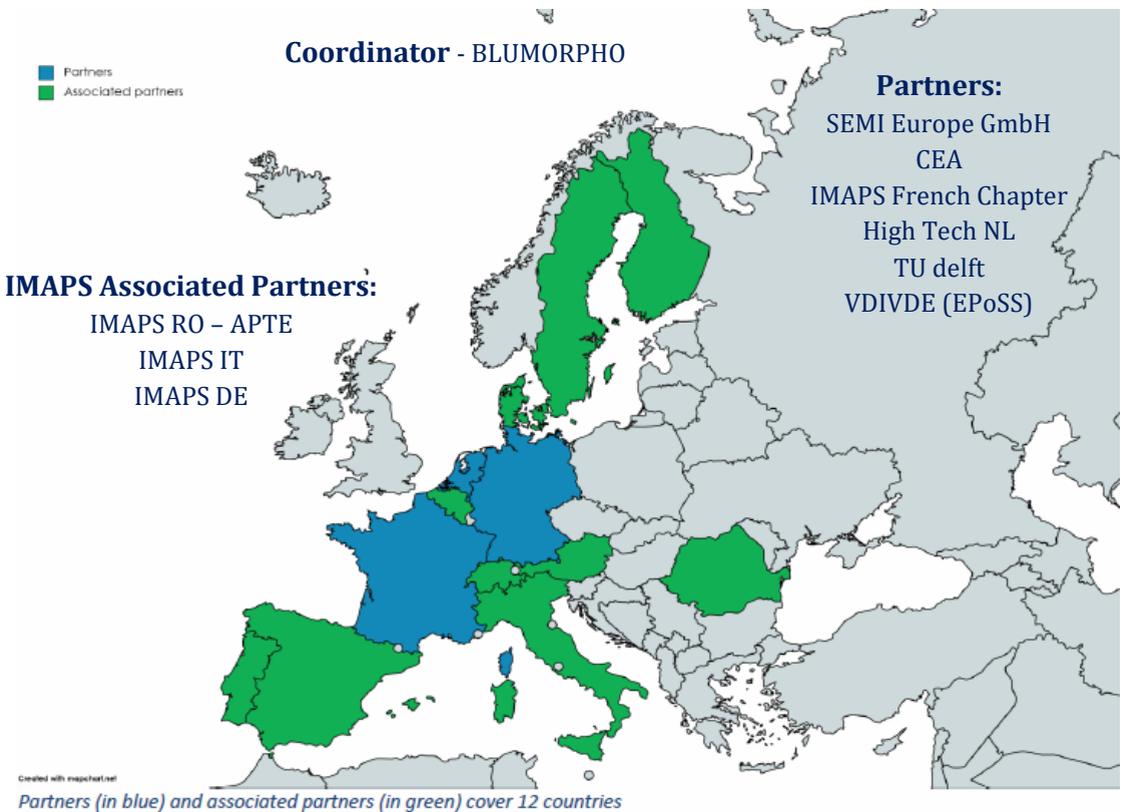
ZEISS
Seeing beyond

KDT JU
Key Digital Technologies Joint Undertaking

PACK4EU

PACK4EU Project
BOOSTER PACKAGING FOR EUROPE

PACK4EU Project has **two main objectives**, the "Creation of the Pan-European network" and as the second one to "give guidance" to the policy makers of the trilogue, European Council, Member States (MS), the Parliament, who ask what to do for the entire value chain.

PACK4EU Partners and Associated Partners

Coordinator - BLUMORPHO

■ Partners
■ Associated partners

Partners:
SEMI Europe GmbH
CEA
IMAPS French Chapter
High Tech NL
TU delft
VDIVDE (EPoSS)

IMAPS Associated Partners:
IMAPS RO – APTE
IMAPS IT
IMAPS DE

Created with mapchart.net
Partners (in blue) and associated partners (in green) cover 12 countries

Contact details:
Bogdan MIHĂILESCU – bogdan.mihailescu@apte.org.ro

Flamenco
Forward Looking Approaches for Green Mobility
Ecosystem Network Collaboration

About the Project

Project FLAMENCO is an ERASMUS+ Co-funded project with the main goal to analyse and pilot forward-looking approaches and methods to enable and make sustainable collaboration on the skills intelligence in the Automotive-Mobility Ecosystem.

