

## *Research partnership between academia and local industry*

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# TECHNICAL UNIVERSITY OF CLUJ-NAPOCA

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Scientific research is an inexhaustible source of knowledge, an important resource of society, while constituting an approach to university education as well.



In the **Technical University of Cluj-Napoca (TUCN)** fundamental and applied research, as well as innovation are promoted in the fields of engineering and science.

**The Technical University of Cluj-Napoca objectives:**

**-to become an important player** at national and international level in education, **scientific research and innovation**

**-to contribute to the growth** of the welfare of the citizens in the social and economic environment

**-by generating and transferring knowledge** through education, scientific research and innovation,

**-by creating an added value** in the international context, by means of a smart specialization which could bring complementarity elements and niche approaches

The research teams enjoy the freedom of choosing their topics.

Institutionally, the following multidisciplinary domains of research are supported:

- **Information and communication technology**
- **Advanced materials**
- **Advanced products and processes**
- **Bioinformatics**
- **Green energy**
- **Transportation,**

The support is provided through **good account of the human, material as well as the financial resources** coming from the **budget, self financing** and **institutional development**.

Research is conducted at department level, predominantly in over **70 accredited research structures**.

The **research strategy aims at creating self- sustainable interdisciplinary and multidisciplinary structures** capable of outstanding scientific achievements.



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## Knowledge and Technological Transfer Centre (CTTC)

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In order to transfer knowledge and new technologies to society, TUCN developed different channels such as:

- FP7, PCCA and applicative research projects
- Institutional developments financed by EU structural funds
- Enterprise Europe Network
- European Regions of Research and Innovation Network (ERRIN)
- Danube Innovation and Technology Transfer Centre Cluj-Napoca



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## Knowledge and Technological Transfer Centre (CTTC)

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- PATLIB Cluj Regional Centre (OSIM Network)
- International Fair of Research, Innovation and Inventics “ProInvent”
- Professional master study programs
- Internship programs
- Life-long learning programs based on requirements from economic environment
- Info days
- Idea’s and project’s contests sponsored by companies
- TT oriented conferences, workshops, seminars, brokerage events



## TUCN offer addressed to the economic environment

### 1. Research & development

Examples: Development of original solutions for modeling dynamic 3D environments.

Development of original algorithms for feature extraction from monocular grayscale or color images, from stereo images, or from medical images (CT, ultrasonic, PET).

Development of original algorithms for 3D or 6D reconstruction, using classical stereovision, omnidirectional stereovision and optical flow.

### 2. Consulting

Examples: Consulting, design, research and prototyping towards development of image processing based solutions for multiple industrial and scientific fields.

Custom integrated hardware and software solutions for specific problems related to driving assistance systems, surveillance, object and people recognition, automated medical diagnosis.

### 3. Training

Examples: Image processing basics, Pattern recognition techniques



## 35 FP7 projects:

Green Active Management of Energy in IT Service centres – **GAMES**, prof. I. Salomie, partner ENERGOECO SRL Cluj-Napoca

Architecture And Design for The Future Internet - **4 Ward**, prof. **V. Dobrota**, partner SIEMENS Programming and Engineering SRL – Braşov

The Large Knowledge Colider – **LARKC**, prof. S. Nedevschi, partner SOFTGRESS SRL Gherla

Virtual Factory Framework –**VFF**, prof. D. Banabic, partner ROPARDO SRL - Sibiu

Cooperation protocols and research contracts with important international companies: **Volkswagen, Bosch, Continental, Emerson, Siemens, Pirelli, HP, Microsoft,**

