CIT UPC

TECHNOLOGY CENTER

UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

2013 **Annual report**

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1 Foreword

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Letter from the Chairman

The capacity to act in conjunction with the industrial sector was a key factor in the activity of the Innovation and Technology Centre (CIT UPC) in the 2013-2014 academic year, of which this report gives an account. The technology centre of the Universitat Politècnica de Catalunya (UPC) listens to and serves the technological needs of businesses by channelling the ability of certain groups within the UPC to transfer the technology that they develop.

This technology is focused on innovation and has proved decisive in increasing the competitiveness and internationalisation of our country's industrial sector. The growing activity of the CIT UPC is a catalyst for university-business relations. In its short lifetime, it has become an expert on business needs and a facilitator of the mutual trust that has been established in recent years between the University and the business world.

The UPC is a leading university in knowledge transfer, innovation, entrepreneurship and patenting. As a technical university, the UPC can claim to play a crucial role in the workings of industry and the CIT UPC is an effective instrument for action in this context.

During the 2013-2014 academic year, the CIT UPC has continued to contribute to the UPC's position as a leading university in the field of technology transfer, a university that helps to transform the industrial sector. The results of this work are presented in this report.

Enric Fossas Colet
Rector of the UPC and chairman of the CIT UPC

2 This is CIT UPC Foundation

The UPC and technology transfer

The UPC is one of the leading technology universities in Southern Europe in the fields of engineering, architecture and sciences. Just after its foundation, the UPC made an institutional commitment to technology transfer and subsequently to spin-offs and patents. This long-term commitment is the reason why the UPC is at the forefront of technology transfer and valorization in Spain.

The research model used by the UPC is that of creating science-based technology, so that knowledge-based technological solutions can be provided for the production system.

Three factors led to the establishment in 2010 of the **UPC Technology Center (CIT UPC)**. The first is the large volume of technology transferred directly to companies via research and development contracts. The second is the existence of research centers that form part of the Government of Catalonia's TECNIO network and are all highly active in technology transfer; they therefore have proven experience in this area, whose management is highly complex. The third is the realization that companies have an increasing demand for technology solutions. As a result, the UPC made a strategic commitment to founding the CIT UPC Technology Center, following the steps of the top technology universities in the world.

CIT UPC objectives

CIT UPC is a **foundation** that brings together **20 UPC research centers**, 18 of which belong to the **Government of Catalonia**'s **TECNIO Network**. The centers carry out excellent research and, as a result, they are highly active in technology transfer to companies and seek to provide technology solutions. They are staffed by 532 researchers, of which 55% are PhD holders.

The UPC research centers' technology transfer capacity is not only due to a strong stock of technology or practical experience; they can also provide innovative solutions based on scientific output and frontline research.

Building on this situation and these strengths, the CIT UPC Technology Center aims to contribute to the economic and social growth of Catalonia through knowledge transfer. It is the **bridge between science in general and companies' technology needs**. Given the available critical mass, and the capacity and range of innovative knowledge provided by the CIT UPC research centers, we can provide **solutions to complex technical problems** that require a **cross-cutting approach**.

We are focused on becoming a cornerstone of southern European technology centers. CIT UPC is now the main technology center in Catalonia in terms of research, technology and knowledge transfer, that is, in terms of **innovation**.

A technology center that can do this job is clearly one that can provide the greatest added value and help to increase the competitiveness of the companies that put their trust in it. We are committed to bringing more and better technology to the market. This is a key factor in economic recovery: the transformation of knowledge into marketable technologies.

Mission, vision and values

Mission

The Center helps to **build business competitiveness** through the **generation, development and application of exceptional technological knowledge to business**. This process is carried out in the UPC's research and development centers, and particularly by CIT UPC members.

CIT UPC furthers the goals of the Universitat Politècnica de Catalunya · BarcelonaTech by fostering research and innovation, while helping to bring new developments to the wider world and providing scientific and technological services to companies.

CIT UPC promotes the stimulation, identification, transfer and valorization of technologies and research results generated by its member centers for companies, to contribute to increasing the competitiveness of the Catalan business sector in particular, and of Spanish and international enterprises in a global environment.

Vision

CIT UPC aims to become a global leader in research excellence, technology transfer and innovation, and in technological areas that have an impact on companies and economic growth.

Values

CIT UPC bases its activity on **efficiency and sustainability** in order to bolster its **credibility and trustworthiness, while at the same time meeting the needs and expectations of its various stakeholders** and complying with current regulations, in particular those related to environmental protection and occupational health and safety.

CIT UPC is dedicated to collaborating and cooperating with third parties and to actively participating, by means of the most appropriate legal model in each case, in initiatives that further the fulfilment of its mission.

The collective values of CIT UPC include the following:

- Commitment to our clients.
- Participation and cooperation.
- Independence, prestige and social outreach.
- Sustainable development.
- Commitment to health and safety.

Organization

Board

Chairman	**Enric Fossas i Colet** Rector of the Universitat Politècnica de Catalunya · BarcelonaTech
Deputy Chairman	**Ramon Carbonell Santacana** Chair of the Board of Trustees of the Universitat Politècnica de Catalunya · BarcelonaTech
Board members	**Diana Cayuela** Rector's Delegate for Knowledge Development and Transfer UPC
	Carles Sumarroca Claverol Vice-President of the Board of Trustees of the Universitat Politècnica de Catalunya · BarcelonaTech
	Sisco Vallverdú Vallés Vice-rector for University Policy UPC
	Fernando Orejas Valdés Vice-rector for Research Policy UPC
	Antoni Ras Vice-rector for Studies and Planning UPC
	Olga Lanau Rami General Manager UPC
	Anna Serra Secretary of the Board of Trustees UPC

Scientific Advisory Board

The Scientific Advisory Board is comprised of the directors of the CIT UPC Member Centers:

Dr. Santiago Royo
Director CD6 UPC

Dr. Carles Riba
Director CDEI UPC

Dr. Eduard Egusquiza
Director CDIF UPC

Dr. Marc Anglada
Director CIEFMA UPC

Dr. Antoni Sudrià
Director CITCEA UPC

Dr. Daniel Sempere
Director CRAHI UPC

Dr. Pere Caminal
Director CREB UPC

Dr. Josep Garcia Raurich
Director CRESCA UPC

Dr. Feliu Marsal
Director INNOTEX CENTER UPC

Dr. Assensi Oliva
Director CTTC UPC

Dr. Josep Lluís Larriba
Director DAMA UPC

Dr. Ferran Silva
Director GCEM UPC

Dr. Josep Casanovas
Director InLab FIB UPC

Dr. Esteve Codina
Director LABSON UPC

Dr. Joaquín Fernàndez
Director LAM UPC

Dr. Jordi Romeu
Director LEAM UPC

Dr. Juan Antonio Ortega i Dr. Luis Romeral
Directors MCIA UPC

Dr. Joaquim Olivé
Director SARTI UPC

Dr. Pedro Rodríguez i Dr. Álvaro Luna
Directors SEER UPC

Dr. Lluis Padró
Director TALP UPC

Industrial board

The Industrial Board facilitates the **active participation of 13 globally leading technology companies** that **help to guide university-business strategy** to promote **business innovation**.