The Purpose

The purpose of the Flamenco project is to make the collaboration of the existing partnership pragmatic and sustainable (outreach to other Pact for Skills partnerships as a good practice) so that it brings valuable information about new technological and societal trends, related skills needs training offer/needs and other goals in terms of the skills intelligence leading up to the re-/up-skilling within the European mobility ecosystem.

Activities

The project's main activities will be to analyse the sector in cooperation with stakeholders in terms of the needs, tools, requirements and goals of the sectoral collaboration on skills intelligence via different methods, such as

- desk research
- surveys or workshops
- identification of collaboration models
- development of unified methodology and approach

The project will produce recommendations and good practices in the form of case studies and will provide them alongside the tested, frequently updated and validated methods which are to be rolled-out in different Pact for Skills partnerships and sustained after the project ends.

acea
DRIVING MOBILITY FOR EUROPE

APTE

AUTOMOTIVE SKILLS ALLIANCE

educam

EURO SPI

ISCN
International Software Consulting Network

InterTradeCard

Olife

TRANSILVANIA IT

TU Graz

VSB TECHNICAL UNIVERSITY OF OSTRAVA
Project coordinator

www.project-flamenco.eu

Wallachia eHUB
Drive innovation and digitalisation to growth

Free services offered by Wallachia eHUB for companies

Innovation ecosystem & networking

Support to find investments

Skills and training

Digital innovation hub

Test before invest
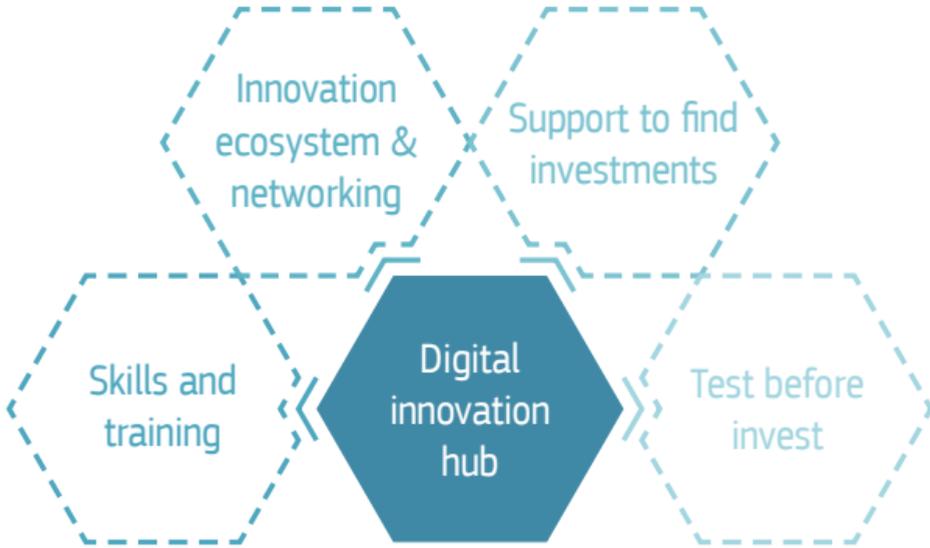
Project Coordinator:

Contact details:

Bogdan MIHĂILESCU – bogdan.mihailescu@apte.org.ro

WeH's profile – www.wallachiaehub.ro
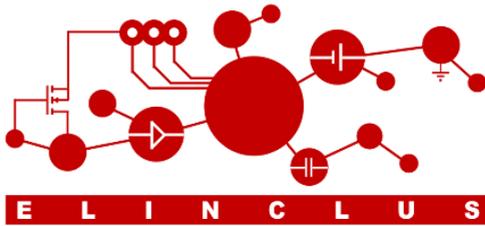
ELINCLUS ELectronic INnovation CLUSter