## Research projects funded by the National Agency of Scientific Research (fundamental, applicative, partnerships)

- Automatic Medium and High Earth Orbit Observation System Based on Stereovision – **AMHEOS**, assoc. Prof. Radu Danescu, partner **BITNET CCSS – Cluj**
- Automotive Low-Noise Electrical Machines and Drives Optimal Design and Development – **ALNEMAD**, prof. C. Martis, partner **LMS-Romania SRL – Braşov**
- Integrated Smart Sensor System for Monitoring of Strategic Hydrotechnical Structures – **HydroSens**, prof. D. Moga, partners **SC CODEC SRL Cluj, SC TECHNOSAM SRL Satu-Mare**
- Cooperative Advanced Driving Assistance System Based on Smart Mobile Platforms and Road Side Units – **SmartCoDrive**, prof. S. Nedevschi, partner **SC AROBS Transilvania Software**
- Robotic assisted brachytherapy, an innovative approach of inoperable cancers, prof. N. Plitea, partner **SC “Electronic April” SRL Cluj**
- Miniaturized Equipment with Capacitively Coupled Plasma Microtorch and Analytical Technologies for Simultaneous Elemental Determination - **MICROCCP**, prof. D. Petreus, partners **SC “Electronic April” SRL Cluj, SC FOTOMETRIC Instruments SRL - Bucharest**

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## Research projects funded by the National Agency of Scientific Research (innovation)

<b>Solar Thermic Collector</b>	<b>Bălan Mugur</b>	<b>S.C. INTELDESIGN – Filiala Cluj SRL</b>
<b>Development of a mobile multifunctional platform for water pipe inspection</b>	<b>Bălan Radu</b>	<b>S.C.LEON GRUP CONSULT – Reghin</b>
<b>Medical equipment for magnetic therapy with low frequency pulsed magnetic field</b>	<b>Petreuș Dorin</b>	<b>SC Datronix Computers SRL – Cluj-Napoca</b>
<b>iOS (IPhone, IPad) system mobile platform to align multimodal medical images in DICOM format</b>	<b>Vaida Mircea</b>	<b>SC PITECHAPPS SRL – Cluj-Napoca</b>
<b>Four cell galvanic bath</b>	<b>Petreuș Dorin</b>	<b>SC Datronix Computers SRL – Cluj-Napoca</b>
<b>Lela – Collaborative Recommendation System in the Tourism Domain Using Semantic Web Technologies and Text Analysis in Romanian Language</b>	<b>Groza Adrian</b>	<b>SC RECOGNOS ROMANIA SRL</b>

## Direct cooperation with important national, regional and local players:

BitDefender, ISDC Romania, IQuest Technologies, RECOGNOS, SC AROBS Transilvania Software, Evoline, TSE Development, Endava, Navigon, Skkobler

SC Emerson SA Cluj, EvoPro Systems Engineering, IPA Cluj,

SC Hidroelectrica SA București, FDEE Electrica Distributie Transilvania Nord SA, SC Energo Consult SRL Suceava, SC Electro Consult Zalau

SC Concefa SA Sibiu, SC NIVEL CONSTRUCT SRL Cluj, INCERC Cluj

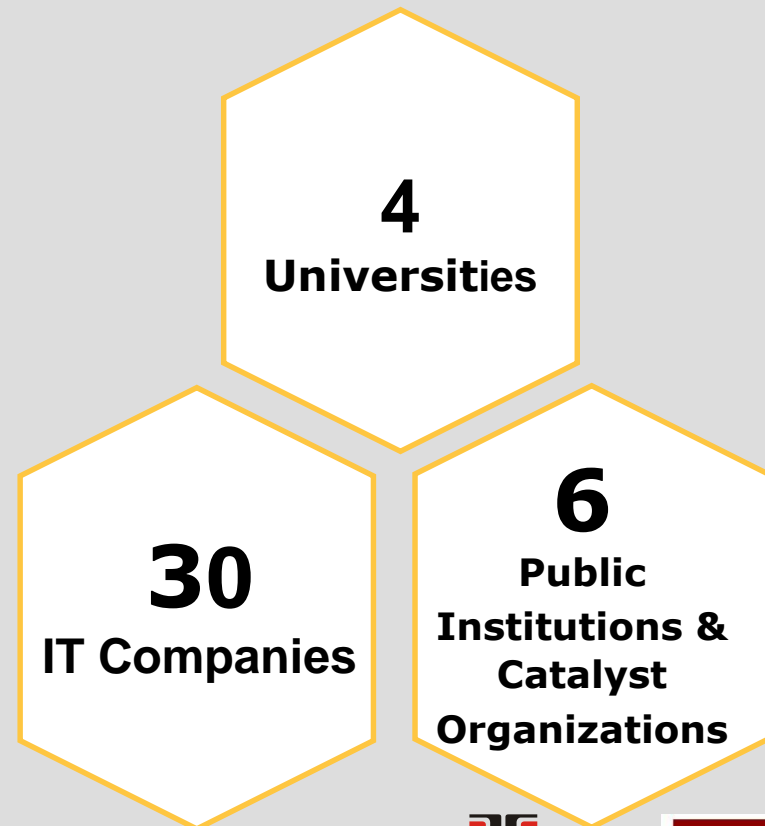
SC TENARIS SILCOTUB Zalau, RATUC Cluj, SNGN Romgaz Medias, SC Transferoviar Grup SA Cluj, SC MCA Super Plastic SRL Cluj, SC UNIO SA Baia Mare, SC FARMEC SA Cluj, SC LUKOIL România SRL