CIT UPC Member Centers

CD6 UPC
Centre for Sensors, Instruments and Systems Development

CDEI UPC
Industrial Equipment Design Centre

CDIF UPC
Centre for Industrial Diagnostics and Fluid Dynamics

CIEFMA UPC
Structural Integrity and Materials Reliability Centre

CITCEA UPC

CRAHI UPC
Center of Applied Research in Hydrometeorology

CREB UPC
Biomedical Engineering Research Centre

CRESCA UPC
Research Center for Food Safety and Control

INNOTEX Center UPC

CTTC UPC
Heat and Mass Transfer Technological Center

CIT UPC
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UNIVERSITAT POLITÈCNICA DE CATALUNYA
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DAMA UPC
Data Management Group

GCEM UPC
Electromagnetic Compatibility Group

InLab FIB UPC *
INLAB Laboratory of the Barcelona School of Informatics

LABSON UPC
Hydraulic and Pneumatic Systems Laboratory

LAM UPC
Multimedia Applications Laboratory

LEAM UPC
Laboratory of Acoustics and Mechanical Engineering Laboratory

MCIA UPC
Motion Control and Industrial Applications

SARTI UPC
Technological Development Centre of Remote Acquisition and Data Processing Systems

SEER UPC
Renewable Electrical Energy Systems

TALP UPC *
Language and Speech Technologies and Applications

* Incorporated in November 2013.

3 Key figures 2013

20 UPC research and technology transfer centers

Total revenue **11,777,215 EUROS**

52% R+D with companies

48% projects funded through competitive calls

906 corporate clients

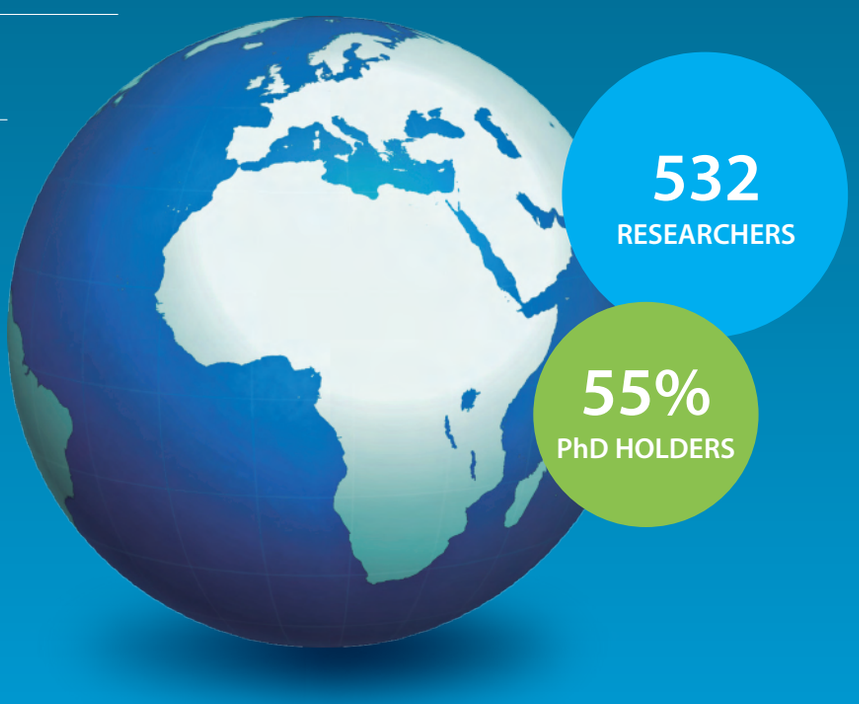
157 new corporate clients in 2013

Projects carried out in over **60 countries**

505 projects in 2013

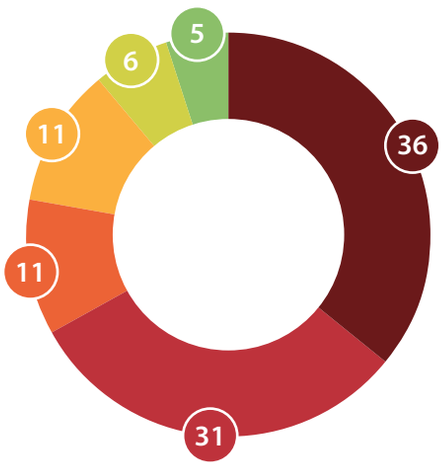
107 Registered patents

24 Spin-offs



Economic indicators 2013

Total revenue **11,777,215 EUROS**

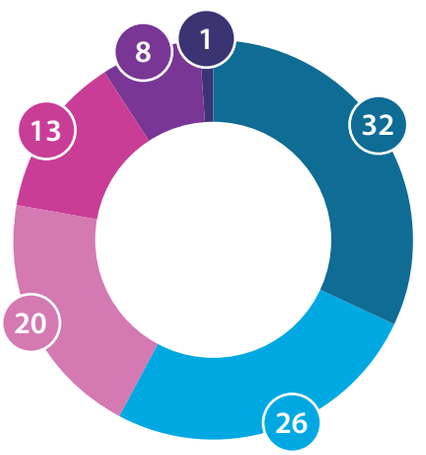


Distribution of income by source (%)

- Corporate R&D
- Spanish projects awarded in competitive calls
- Corporate services
- European projects with business participation
- Others
- Training for companies

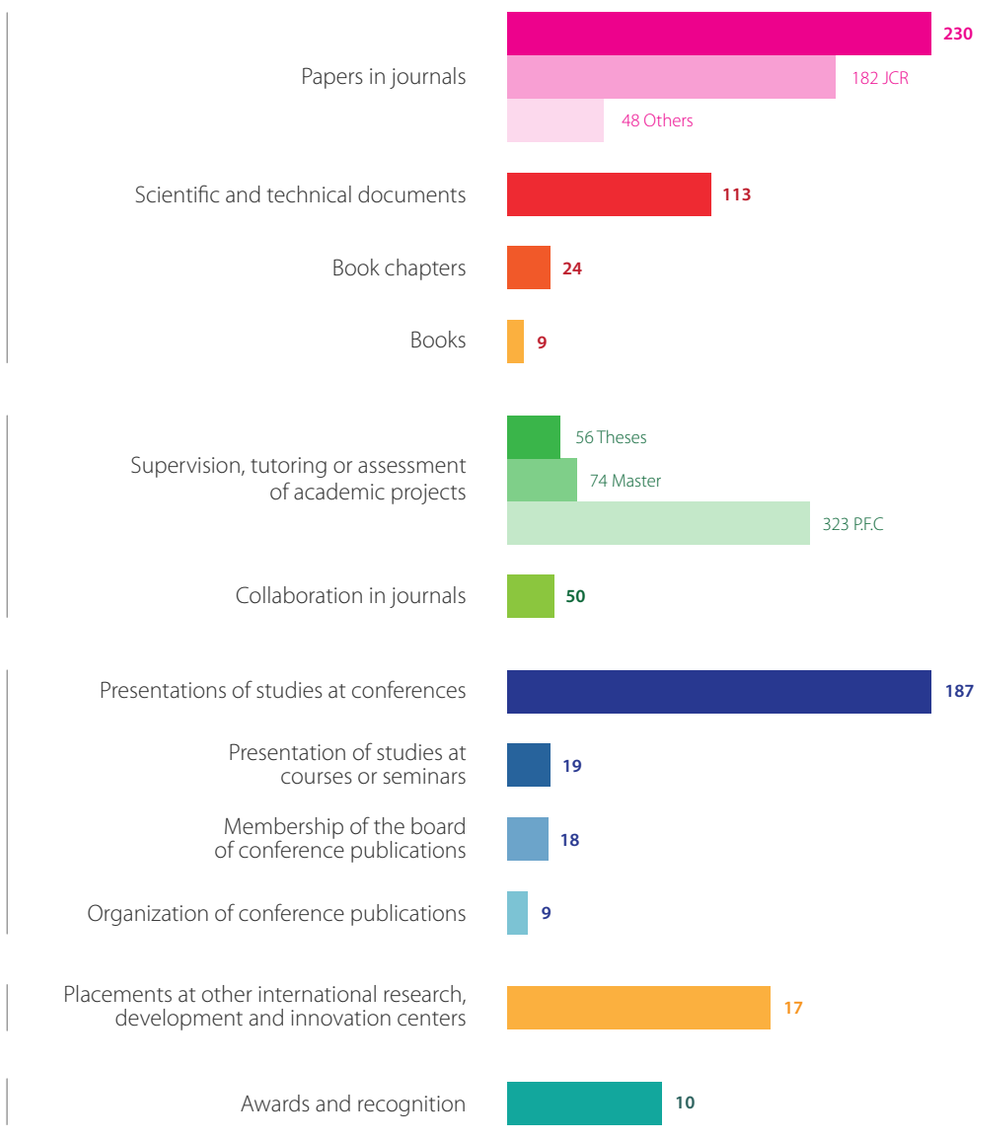
Distribution of projects by sector (%)

