



**Centrul de Electronică Tehnologică și  
Tehnici de Interconectare - CETTI,  
20 de ani de activitate în educația academică și  
cercetare în folosul industriei electronice**

# Precursori ai activităților de packaging electronic în facultatea E&Tc



Prof. Gheorghe  
CARTIANU  
(1907-1982)



Prof. Vasile  
CĂTUNEANU  
(1918-2002)

# Steps before creation CETTI

- **1968** – new course: ***Material Components and Assembling in Electronic Technologies- Materiale, Piese si Tehnologia Aparaturii Electronice - MPTAE*** with laboratory hands-on:
  - students developed a low complexity product using electronic technology of that time
    - learning stages:
      - ❖ interconnect structure design of electrical scheme
      - ❖ practical realization of PCB
      - ❖ placement and soldering of components.
      - ❖ final electrical measurements
- **Until 1989**, the ***TEF Department***, together with other departments of the faculty E & Tc. (***DCAE, Applied Electronics, Radiocommunication and Telephone - Telegraph***), are involved in a number of projects finalized by products that were further required by a broad range of beneficiaries: industry, research institutes, Ministry of Defence, Ministry of Sport, etc.

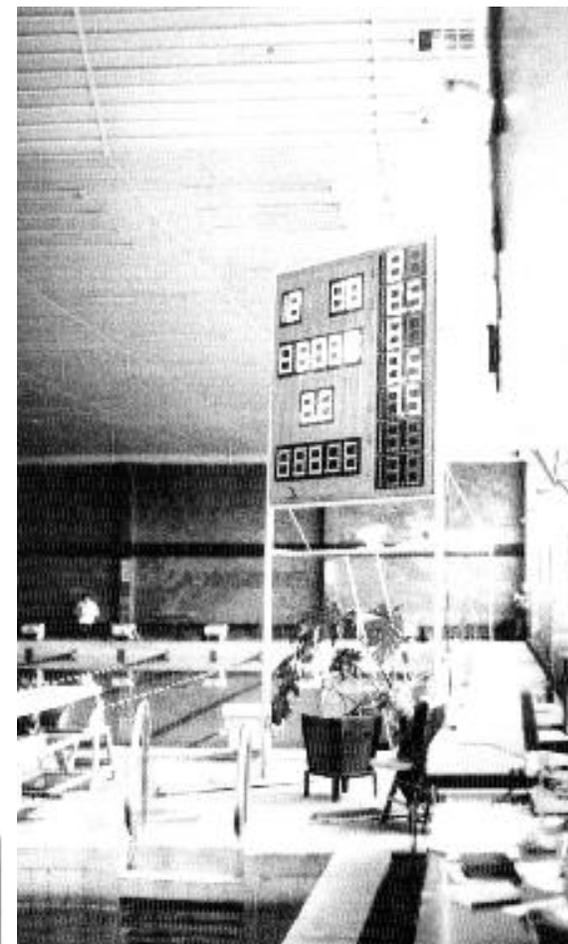
# Steps before creation CETTI

- For example: **at *the TEF department***, some of developed equipments are:
  - Automatic sorter for sorting organic dielectric capacitors (styroflex, mylar);
  - Equipment for Bucharest underground railway;
  - Display systems for various national and international competitions: the European Diving Cup - Sibiu 1979, European Greco-Roman and free fights Championship - Bucharest 1979, Bucharest Universiade 1981, etc.