# Cluj IT Cluster

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**Institutional developments financed by EU structural funds:**  
**Cluj IT Cluster** in which TUCN is founder member:

- ➡ Fostering innovation
- ➡ Creating a culture of partnership
- ➡ Romanian IT promotion
- ➡ Partnership between academia and economic
- ➡ Making a robust public - private partnership



# Cluj IT Cluster

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## Short Term Objectives

- Attracting funding to support initiatives accelerating the cluster
- Organization of workshops for sharing expertise and collaborations
- Initiate R&D collaborative projects based on existing capabilities in universities and in the economic environment

## Long Term Objectives

- Expanding the footprint of the local IT on the international market
- Building an effective cooperation mechanism between the IT industry and academia
- Develop internal and external partnership networks

# Cluj IT Cluster

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## Innovative Project: Next Generation City

- Approved for funding on POSCCE/ Op. 1.3.3
- Broad involvement of advanced technology oriented innovative capabilities from TUCN, UBB and Cluj IT Cluster (14 subprojects involving TUCN and local industrial partners)
- Pilot City: Cluj-Napoca
- Final target: Cluj Innovation City

# Cluj IT Cluster

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**Objective O1.** Integration of advanced IT technologies (Cloud, HPC and Mobile Devices) in a knowledge-management platform for providing public services based on e-accesibility and Design For All principles

**Objective O2.** Integration of the IT innovative solutions for modern traffic

**Objective O3.** Integration of e-health innovative solutions

**Objective O4.** Utility infrastructure (starting from the „under-ground” level, towards the aerial network level).

**Objective O5.** Educational and Cultural Network

**Objective O6.** Economical and Business Network

**Objective O7.** Next Generation Habitat/ Housing.  
Intelligent Buidings



## Enterprise Europe Network

The Enterprise Europe Network helps small business and Inventors to make the most of the European marketplace.



Working through local business organizations, EEN can help in:

Develop businesses in [new markets](#)

Source or license [new technologies](#)

Access [EU finance](#) and [EU funding](#)

The Enterprise Europe Network was launched in February 2008 by the Commission's Directorate-General for Enterprise and Industry. :

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### TUCN contributions:



- 555 companies reached by Network promotion
- 171 first company meetings
- 58 clients receiving international & innovation support
- 139 participants in local or regional events
- 180 expressions of interest made
- 227 expressions of interest received
- 15 partnership proposals produced

## **European Regions of Research and Innovation Network (ERRIN)**

Aims to strengthen regional **Research and Innovation** capacities by exchanging information, sharing best practice, supporting **European project development**, **policy shaping** and **profile raising** by working together with a **partnership approach**

**TUCN initiated the set up of the NW Region of Research and Innovation Association which joined ERRIN in 2013**

**Workgroup organized in Medical**

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### Danube Innovation and Technology Transfer Center (DTC)

**DTC Cluj-Napoca** is one of the first 4 pilot centers fostered by Steinbeis within a project financed by the Baden-Württemberg Government in countries from the Danube region.

**These centers' aims are:**

- to help the **intelligent regional development** in the Danube macro-region by facilitating and stimulating innovation and technology transfer
- to **match the needs of the economic environment** and the **RDI capabilities** within an international wide network.