- Production technologies
- Energy and environmental technologies
- Medical technologies
- ICTs
- Materials technologies
- Chemical and food industry technologies



Main indicators of the CIT UPC Member Centers' Science and Research activity

« We develop knowledge-based technology. »



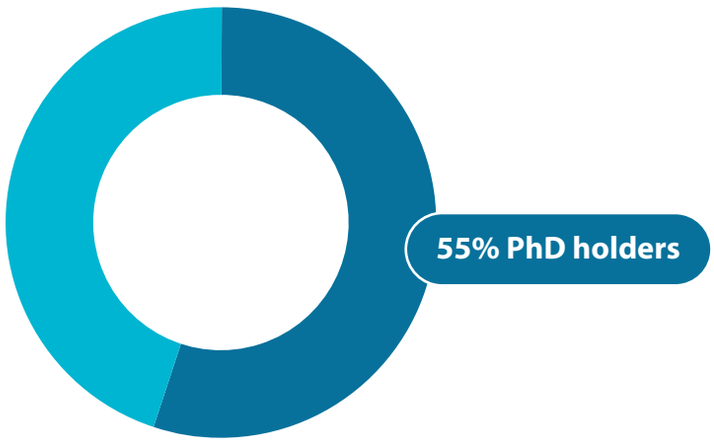
Spin-offs created

Up to 30 June 2014, **CIT UPC Member Centers had created 24 spin-offs**, as another way to transfer technology to the market.

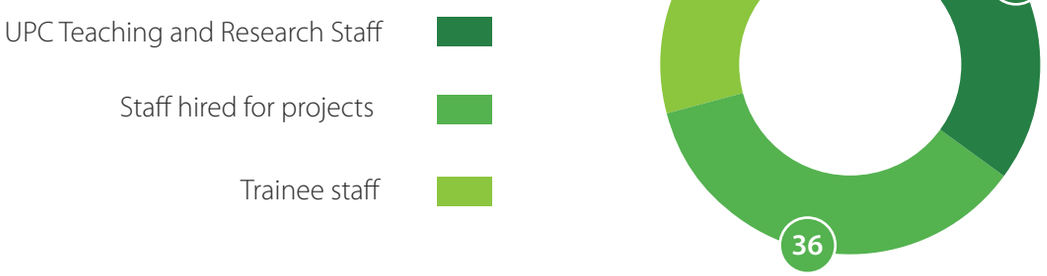
TECHNOLOGY MADE REAL

Due to the work, commitment and effort of all the researchers in the 20 CIT UPC Member Centers, we can provide the following results.

532 Researchers



Distribution of staff (%)



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Medical technologies

Health and life sciences industries

New electroporation technique for cell cultures

A new technique has been developed to improve electroporation in cell cultures. Electroporation opens cell membrane pores by creating an electrical field, so that drugs, DNA or RNA can enter the cell. In the new system, considerably lower voltages are applied via a small printed circuit board that considerably reduces the stress to the cells, and costs less than a euro to manufacture. The system has been patented and was developed by researchers in the Instrumentation and Bioengineering Area of the Biomedical Engineering Research Centre (CREB UPC), in collaboration with Fundació Clínic.

New device for monitoring lithiasis

The Centre for Sensors, Instruments and Systems Development (CD6 UPC) has worked on the development of a prototype of a device that enables patients with renal lithiasis (the presence of calculus or stones in the kidney or urinary tract) to track their disease daily at a cost that is 30 times less than today. The electronics and the programming of the device have been developed for the company Devicare, which is directed by Rosendo Garganta, a former UPC student.

Games to detect senile dementia: Smart Ageing

The Biomedical Engineering Research Centre (CREB UPC), in collaboration with the *Consorzio di Bioingegneria e Informática Medica* and the *Fondazione Istituto Neurologico Casimiro Mondino* of Pavia (Italy), has developed a serious game as a virtual test for early detection of senile dementia. This disease a ffects between 10 and 20% of people over 65 years old. The team, led by PhD. Dani Tost and Prof. Sergi Grau from the Computer Graphics area of CREB, has created a virtual test involving memory and attention exercises carried out in a realistic 3D virtual environment to detect cognitive deterioration in over 50 year olds.

A new surgical suture system has been patented

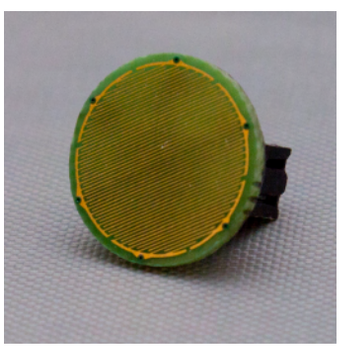
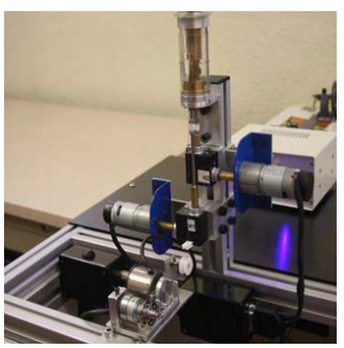
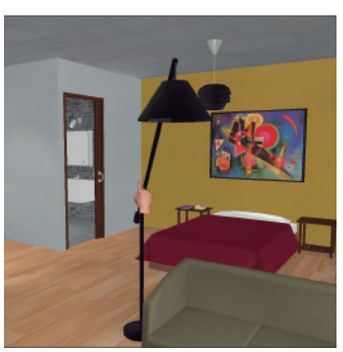
A device for automatic suturing of the large intestine (anastomosis) in surgery for colon cancer and other illnesses has been developed. The system, called Insewing, was developed as part of the ECHORD European Project. It works with absorbable suture material rather than the metal staples that are currently used, which can cause intestinal stiffness and obstruction. The device can be used in colon cancer operations, in which the affected part of the intestine frequently needs to be resectioned and the healthy ends sutured together. The project was developed by a group of Innotex Center researchers, led by José Antonio Tornero, with the collaboration of the UPC Institute of Industrial and Control Engineering (IOC) and the *Hospital Vall d'Hebron*. The new system is patented and available for commercialization.