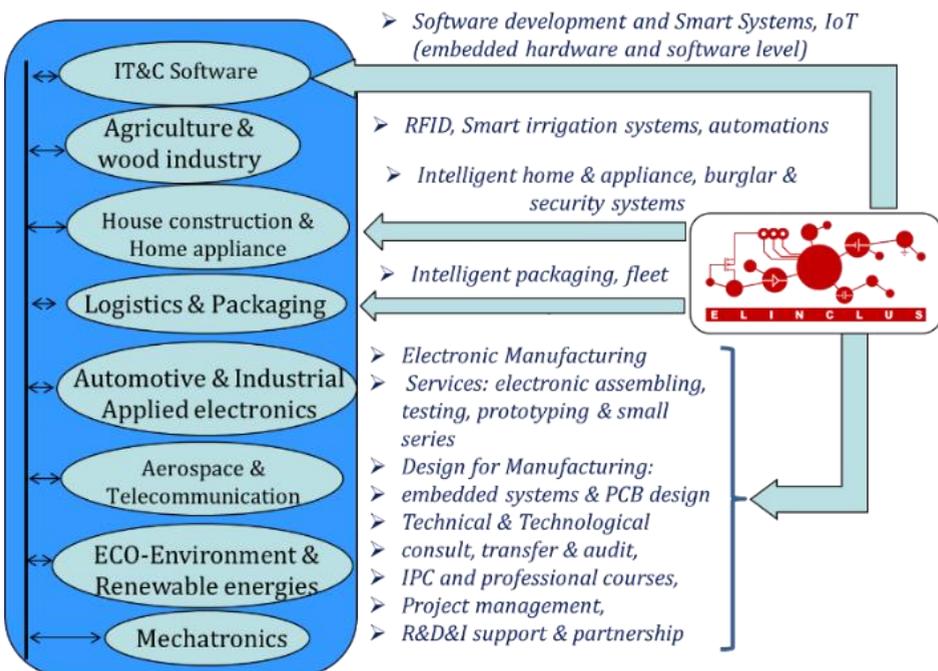**EMC**: Association for Promoting Electronics Technology – APTE (www.apte.org.ro)

Founded 2011; 94 registered members

President: Prof. DHC. mult. Paul SVASTA,Ph.D.

Executive Manager: Lect. Eng. Bogdan Mihăilescu, Ph.D.

- Founding member of the Clusters Association from Romania, CLUSTERO - www.clustero.eu
- European Cluster Excellence Initiative Silver Label Certificate from ESCA since 2016
- Founding member of the IT Cluster Network from Romania comprised of 9 members 9: Transilvania IT Cluster, ALT – Brașov, Banat Software, Innovative Clsuter Open Hub, INOMAR, **ELINCLUS**, ICT Oltenia, ICT Cluster Lower Danube şi Smart Alliance Cluster.
- Founding member of the regional Digital Innovation Hub – Smart e-Hub https://smartehub.eu/

- **E-mail**: office@elinclus.ro **Web page**: **www.elinclus.ro**

ASSOCIATION FOR PROMOTING ELECTRONICS TECHNOLOGY
(ASOCIAȚIA PENTRU PROMOVAREA TEHNOLOGIEI ELECTRONICE)
IMAPS ROMANIA

A globally-competitive workforce with theoretical, as well as applied engineering/hands-on, education must be trained. In addition to the areas of science, engineering, microelectronics, and packaging, this training must encompass the broader areas of business, economics, ethics, foreign culture, and languages.

The Association for Promoting Electronics Technology (APTE, see https://apte.org.ro/) is IMAPS Romania. APTE was founded in 2002, by the Center for Technological Electronics and Interconnection Techniques (UPB-CETTI) together with highly respected members of the electronics industry, in order to support the electronics packaging education and engineering, in a climate of trust, ethics, and social responsibility.

APTE/IMAPS Romania is the management entity of the ELINCLUS Cluster (see http://elinclus.ro/), which has currently 94 members. ELINCLUS was established starting from the economic relationship existing between UPB-CETTI (which developed a Technological and Business Incubator, entity accredited by the National Innovation and Technology Transfer Network – ReNITT) and companies from Bucharest and Ilfov county. This structure has offered to ELINCLUS the status of a regional cluster in the field of electronics.

APTE offers annually a comprehensive set of short courses and training classes in the area of electronics packaging, IPC standards certification, management, and industrial development, in order to serve the needs of the electronics industry. APTE organises annually The International Symposium for Design and Technology in Electronics Packaging (SIITME, see http://siitme.ro/) and the Interconnection Techniques in Electronics (TIE, see www.tie.ro/) Professional Student Design Contest.