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## DTC activities for capacity building:

Capacity building, training our members and partners

Internal organization

Integrate within the international network



Map the innovation potential of the area

Draft identification of the needs for innovation

Networking and relationship building

Identifying financing sources

### **DTC activities with the industrial partners:**

Organize events for the exchange of ideas, networking

Provide consultancy, training and direct assistance

Matching needs and capacities for innovation

Identifying financing sources and drafting funding projects

Encourage the IP process both in generation and use

Encourage and taking part to the regional economic structuring and coagulation (clusters, poles of competitiveness etc.)

Support specific industries / activities: IT, welding, plastics, furniture, etc.

Develop and publish know-how in the field.

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Patent information centres (PATLIB centres) are spread regionally throughout Europe to make patent information accessible and provide IP advice to companies in a given region.

TUCN hosts PATLIB Cluj Centre since 2010.

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### TUCN Patents Request and Patents 2013-2016

Year	2013	2014	2015	2016	Total
Patent requests	10	10	7	9	36
Patents	5	6	10	7	28



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## PROINVENT 2016

The 14th session of PRO INVENT, the International Fair of Research, Innovation and Inventics, was organized between March 2016, in the premises of the TUCN.

The fair aims at meeting together inventors and potential users as well as wide public.



## Professional master study programs (example)



Logo of the European Union

Logo of the Ministry of National Education and Research

Logo of the Operational Program Human Resources Development 2007-2013

Logo of the Operational Program Information Society Development 2007-2013

Logo of the Ministry of National Education and Research

Logo of the Technical University of Cluj-Napoca

Investiție în oameni  
Proiect cofinanțat din Fondul Social European prin Programul Operațional Sectorial Dezvoltarea Resurselor Umane 2007-2013

Program multi-regional de studii masterale în domeniul eActivități

4 noi ocupații incluse în COR România –  
specialist în eMedia, eSănătate, eGuvernare și  
eAfaceri

[www.earstart.utcluj.ro](http://www.earstart.utcluj.ro)

## Professional master study program (example)



UNIUNEA EUROPEANĂ



MINISTERUL EDUCAȚIEI, CERCETĂRII ȘI INOVĂRII



Fondul Social European  
PROIECTE 2007-2013



Programul Operațional Sectorial pentru Dezvoltarea Resurselor Umane  
2007-2013



MINISTERUL  
EDUCAȚIEI,  
CERCETĂRII  
ȘI SPORTULUI

DIPOSDIU



UNIVERSITATEA  
TEHNICĂ  
din CLUJ-NAPOCA

**Investește în oameni!**  
Proiect cofinanțat din Fondul Social European prin Programul Operațional Sectorial pentru Dezvoltarea Resurselor Umane 2007-2013

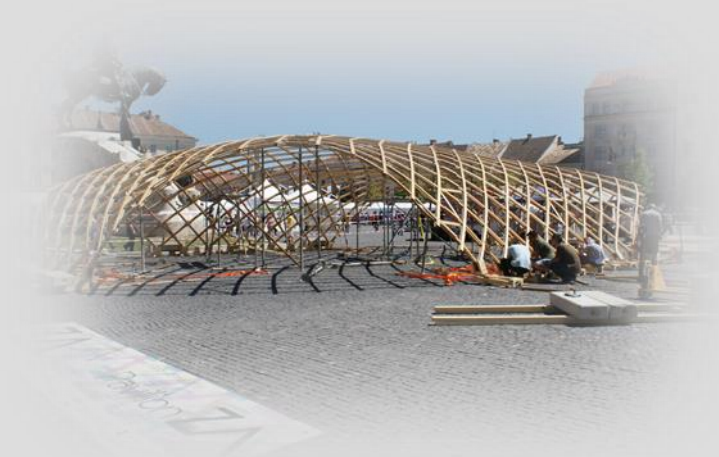


**ROBOTICĂ**  
UNIVERSITATEA TEHNICĂ  
din CLUJ-NAPOCA

**MASTERAT INTERNAȚIONAL  
ÎN ROBOTICĂ ADAPTABIL LA  
PIAȚA FORȚEI DE MUNCĂ**

## Contests

## Info Days



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Thank you!