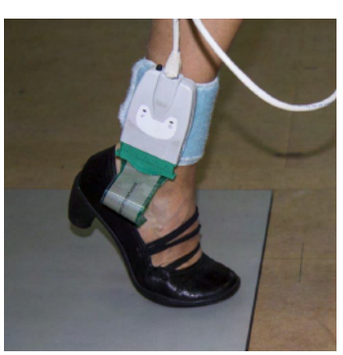
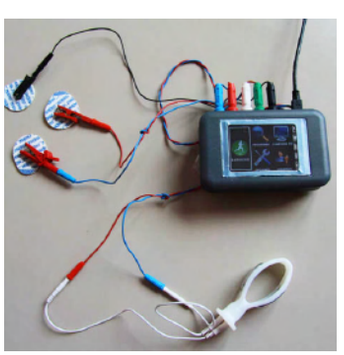
Biomedical analysis of the comfort of CAMPER shoes

The Biomechanics area of the Biomedical Engineering Research Centre (CREB UPC) has carried out a study for CAMPER, in which the comfort of the company's shoes was analyzed in an objectively measurable way. Using optical imaging systems, force plates, pressure insoles and a non-invasive electromyography (EMG) system, the team led by Josep Maria Font measured the interaction between shoes and users to determine the factors that have most impact on comfort.

Device for pelvic floor rehabilitation

A team of researchers from the Instrumentation and Bioengineering and Biomedical Signals and Systems areas of the Biomedical Engineering Research Centre (CREB UPC), in cooperation with the *Hospital Clínic de Barcelona*, have developed a new portable biofeedback device. The device helps women with urinary incontinence to effectively retrain and gain voluntary control of pelvic floor muscles. The new device records all of the muscle activity during exercises that the patient carries out at home, which provides immediate feedback on results. It is designed so that therapists can receive the information electronically. The biofeedback device is patented and is available for licensing to companies.

Production technologies

Industrial Systems

New methods for measuring electromagnetic compatibility in Industrial environments

The Electromagnetic Compatibility Group (GCEM UPC) has begun work on a new project, which is part of the European Metrology Research Programme (EMRP). The aim is to establish better methods for measuring electromagnetic compatibility that are less costly in time and money, and better adapted to current needs in industrial environments. The three-year project, which has a budget of 2.4 million euros, is supported by the European Commission and involves the participation of some countries that belong to the European Association of National Metrology Institute (EURAMET).

High performance suspension for lorries with several axles

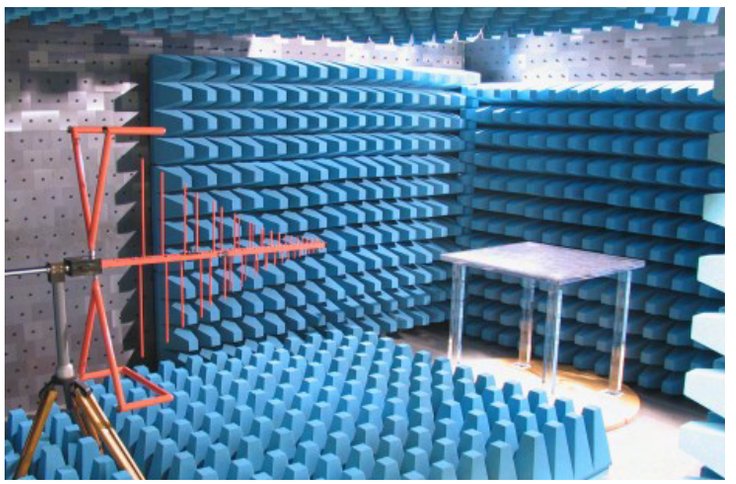
The Hydraulic and Pneumatic Systems Laboratory (LABSON UPC), in collaboration with Gutmar, has studied and designed a high performance suspension system for heavy goods vehicles and lorries with several axles (such as fire engines, breakdown lorries or racing trucks). The main advantage of semi-active suspension over passive suspension is that it enables each wheel to be controlled independently, which increases both the vehicle's road holding capacity and driving safety. Gutmar SA manufactures and carries out maintenance on hydraulic suspension cylinders for four-wheel-drive vehicles and is a leading supplier of precision parts for the aerospace industry.

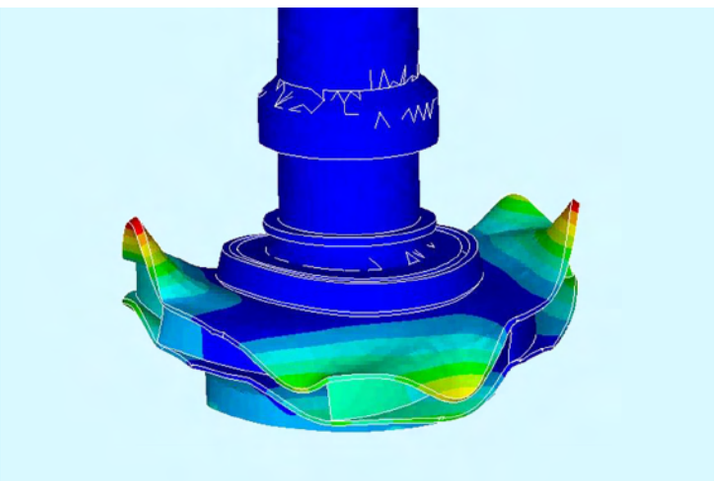
New technologies for the cleaning and sterilization of textiles

Results have been presented for the SEILA project, which was led by FAGOR as part of the CENIT-E (National Strategic Consortia for Technical Research) programme, with the participation of the Heat and Mass Transfer Technological Center (CTTC UPC). The aim of the project was to investigate new technologies that could lead to more efficient, environmentally friendly, smart systems for textile cleaning and sterilization at domestic and industrial level that could meet market demands for the treatment of the latest generation multifunctional textiles. CTTC UPC's activities address computational fluid dynamics (CFD) and heat transfer (HT) techniques at the highest level possible today.

The behavior of pump-turbines in pumped storage power stations

The Centre for Industrial Diagnostics and Fluid Dynamics (CDIF UPC) has completed a numerical and experimental study of the dynamic behavior of pump-turbine runners submerged in water. The study determined the effects of the added mass of water, the boundaries, and the rotor on the dynamic response of this type of runner. Pump-turbines are high-power reversible machines that are used in hydraulic power stations to store surplus energy generated in off-peak periods by new renewable energy power plants (wind, marine and solar energy). Pumped storage power stations are essential to the control of the electrical grid and the development of new renewable energies. The results of the project, which was funded by the German company VOITH HYDRO Holding GmbH, will help to reduce the possibility of resonance and fatigue damage in the machine.





Equipment for modelling subsidence

CDEI UPC & CITCEA UPC have developed new subsidence modelling equipment that can measure the temperature and pressure on the cut edge, and apply high pressure and cutting speeds to an analyzed sample of land. The equipment reveals in greater depth the characteristics of land that is prone to subsidence, in order to avoid building on such sites or in the surrounding areas. In the long-term, it can help to reduce the material and human damage caused by constructing buildings and public works on unstable land. The equipment enables experimentation with the thermal-hydraulic-mechanical model created in the UPC's Department of Geotechnological Engineering and Geo-sciences (ETCG), and will help to validate a theory to predict the appearance of rapid subsidence.

European project for the aeronautics industry

The Electromagnetic Compatibility Group (GCEM UPC) has completed its participation in the HIRF SE European project. The aim of this electromagnetic compatibility project is to provide the aeronautics industry with numerical simulation methods to assess aircraft in the development phase. The opportunity to assess the electromagnetic behavior of the structure and wiring before the final prototype of an aircraft is built considerably reduces the expensive phase of certification and testing. The simulations take into account the new materials used in the aeronautics industry. A total of 43 partners have been involved in the project, which has a total budget of 26.5 million euros. The project was led by Alenia Aeronautica S.p.A.