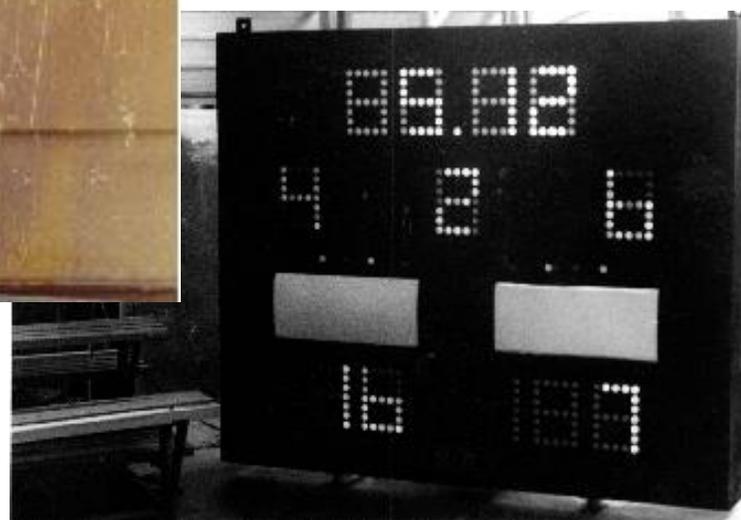
**Echipament de afișaj pentru competiția de lupte libere și greco-romane  
Campionatul european,  
București  
aprilie, 1979**



**Echipament de afișaj pentru competiția de sărituri în apă,  
Cupa Europei,  
Sibiu 1979**



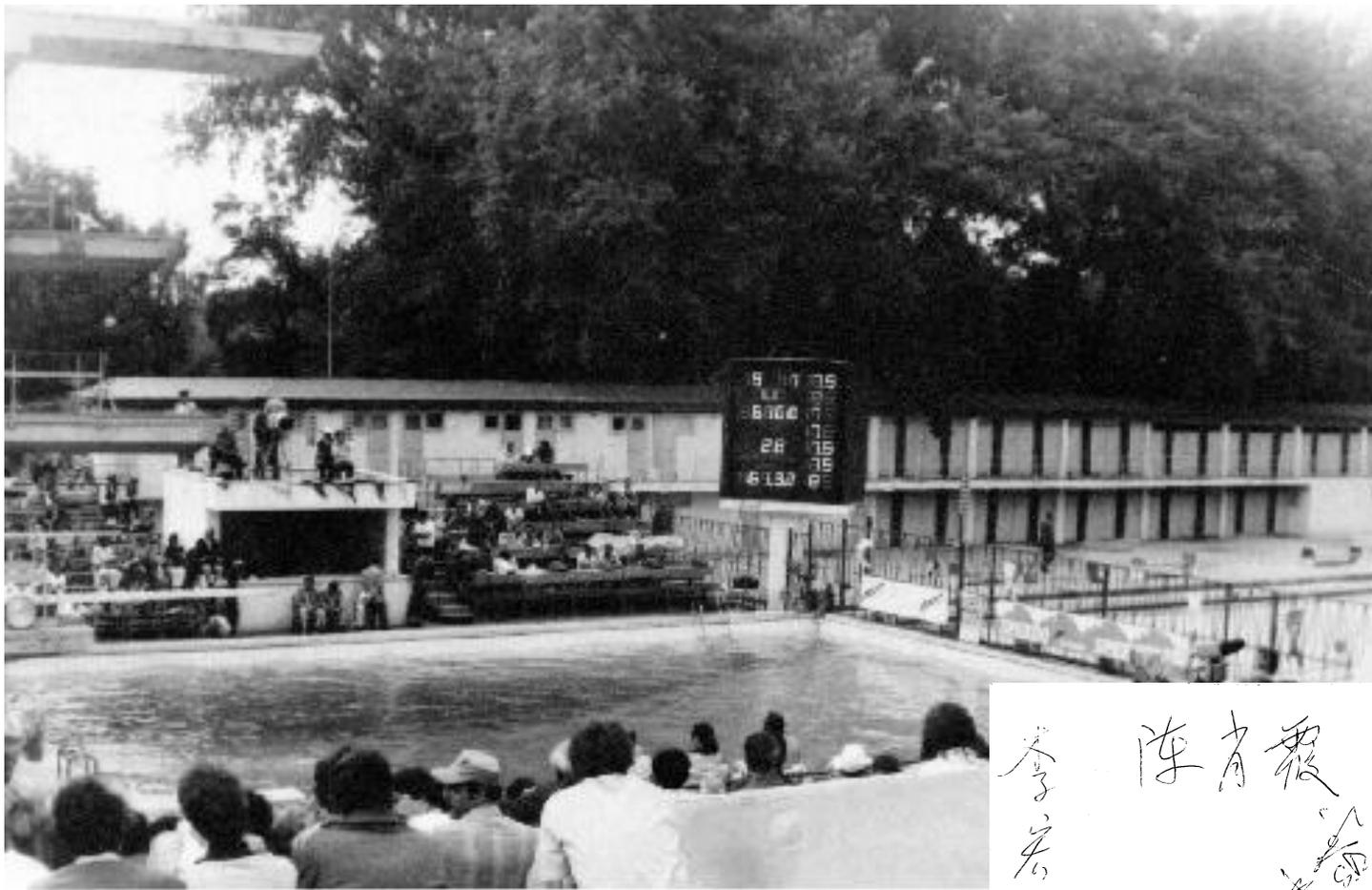
**Echipament universal de afișaj pentru competiții sportive  
(handbal, volei, baschet, etc.  
Universiada Tineretului  
București 1981**