Contact:
27-29 Callimachi Street
023496 - Bucharest, Romania
Phone: +40213169633
E-mail: apte@apte.org.ro

ITEC Information Technology in Electronics Research Center
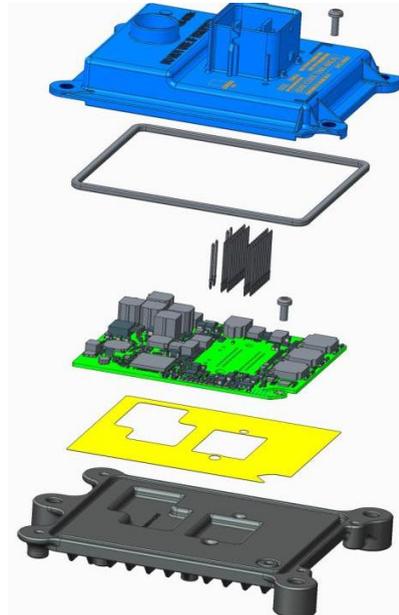
TECHNICAL UNIVERSITY OF CLUJ-NAPOCA ROMANIA

ITEC Research Center

belongs to the Technical University of Cluj-Napoca having 25 researchers in Embedded Systems (electronics & software). ITEC can access the entire infrastructure of Technical University of Cluj-Napoca, resources from all other research centers and resources from Romanian University Alliance.

ITEC Competencies

- Circuit design: modeling, simulation and cross-simulation of electronic circuits (analog, digital, power, RF/EMI) & system design: modeling and simulation for electro-mechanical systems: power devices, actuators, mechatronics;
- HW Application design: fast-prototype design, PCB design for mass production, BOM/AVL design, DfM & DfT for embedded applications, power supplies, interface/signal conditioning boards;
- SW Application design: embedded control applications for OS and non-OS targets;
- TW Application design: testing and design of testing systems: SW and HW testing process, HiL and SiL, design of test-cases for SW;
- Training services: LabVIEW trainings, Embedded Systems trainings, TW and HiL operation;
- PCB DESIGN: DfX, SI and PI.

Contact

Information Technology in Electronics Research Center | Technical University of Cluj-Napoca 400027, G. Baritiu 26-28, Cluj-Napoca, Romania | E-Mail: gabriel.chindris@ael.utcluj.ro

SIBIU WELCOMES TIE AND SIITME 2024

TIE 2024
- TIE, TIE M, TIE Mplus, TIEplus, TIEµ -
23rd - 26st of April 2024

In 2024, Sibiu will be honoured to host two key events for the electronics community: the popular student competition Interconnected Techniques in Electronics (TIE) with its related

SIITME 2024
CONFERENCE & EXHIBITION
30th edition
15th - 19st of October 2024

contests (TIEM,TIEMplus TIEplus, TIEµ) in spring (April 23-26, 2024) and the anniversary 30th International Symposium for Design and Technology in Electronic Packaging (SIITME) in autumn (October 16-19, 2024).

The Large Square (ro. *Piața Mare*), photo source: https://sibiucityapp.ro

The host town Sibiu, located centrally within Romania and close to the Carpathian Mountains, has immense touristic potential, combining stunning natural views with architectural wonders from its rich multicultural history. Economically, Sibiu is well connected, especially to the German-speaking countries of Central Europe. Academically, the "Lucian Blaga" University (LBUS), as the host institution of the events, has a tradition of over 50 years. Within LBUS, the Faculty of Engineering in particular is fortunate to have the powerful support and understanding from industrial partners such as Continental for creating an immersive and comprehensive learning experience for its students, especially related to electronics topics.

For these industrial partners, electronics is and will remain a field where better designs and materials can make a big difference. As Continental Sibiu celebrates 20 years of shaping the future of mobility, the two events will mark a new height in collaboration, not only within Sibiu or Romania, but also with neighboring countries and the wider electronics community. The TIE competition invests in the vibrant spirit of new ideas and student collaborations in spring, towards the end of the academic year, while SIITME provides an international forum for the dissemination of knowledge and scientific results in autumn, connecting representative cutting-edge technologies with scientists and companies. As in the previous editions, the presented papers will be indexed in international databases.

Looking forward to meeting you in Sibiu!

Prof. Maria Vinţan, PhD
Dean of the Faculty of Engineering, Sibiu

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Venue of the Electronic Week

The ELECTRONIC WEEK OF ELECTRONICS PACKAGING COMMUNITY 2023 will take place at the Aula MIHAI I of the **University of Craiova**, Alexandru Ioan Cuza Street no. 13 (*SIITME Conference and Exposition*) & at the **Casa Universitarilor**, Calea Unirii no. 57 (*2nd Summit of IEEE EPS & NTC Student Branch Chapters, Strategic Partnership for Education Workshop Professional Development Courses, TIE and TIE_M*).