Smart sensor for early fault detection in industrial machinery

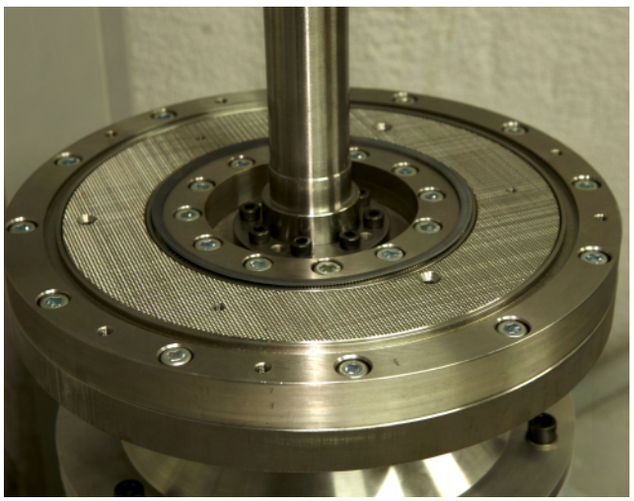
Together with other European centers and companies, the Motion Control and Industrial Applications (MCIA UPC) center, led by Luis Romeral, has developed a sensor based on acoustic emissions that is self-powered, smart and capable of automatically establishing a wireless network to aid the control and maintenance of rotating machinery. This technology was developed as part of the Mosycousis European project to develop a system for monitoring mechanical elements for the early detection of faults in industrial machinery. This project is an example of European public-private collaboration to increase the competitiveness of SMEs.

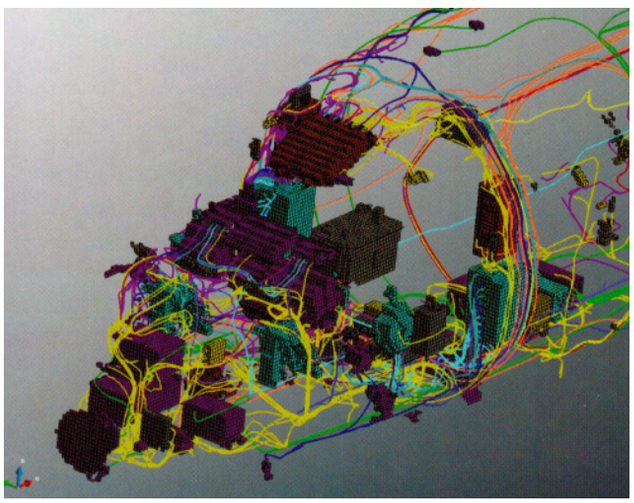
Food technologies

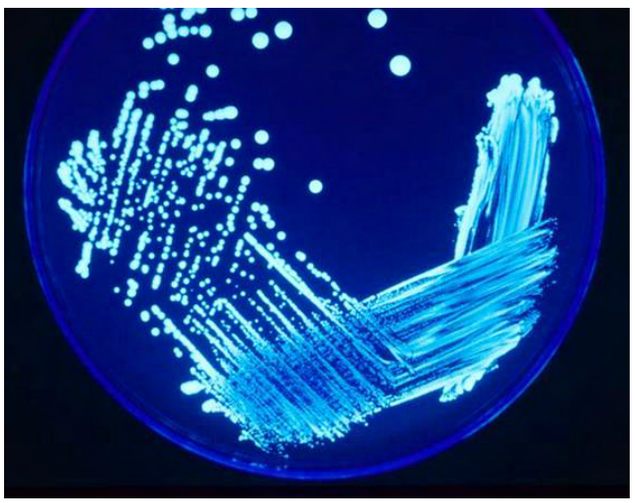
Agrifood Industry

Fifth congress on legionella and environmental quality

The Food Safety and Control Research Centre (CRESCA UPC) organized the Fifth Congress on Legionella and Environmental Quality. The Congress provided a forum for discussing current legislation and existing detection methods and treatments, with particular focus on prevention, education and protection. The aim was to propose new work methods and to plan the development of appropriate safety measures.







Energy and environmental technologies

Chemical, Energy and Resources Industries

Modelling the vibration impact of public works

The aim of the Vibraimpact project is to model the vibration impact of public works on the environment, and particularly inside dwellings situated around a construction site. This is an innovative project to characterize a set of public works activities as the source of the vibration, vibration propagation through the ground, and transmission to the structure of dwellings. A range of variables are considered, such as the type of land, the type of structure, the stratification, and the types of foundations. The project was carried out by the Acoustic and Mechanical Engineering Laboratory (LEAM UPC), together with AYESA and AV Enginyers, and received funding from the CDTI.

Monitoring and prediction of precipitation

The Center of Applied Research in Hydrometeorology (CRAHI UPC) has coordinated a European project entitled HAREN. The aim of this project was to develop a system for monitoring and predicting precipitation that could be used to anticipate risks at local and European scale. The project makes use of mosaics from Opera, a network of European national radars, and recent improvements in immediate forecasting techniques. It generates high-resolution forecasts of precipitation and identifies risks at European level, as well as uncertainties associated with these phenomena.

The COLTOX Kit for detecting contaminants

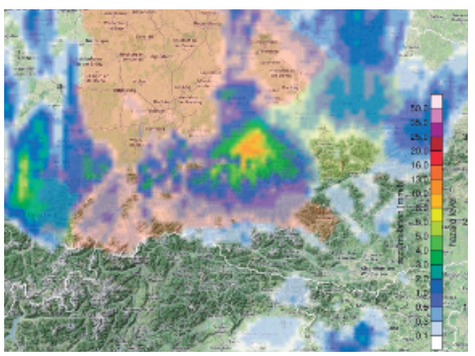
The INNOTEX Center / CRIT has presented a new device for detecting soil contaminants. The COLTOX Kit is a simple, fast tool (the system provides a response in just 24 hours) that is easy to use and transport. It provides a preliminary evaluation of the environmental quality of soils that are thought to be contaminated or an evaluation of the effects of chemical products on soil organisms by analyzing the response of springtails. COLTOX Kit is patented and available for licensing.

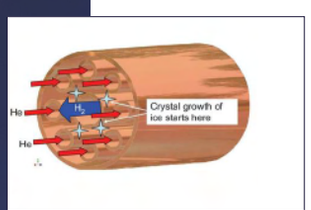
Improvements in cryogenic space propulsion

The Heat and Mass Transfer Technological Center (CTTC UPC) has taken part in Space Propulsion 1, a European project to improve the knowledge and techniques necessary to successfully implement cryogenic propulsion in future space missions. The project focused on the study of:

- Various propellants.
- LOX/methane combustion.
- Energy management of propulsion systems.
- Compatibility of materials and tribological properties in liquid hydrogen.
- Hydrogen embrittlement.
- The development of electrically propelled cryogenic turbopumps.

CTTC UPC has presented its conclusions on the modelling of a heat accumulator, experimentally validated several results, and carried out various parametric studies of interest.




Crystal growth of
ice starts here
He
He

Technology platform for cloud data management

DAMA UPC is involved in CoherentPaaS, a European project within the Seventh Framework Programme. The aim of the project is to develop a technology platform for cloud data management, including NoSQL stores such as key-value and graph databases, SQL databases with in-memory and column-oriented databases, hybrid systems such as SQL engines over key-value stores, and complex event processing data management systems. All of these systems can be programmed using a common query language. In addition, a scalable transaction processing system will provide holistic coherence across data stores. The project's results could simplify the development and increase the quality of cloud applications using one query language with holistic coherence.