**Echipament de afișaj  
competiții sportive  
(handbal, baschet, volei,  
tenis, box, etc).  
Sala sporturilor Brașov,  
1978**

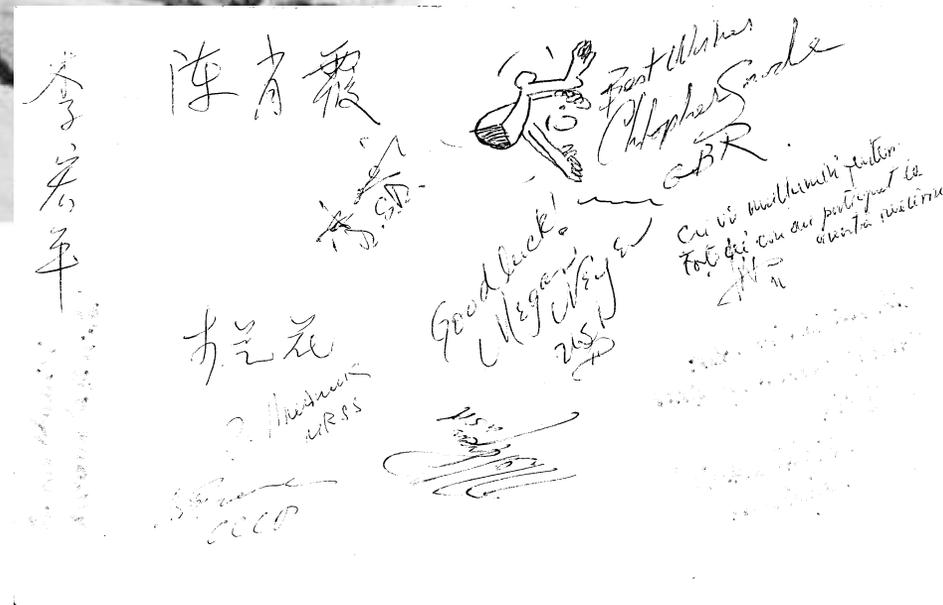




## Echipament de afișaj competiții sportive de sărituri în apă

Ștrandul Tineretului,  
Universiada Tineretului,  
București 1981

Autografe ale câtorva participanți



# Circumstances before creation CETTI

- indigenous encouragements -

## 1992

- The introduction in the curriculum of ETTI of the optional discipline "Interconnection Techniques in Electronics" (TIE) - oriented to introduce students on computer-aided design of interconnection structures (PCB CAD);
- Initiation of TIE contest;
- The occurrence in our national law of HCM57/1992, throughout senates of universities, to stimulate research in universities, had the right to create autonomous research centers.

# Circumstances before creation CETTI

- indigenous encouragements -

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In the process of CETTI creation, there was another very important internal factor:

It should be emphasized the perseverance of the late ***Professor Emil Florian***, Prorector for research, 1992 – 1996

He insisted that in our university should be created research centers.

