Working Group / Task Force name

Participating organisations:

Responsible Project Partner	APTE	Contributing Project Partners	VSB-TUO, ISCN, ACEA, EuroSPI, ITC

Geographical scope:

Romania, Europe

The students that are participating in the competition are from Romanian technical Universities, but the sponsors, partners and exhibitors are from Europe wide.

Target group(s)

60% industry, 40% educational providers and students

The target groups are defined by thematic topics as students, educational provders and industry are invited to join to participate at the contest and exibition. Current thematic topics:

1. **Printed Circuit Boards Design (TIE-E):** This topic emphasizes the integration of computer aided design skills in electronic products, mainly PCBs.
2. **Innovations in Packaging Solutions (TIE-E Plus):** Here, the focus is on Power and Signal Integrity challenges in electronic modules.
3. **Materials and Manufacturing Processes (TIE-M):** This area computer aided design of mechanical structures, considering materials and innovative production processes.
4. **Advancements in Mechatronics (TIE-M Plus):** This section delves into professional structural analysis of mechanical designs.
5. **Trends and Technologies in Thermal Management (TIE-T Plus):** It addresses the critical aspects of thermal management in electronics.
6. **Unveiling Innovations in Micropackaging (TIE-µ**): This part highlights the future of micropackaging innovations.

Summary/short description:

The INTERCONNECTION TECHNIQUES IN ELECTRONICS (TIE) contest is a student professional contest whose objective is to promote technological computer aided design (CAE-CAD-CAM) of electronic modules. This contest brings together students from different Universities since 1992. Students have a great opportunity by taking part in this contest. A good organization and a total transparency during the contest are the main coordinates proving professionalism and fair-play among students keen on electronic packaging. Every year TIE gathers the talented student PCB designers form around the country in the ultimate showdown in which not only pride and glory are at stake, but also important prizes to be won. At the end of the contest, there can be only one winner, however, all contestants meeting a score margin established by the Industrial Advisor Committee receive a “Certificate of Competence”, recognizing their professional abilities as PCB designers. Being in close relations with the industry, TIE contestants are widely sought by highly appraised companies for internships and hiring after graduating their studies. As a result, many examples of past TIE contestant can be found in high ranking functions at important companies around the country and around the world, often returning to TIE as part of the “Industrial Advisor Committee”.

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Objectives:

APTE is dedicated to spearheading a Task Force aimed at fortifying and broadening collaborative efforts between the industrial sector and academic institutions, with a pivotal focus on fostering innovation and advancements in technology. A key aspect of this endeavor is to galvanize a new wave of professionals through invigorating competitions and expansive networking opportunities.

The primary objectives are centered around solidifying partnerships and nurturing a culture of knowledge sharing and certification of technical skills:

1. **Fortify and broaden collaboration** between the industrial sector and academic institutions.
2. **Galvanize a new wave of professionals** through competitions and networking opportunities.
3. **Solidify partnerships** and nurture a culture of knowledge sharing.
4. **Drive forward innovation** and facilitate productive collaboration through the TIE event.
5. **Establish enduring models of collaboration** that foster knowledge exchange and skill development.
6. **Construct a robust network** connecting industry professionals with students to catalyze technological breakthroughs and broaden educational opportunities.

Methodology:

In its role within this Task Force, APTE is committed to solidifying the bond between the academic community and the electronic technology industry. This is achieved by driving forward innovation and facilitating productive collaboration, specifically through the TIE event. The goal is to establish enduring models of collaboration that not only foster the exchange of knowledge but also contribute significantly to the development of skills pertinent to the field. The overarching aim is to construct a robust network connecting industry professionals with students, a network that is poised to catalyze technological breakthroughs and broaden the spectrum of educational opportunities.

a. **Leader**: Industrial Advisor Committee representing a consortium of experts and professionals in the field of electronic technologies, will lead the initiatives of the Task Force.

b. **Tandem Leader or Co-leader**: Paul Svasta (APTE), Bogdan Mihăilescu (APTE), Co-leaders with complementary expertise will be appointed based on the specific events (TIE) and the project's needs.

c. **Advisors**: Cosmin Moisa (Continental Automotive), Jakub Stolfa (ASA), Richard Messnarz (ISCN), Didier Stevens (ACEA). The group will include advisors from among industrial and academic leaders, with direct experience in organizing and managing TIE events.

d. **Ambassadors**: Cristina Lepădatu (APTE), Laura Aschenbacher (EuroSPI), Marius Tudor (ITC). Ambassadors will be designated to promote the group's activities and facilitate partnerships with industrial and academic entities involved in TIE.