Bidirectional three-phase power converter for a microgrid

CITCEA UPC has designed and built a bidirectional three-phase power converter to be used between a battery or supercapacitor energy storage system and an experimental microgrid. This converter enables private power generation, storage and consumption to be integrated into the public grid. Thus, private generation can be considered by the public system as an intelligent, single entity that can supply itself independently, but can also support the grid, supply and consume energy, depending on the needs and/or shortfalls of the public electricity system. The power that is generated is integrated close to where it is consumed, which helps to relieve the power transmission system. The device was developed as part of a tender issued by CENER. CITCEA UPC has a replica of this device in its lab.

Improvement in the management of fishing activities and marketing of products from the sea

The Technological Development Centre of Remote Acquisition and Data processing Systems (SARTI UPC) has launched a Fishing & Marketing Box (F&MB) platform. This is a low-cost, one-device system for managing and controlling fishing activities. F&MB incorporates a vessel monitoring system ('blue box'), an electronic fishing log and the prices of fish, without using a satellite connection. The project, which aims to increase the competitiveness of the sector, has been developed in conjunction with the Directorate General of Fishing and Maritime Affairs of the Regional Government of Catalonia's Ministry of Agriculture, Livestock, Fishing, Food and the Environment and was funded by the EU.

Materials technologies

Chemical, energy and resources industries

Damage and fatigue sensitivity in cemented carbides

The Structural Integrity and Materials Reliability Centre (CIEFMA UPC) is carrying out a research project led by Professor Luis Llanes with the support of Sandvik Hard Materials (SHM) to analyse damage tolerance and fatigue sensitivity in cemented carbides. The results obtained to date were presented at the "9th Tungsten, Refractory & Hard Materials Conference", held in conjunction with the "World Congress on Powder Metallurgy & Particulate Materials" in Orlando (Florida). The conference paper that was presented won the "2014 Best paper award".

Information and communication technologies

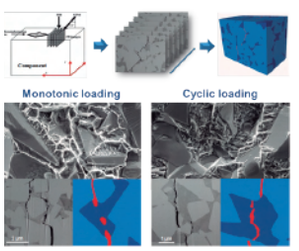
Sustainable Mobility Industries

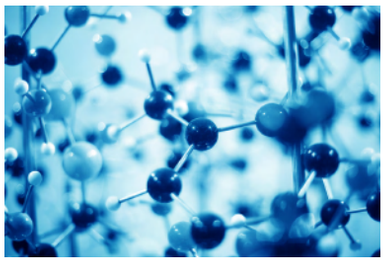
Sparksee searches to identify potential insider threat

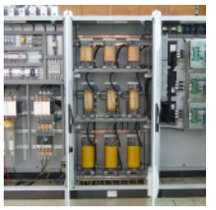
The RMIT University (Melbourne, Australia) and CA Labs (CA Technologies) have successfully used Sparksee, a high-performance system for managing large volumes of information in the form of graphs or networks, to identify potential insider threats among employees of an organization. Sparksee was developed by the Data Management Group (DAMA UPC) to analyze large volumes of logs, and thus to study users' normal patterns of behavior and detect any possible deviations, which warn of potentially inappropriate access to restricted business information (including cloud computing).

Cells for Innovation and Design

The Multimedia Applications Laboratory (LAM UPC) has undertaken a project entitled *CID Cèl·lules d'Innovació i Disseny* (CID: Cells for Innovation and Design) that focuses on a new method for open innovation. The method has been applied to a group of companies in the Baix Llobregat area to foster competitiveness through innovation. Six cells comprised of agents involved in the innovation process (companies, designers, experts and users) form a network in which knowledge transfer is promoted. The growth of the network has been facilitated through the incorporation of new members. The project is promoted by the *Fundació Ciutat de Viladecans* (FCV), with the collaboration of Barcelona Design Center (BCD), and has been jointly funded by SOC and the European Social Fund.







30 January 2013

The Metal - Innova Project

In January 2013, the first meeting was held for the Metal-Innova project (INTERREG IV B-SUDOE - European Interregional Cooperation Programme for the southwestern European area), with the participation of CIT UPC as a member. The aim of the two-year project, which is coordinated by the *Unió Patronal Metal·lúrgica* (UPM) is to stimulate technology and knowledge transfer between companies and research centers in Spain, Portugal and France in the metal sector. The objective is also for the project to become a benchmark for companies in this sector.

In October, a seminar was held to present the Metal-innova project to companies. The session was organized jointly by CIT UPC and the *Unió Patronal Metal·lúrgica* (UPM). Participants included companies in the metal sector that are interested in developing innovation projects. The Structural Integrity and Materials Reliability Centre (CIEFMA UPC) presented its technological capabilities and examples of collaboration with companies in this sector.

18 February 2013

Josep Amat receives the award of honor at the Night of Telecommunications and Computer Science 2013Telecomunicacions i de la Informàtica 2013

Josep Amat, Director of the Robotics and Vision Division of the Biomedical Engineering Research Centre (CREB UPC), received the Award of Honor at the Eighteenth Night of Telecommunications and Computer Science. The award was presented by Felip Puig, Minister for Enterprise and Labor of the Regional Government of Catalonia, on 18 February in Barcelona, in recognition of Amat's long and outstanding career.

19 February 2013

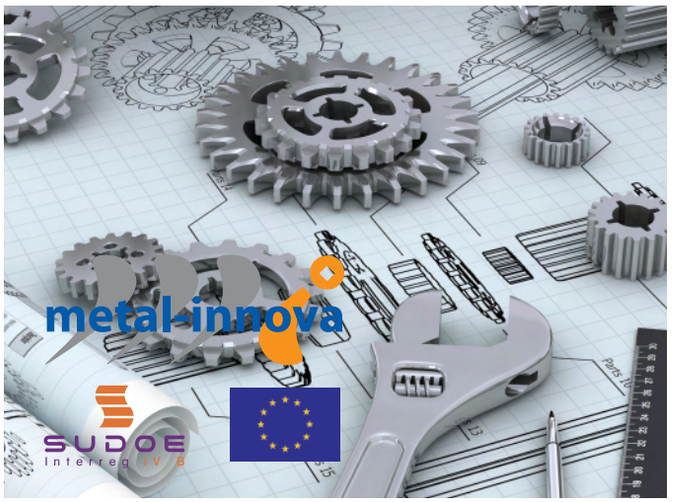
Graph-TA workshop

The Data Management Group (DAMA UPC) organized the Graph-TA (Graph Technology and Applications) Workshop. The event was a meeting place for international experts on graphs and related aspects (including technology, graph theory, pattern recognition and network modelling, among others). The aim of the workshop was to present the center's research areas and to facilitate collaboration and information exchange. The workshop is therefore a forum for sharing research results and their potential applications.