# Circumstances for creation CETTI

## - external influences -

- **1992** – establishing the contact with the Technical University of Budapest, by visiting the Department of Electronics Technology; meeting with Prof. Zsolt Illyefalvi-Vitez;
- **1996** - **ISSE**: contact with “Electronic Packaging”- personalities: Prof. Sauer, Prof. Rishanek, Prof. Mach, Prof. Golonka, Prof. Nicolics, Prof. A. Pietrikova, Prof. Zsolt Illyefalvi-Vitez;
- **1992, 1994, 1997** – Research Internships at Fraunhofer Institut für Festkörper Technologie - IFT



**15 June 1995**

The ***Senate*** of “POLITEHNICA” University of Bucharest established,  
***“by jure”***, ***CETTI***, as an academic entity,  
**dedicated to:**

**research, development, education and  
training into Electronic Packaging topics.**

# After 1990

## -the first contact with abroad -

# Technical University of Budapest

- In 1992 I “discovered” at *Technical University of Budapest*, the Department for Electronic Technology, Department which I visited and had the chance to meet **Prof. Zsolt Illyefalvi-Vitez**. He was the person that opened to me the "door" to the international environment of Electronics Packaging.
- The first "stop" was at the **ISSE** (International Spring Seminar on Electronics Technology), a true “school” for me, a school where I had the privilege to have many outstanding teachers.

# ***ISSE***

***- a true school on Electronic Packaging -***

- Prof. Sauer, Prof. Rishanek and Prof. Illyefalvi were personalities from which I learned a lot.
- Thanks to the ISSE environment I came in contact with IEEE CPMT Society and thanks to Zsolt, I met people, like Prof. James Morris, Prof. Rao Tummala, Prof. Nihal Sinnandurai and many others.
- During the "school semesters", I had very good colleagues, like Prof. Wolter, Prof. Mach, Prof. Golonka, Prof. Nicolics, Prof A. Pietrikova, Dr. Wohlrabe. From them I had a lot to learn, and with them it has been constituted, in their current form, the two events focused on electronic packaging: SIITME and TIE.

# Research activities at Fraunhofer Institut für Festkörpertechnologie- IFT, München

- Another extremely important "input" in CETTI evolution came from Fraunhofer Society, a research structure that is deeply oriented on applied research.
- Being able to conduct research stages in 1992, 1994, 1997 in Munich within the Fraunhofer Institut für Festkörpertechnologie, IFT, I found close collaboration between the research institute and companies that carry on activities in the field of research, promoted by the institute, some of them true spin-offs.
- Numerous discussions with renowned experts from the IFT, as **Dr. Detlef Bonfert, Gerhard Klink, Michael Feil, Dieter Hemmetzberger** and many others, were all arguments to try to promote in our faculty and, why not, in this region of Europe, the issue of electronic packaging.

# ***Research Internships at Fraunhofer Institut für Festkörpertechnologie, IFT, later EMFT, München***

**Thanks to Prof. Karlheinz Bock,  
CETTI members,**

- **PhD students, were able to benefit from the exceptional facilities that exists in the institute and were able to achieve a good part of experimental parts of their doctoral theses;**
- **teaching staff attended several time the Be Flexible seminars;**
- **visited the institute laboratories.**

***The effect on CETTI members of the  
attended international events in the field of  
the electronic packaging***

***The presence at oral sessions and/or the poster sessions, discussions  
with numerous specialists during attending conferences on electronic  
packaging, for example,***

***ISSE, ECTC, EMPC, ESTC,***

***has demonstrated how important and necessary it is, for academic  
environment, along with many aspects of research in that field, to  
educate and trainee students, the future electronic engineers,  
according with the electronic packaging topics .***