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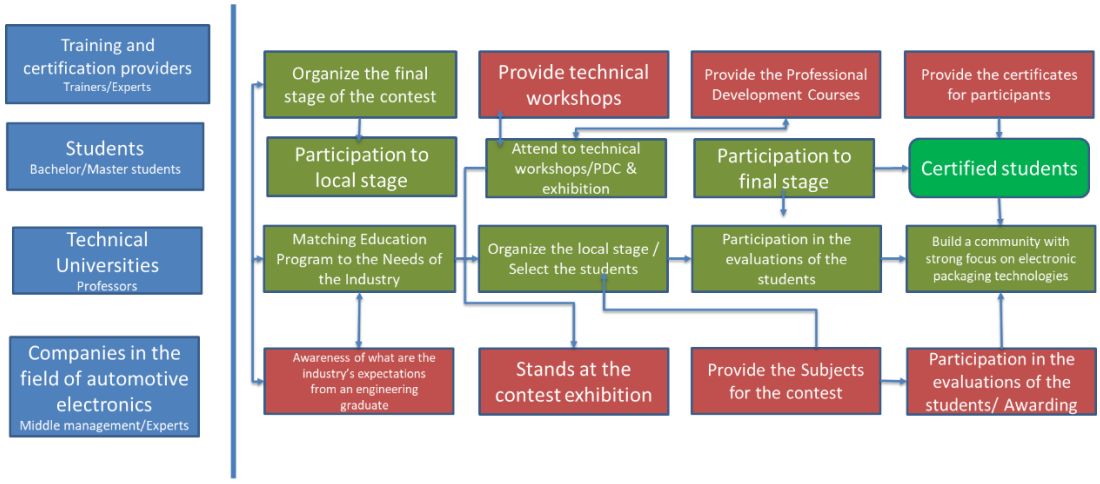

TIE Cooperation Model

Activities:

APTE is committed to crafting and executing an innovative collaboration framework, primarily focused on the TIE event. This model is designed to engage ASA members and extend beyond, encapsulating a comprehensive approach towards professional and academic synergy. Student Competitions: A core component of our approach is the initiation of student competitions specifically tailored for the TIE event. These competitions are intended to inspire creativity, foster innovation, and provide a platform for showcasing emerging talents in the field of electronic technology.

- Set up the contest committees
- Set up the contest subjects
- Set up the exhibition
- Organise the contest
- Manage the evaluation of the contestants
- Manage the diplomas
- Manage the awording ceremony
- Edit the annual TIE brochure and programme
- Attracting sponsors for TIE

Status Update / Best practices identified during the FLAMENCO Project:

Some of the best practices within the TIE events are presented below:

- Networking opening new opportunities between Academia and Industry
- All contestants meeting a score margin established by the Industrial Advisor Committee receive a "Certificate of Competence", recognizing their professional abilities as PCB designers.
- Companies can identify top talents from among the students participating in the contest
- Students gain experience about the design process performed as professional PCB Designer
- Companies participating in the exhibition gain higher visibility
- Students and academic representatives have access to technical presentations from companies

The overall implementation of the event is described below:

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Training and certification providers
Trainers/Experts

Description: The representatives from the Training providers and from the certification providers are members of the Technical Committee, they organize the contest, technical workshops , the Professional Development Courses and the PCB certificates.

Students
Bachelor/Master students

Description: Bachelor and Master students from technical universities that follow a specialisation curricula related to electronic technology, telecommunications, mechatronics and information technology.