21 February 2013

Mobile technologies breakfast at the UPC and Mobile World Congress 2013

To mark the UPC's participation in the Mobile World Congress 2013, the CIT UPC presented some examples of the University's technological capacities in the mobile communications field (specifically the work of five research groups) to a group of companies linked to this sector. The following companies attended the event, among others: Abertis Telecom, ATOS, Altran, CA Technologies, Telefonica I+D, Everis, Indra, SEAT, Tempos 21, Vodafone España, Mier Comunicación, Geonik, Lear and GMV.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SUDOE
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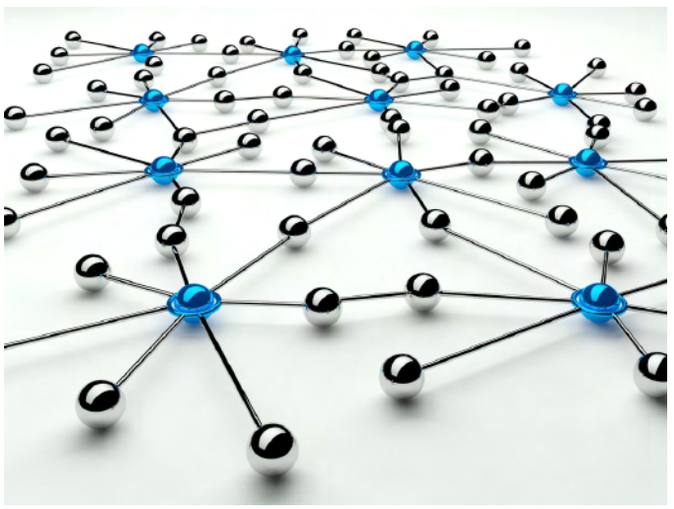

27 February 2013

UPC INNOTEX Center is launched

The UPC has officially launched the INNOTEX Center, a leader in research and development for the textile industry and related sectors that draws on years of experience of university-business collaboration in the fields of textiles, toxicology and environment. Three UPC R+D groups joined together to form this Center: the Technological Innovation Centre (CTF UPC), the Centre for Research and Innovation in Toxicology (CRIT UPC), and the Institute of Textile Research and Industrial Cooperation of Terrassa (INTEXTER). INNOTEX, which is a member of CIT UPC, benefits from:

- Technological know-how, with over 20 registered patents.
- A team of 60 researchers (27% PhD holders).
- Collaboration with over 1,000 companies.
- Participation in the most representative international and sectorial networks
- 4.450 m^2 of facilities.

The kick-off event was led by Antoni Giró, UPC Rector; Francisco Garcia-Planas, Vice-President of the Confederación de la Industria Textil (Texfor); and Xavier Gil, UPC Vice-Rector for Scientific Policy. It was attended by representatives from a wide range of companies in the sector, members of the Catalonian Government's ACC1Ó, and UPC members.

20 & 21 March 2013

Participation in the Sixth Annual Conference of Biomedical Research Technology Platforms

Dr. Caminal, Director of CREB UPC, took part as a speaker in the session on Commercialization of Research at the Sixth Annual Conference of Biomedical Research Technology Platforms, organized jointly by FENIN, ASEBIO, Farmaindustria and IMIM to promote innovation in the health field.

21 March & 15 May 2013

Meeting on technology transfer and support for innovation

Collaboration with the Asociación de Empresarios de Alt Penedes, Baix Penedes y Garraf (ADEG) was continuous throughout 2013. The ADEG and its Escuela de Dirección de Empresa (EDE) organized a working lunch at which a CIT UPC representative gave a speech entitled "Resources for innovation and technology transfer". In this speech, the technological capacities and knowledge of CIT UPC's Member Centers were presented to a group of managers from 25 SMEs.
In May, CIT UPC and ADEG held a meeting for business people and companies at which UPC technological capacities were presented. The wine company TORRES S.A. hosted the meeting at their visitors' center in Penedès.

9 & 10 April 2013

Participation in the European Data Forum 2013

Josep Lluis Larriba Pey, Director of the Data Management Group (DAMA UPC), gave a presentation at the European Data Forum 2013, held in Dublin on 9 and 10 April. The presentation was on the Linked Data Benchmark Council (LBCD) European project, which is coordinated by DAMA UPC. The aim of the LBCD is to create a benchmark that allows the market to assess RDF and graph technology products.


Presentació INNOTEX CENTER


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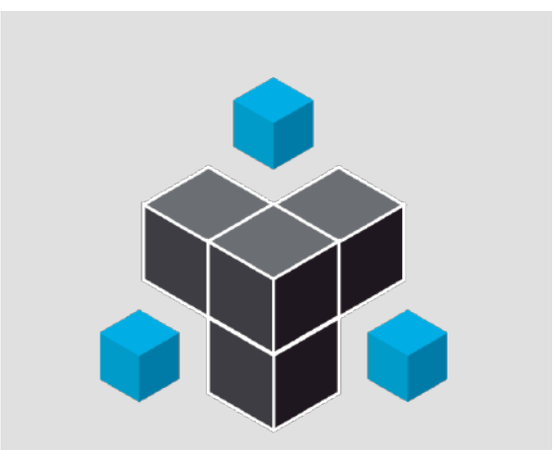

15 April 2013

Recognition of Daniel Palet, researcher

Daniel Palet, a member of the research team at the INNOTEX CENTER, was recognized in April as a Fellow of The Textile Institute, Manchester, for his notable contributions to the industry, research and design, as well as to advances in technology, training and communication. The Textile Institute was founded in 1910 and has more than 3,000 members in 80 countries and over 100 corporative members. It awards titles that recognize experience, skills, academic knowledge and the highest professional level.

23 April 2013

Technical symposium on clusters

The Center for Sensors, Instruments and Systems Development (CD6 UPC) took part in a symposium on Clusters as a tool to increase competitiveness and the role of TECNIO. CD6 UPC presented its successful experience as part of SECPhO, the southern European photonics cluster of which it is founding member.

9 May 2013

Round table held on CEEC Efficiency Night

Dr. Joan Bergas, director of research at CITCEA UPC, took part in a round table held on 'Efficiency Night'. The topic was the current state of the energy efficiency market and the perspective of research and universities in particular. The event, which was held at Torre Agbar in Barcelona, was organized by the Catalan Energy Efficiency Cluster (CEEC). Over 200 people attended, including Felip Puig, the Regional Government of Catalonia's Minister for Business and Labor.

27 May 2013

CIT UPC at the Eco-Innovation Day

CIT UPC took part in the Eco-Innovation European Information Day held in Brussels. Eco-Innovation is a sub-programme of the Competitiveness and Innovation Framework Programme (CIP). The initiative is designed to fund projects that bring ideas for green products and services to the market. There are 5 priority categories: recyclable materials, sustainable products for construction, food, water, and ecological businesses.

June 2013

CIT UPC has subscribed the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers

CIT UPC has subscribed the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. It is committed to applying the principles stated in these documents that promote transparency, accessibility, fairness and the search for excellence in the hiring of researchers. Through EURAXESS Rights, these initiatives help the EU to boost employment and economic development.

7 June 2013

Carles Riba receives the Manel Xifra Boada 2013 award

Carles Riba, Director of the Center for Industrial Equipment Design (CDEI UPC), received the eighth edition of the Manel Xifra Boada Award for science and technology knowledge transfer, which is given by the Association of Industrial Engineers of Girona (CETIG) and the COMEXI Group. This year, the award recognizes Dr. Riba's role as one of the driving forces behind a research project into the transition to renewable energies.


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13 June 2013

Participation of CIT UPC in the MIT's ILP Program and in the eighth conference

CIT UPC is the only Spanish Technology Centre to take part in the MIT's ILP program. This involvement strengthens our ties with a leading institution and world reference in science, technology and transfer to industry. An example of CIT UPC's collaboration is its participation in the eighth edition of the Barcelona Global Energy Challenges Congress, organized by the b_TEC Foundation, the IREC and MIT-ILP. During the conference, the UPC's Technology Center was presented to an audience of over 300 people.

13 June 2013

New facilities at CTTC: Bioclimatic Area

The Heat and Mass Transfer Technological Center (CTTC UPC) has extended its facilities with a new 800m^2 building where 30 researchers work. The building has been designed so that its structure can also be used for testing bioclimatic systems. It has double-skin façades, living walls, landscaped interior microclimates and free-cooling systems suitable for the work of large computer clusters. It was funded by the Spanish Ministry of Economy and Competitiveness and the Spanish Ministry of Education.