# **CETTI after 20 years**

**If today, after 20 years, CETTI gained national recognition and also international, I hope to believe, this is due to the continuous engagement over time of CETTI members, and due to fruitful collaborations with prestigious personalities such as: Prof. Karlheinz Bock, Prof. James Morris, Prof. Klaus-Jürgen Wolter, Prof. Dan Pitică, Prof. Vlad Cehan, Prof. Aurel Gontean, Prof. Illyefalvi-Vitez, Prof. Wilfried Sauer, Prof. Paul Mach, Prof. Nihal Sinnaduray, Prof. Rao Tummala and many others.**

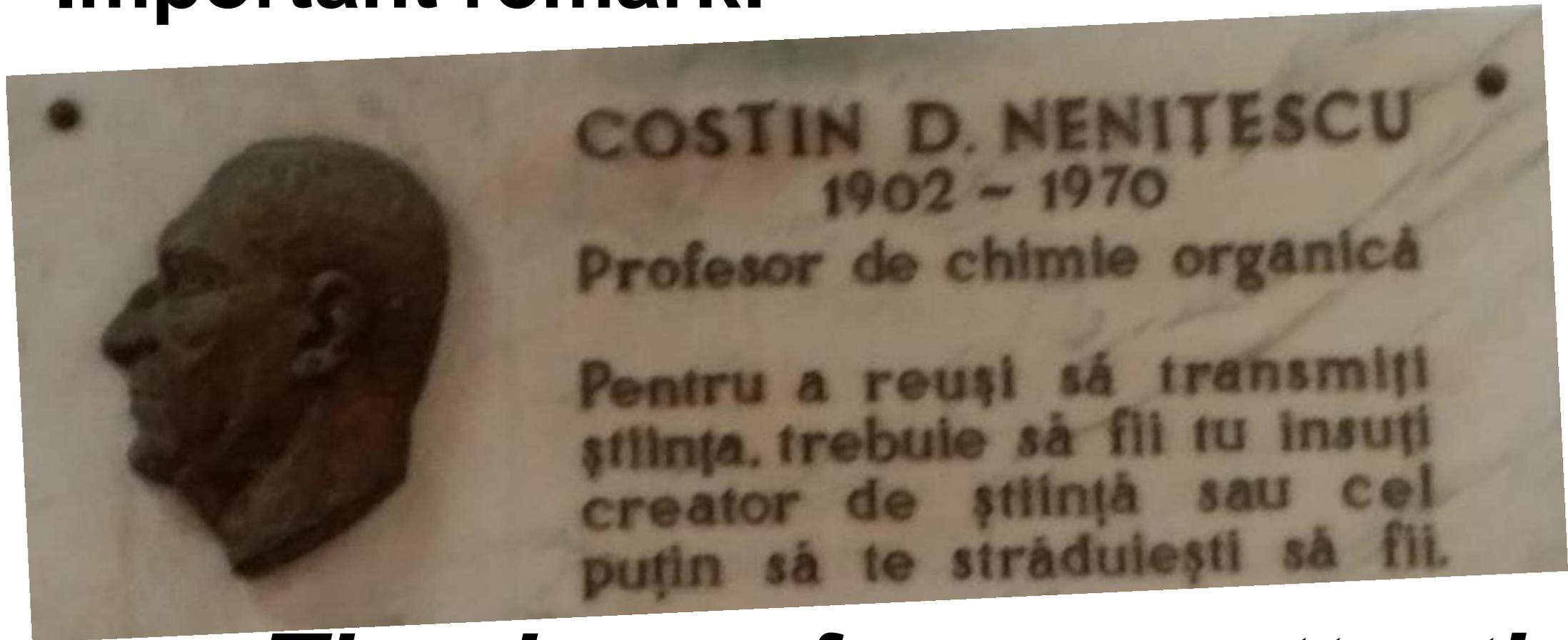
**I am grateful to all persons mentioned above, for their trust and confidence, and I will always have a great and highly gratitude and respect for them.**

# Some remarks:

Today , after 20 years, CETTI promotes constantly activities, normally for an university, like: ***research and education*** and is trying to do and support entrepreneurial activities, in the benefit of both.

CETTI doors were and are "open" to support the electronic products research, education, development, manufacture and training activities.

# Important remark:



***Thank you for your attention.***