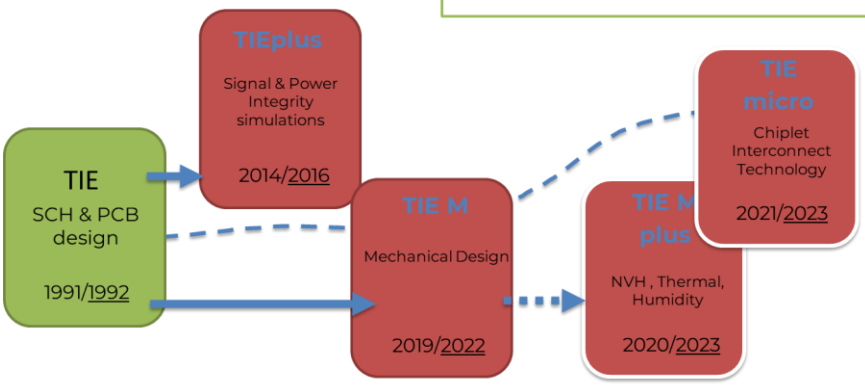
Technical Universities
Professors/Lecturers

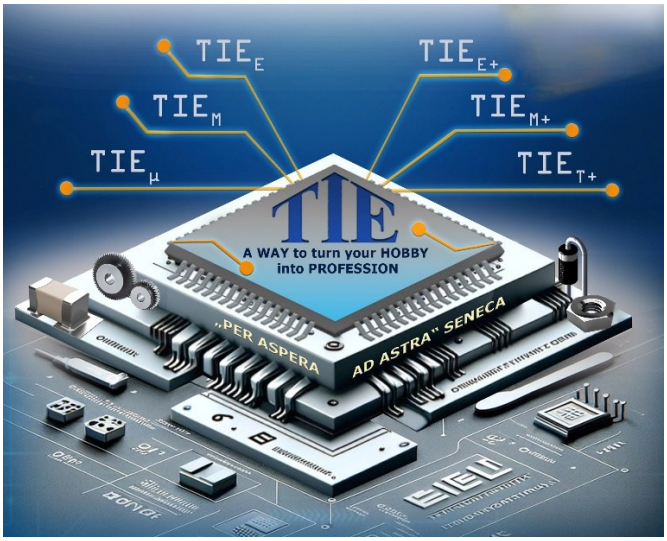
Description: Every Technical University prepare the students and organize the local stage of the contest and come with the winners at the national stage of the contest. Representatives from the Technical Universities are members of the Technical Committee and a part of them are in the Steering Committee. They evaluate together with the members of the Industrial Advisor Committee the participants of the TIE contest.

Companies in the field of automotive electronics
Middle management/Experts

Description: The representatives from the industry are members of the Industrial Advisor Committee, and a part of them are in the Steering Committee. They make the subjects for the contest and evaluate them together with the professors from the Technical University. The companies are also sponsors of the contest, Technical Sponsors, Platinum Sponsors or Gold Sponsors and they can have a stand at the contest exhibition.

Following design trends, the TIE event has evolved into several branches (spin-off contests) covering different areas of packaging expertise.





The current TIE events include 6 contests related to electronics design (TIE$_E$), mechanical design (TIE$_M$), electronics and mechanical analysis of electronic modules (TIE$_{E+}$, TIE$_{M+}$), thermal analysis (TIE$_{T+}$) and advanced chip packaging design (TIE$_\mu$)

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Challenges and risks:

The event organisational costs. As students don't have an income, their fee is usually covered by their University or local company. However there are uncertainties related to financing their travelling and accommodation costs.

Results / Assesed Progress

- Contestants meeting a score margin established by the Industrial Advisor Committee receive a "Certificate of Competence", recognizing their professional abilities as PCB designers.
- Companies can identify top talents from among the students participating in the contest
- Students gain experience about the design process performed as professional PCB Designer

Financial support:

TIE is financed by sponsorships and participation fees from companies.

Student teams expenses are also sponsored by the companies based on the proximity (usually the company finances the students from the regional technical university where they have a headquarters)

Replication and Sustainability:

Companies from ASA with a common field of interest (mechanical, electronics, automation, AI, etc.) where is a lack of highly trained human resources may come together to propose topics which may be approached by students (bachelor and master studies) from technical universities in Europe.

ASA- Automotive Skills Alliance

APTE will collaborate closely with ASA members and others, including Didier Stevens from ACEA, Laura Aschenbacher from EuroSPI, Richard Messnarz from ISCN, Georg Macher from TUG, and Svatopluk Stolfa from VSB-TUO, as well as other strategic partners to bring expertise and enhance the impact of the Task Force.

The results and progress of the Task Force will be communicated to the general public, ***but also with specific details protected and accessible only to direct members and partners.***

Further Reading and Acknowledgements:

Websites:

- https://tie.ro
- https://eecamp.eu/

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