16 June 2013

Foundation of the Manel Xifra Boada Chair

The Comexi Group, the University of Girona and the Universitat Politècnica de Catalunya · BarcelonaTech (UPC) signed an agreement to set up the Manel Xifra Boada Chair, named after the founder of the Comexi Group. This is the first interuniversity chair created in Catalonia to carry out training, research and knowledge transfer activities in the area of flexible packaging manufacturing technology. Carles Riba, director of the Center for Industrial Equipment Design (CDEI UPC), will be in charge of aspects related to the converting industry, on behalf of the UPC.

19 September 2013

Gaceta Dental Prize

F. Xavier Gil Mur was awarded the prize for best R&D article published in the Gaceta Dental 2013 journal for a paper entitled "*Sellado biológico para modificación superficial del cuello del implante dental: ensayos in vitro con fibroblastos humanos*" (Biological sealant for surface modification of the neck of dental implants: in vitro trials with human fibroblasts). Dr. Gil is a researcher in the Biomaterials, Biomechanics and Tissue Engineering area of the Biomedical Engineering Research Centre (CREB UPC).

17 October 2013

Technological capabilities of the UPC at 22@

The October edition of 22@Breakfast, organized by the 22@network Association, was on the subject "Technological Cooperation at the UPC, a key to successful innovation". More than 40 companies from the 22@ technology district attended the event, which was held at the Fundació Politècnica. CIT UPC presented the Data Management Group's (DAMA UPC) technologies ("New tools for managing big data in real time"). Víctor Muntés, as the innovator of the month, described some projects and the experience of multinationals such as CA Technologies, which established its CA LABS Europe headquarters in Barcelona as a result of collaboration with the UPC.

1 November 2013

Two new centers join CIT UPC

Two new UPC centers became members of CIT UPC, leading to an increase in technology capabilities, particularly in the ICT area, and providing new opportunities to collaborate with companies:

- InLab UPC, with over 30 years of experience and a team of 70 people, develops applications and services based on the most innovative information technologies and creates tailor-made solutions for companies and private and public institutions.
- TALP UPC, Center for Language and Speech Technologies and Applications which has a team of over 50 people and is specialized in the automatic processing of written and spoken natural language. Its aim is to help overcome language barriers to improve access to information systems.




15 November 2013

Smart City Technologies at the UPC

Over 55 companies and organizations attended a symposium entitled Smart City Technologies at the UPC. At the event, some of the 120 smart city projects that are currently underway at the university were presented. These include Green radio networks, communications applied to Smart Environments (WiComTec UPC), GIS systems applied to the area of mobility, sport and health (inLab FIB), conditioners for smart grids (CITCEA UPC), assessment of resilience and damage detection for electricity pylons (LITEM UPC), virtual and sustainable cities (CPSV UPC) and social robots in Smart Cities (VIS UPC). Other speakers included representatives of Indra and Seat.

11 December 2013

CIT UPC at Seat's Forschungstag 2013

CIT UPC took part in the Innovation Day 2013 Forschunsgtag, held at SEAT's Technical Centre. As executives from the Volkswagen Group Research Centre took part at the event, SEAT Technical Center arranged a meeting in which university and research centers presented their technological capabilities that are applicable to automotive companies. Six UPC centers (MCIA UPC, LACAN UPC, INNOTEX CENTER UPC, CCP UPC, InLab FIB UPC and WNG UPC) and the SEAT-UPC Chair took part. Working meetings were held with heads of SEAT and the Volkswagen Group, to identify opportunities for university-industry collaboration in the areas of materials and processes, electricity, electronics and connectivity, mobility and simulation (CFD/CSM).

December 2013

OBSEA at CosmoCaixa Barcelona

The OBSEA seafloor observatory, which was set up by the Technological Development Centre of Remote Acquisition and Data processing Systems (SARTI UPC) 4 km off the coast of Vilanova i la Geltrú, is represented in the exhibition 'Mediterrani: el nostre mar com mai l'havies vist' (The Mediterranean: our sea as you've never seen it before) at CosmoCaixa Barcelona. An interactive tool can be used to find out about the observatory's activities and to view the seafloor in real time. The exhibition was opened in December and will run throughout 2014.

Creation of spin-offs

The following spin-offs have been created as a result of technology generated by CIT UPC Member Centers:

ObsTech

ObsTech, a spin-off associated with the Centre for Sensors, Instruments and Systems Development (CD6 UPC) with the participation of Dr. Santiago Royo. ObsTech markets the use of high quality astronomical telescopes that work by remote control via the internet.

SUBTILIS BIOMATERIALS

Subtilis Biomaterials is a spin-off from the Biomaterials area of the Biomedical Engineering Research Centre (CREB UPC) of the Universitat Politècnica de Catalunya · BarcelonaTech. The company focuses on the development and marketing of materials and last generation technology for bone regeneration, including injectable calcium phosphate foam with inherent technological properties, which could be used to regenerate lost bone material or act as a drug release system, as it can be injected through minimally invasive surgery.

teknoCEA

teknoCEA is associated with CITCEA UPC and is specialized in electrical energy engineering services to meet corporate needs and aid the industrialization of already developed technologies. The initiative helps to forge closer links between the development of knowledge and the market. Through this new company, CITCEA UPC designs will be marketed in the areas of power electronics, automation, renewable energies, microgrids and smart grids.

Participation in trade fairs

In 2013, **CIT UPC** took part in 15 national and international trade fairs and brokerage events:

25-28 February 2013

The UPC at the Mobile World Congress 2013

The UPC is the only public Spanish university to take part in the GSMA Mobile World Congress 2013. The University promoted its latest innovations in mobile technology, the technological capacities of its research groups in the field, and the potential applications of these technologies in companies.

11-13 April 2013

Participation in Dental Forum 2013

CIT UPC took part in the Dental Forum (FDM) 2013, which was held in Barcelona. FDM is a trade fair for the dental sector that is attended by dentists, dental hygienists and dental technicians and the public administrations involved in this sector. Several meetings were held with companies interested in technology applications developed by the Biomaterials, Biomechanics and Tissue Engineering Division of the Biomedical Engineering Research Centre (CREB UPC).

22-25 April 2013

Participation in the BIO International Convention 2013

The Biomedical Engineering Research Centre (CREB UPC) participated in the BIO International Convention held in Chicago. CREB UPC presented recently developed technologies, including an electroporation system for cells.

26-28 June 2013

MIHealth Forum 2013

CIT UPC, which is a collaborating member of the MIHealth Forum conference that was held in Barcelona, presented the Innovation Capsule "Biofeedback system for training the pelvic floor". The presentation was given by Miguel Ángel Mañanas from the Biomedical Engineering Research Centre (CREB UPC).

16-20 September 2013

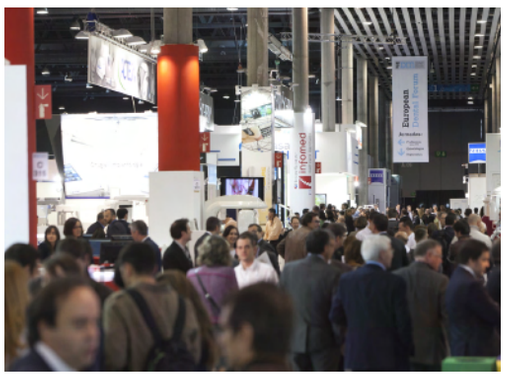
CIT UPC attends the international symposium on fusion nuclear technology

CIT UPC has taken part in the 11th International Symposium on Fusion Nuclear Technology (ISFNT-11), which was held in Barcelona. The aim of the Symposium is to promote information exchange between scientists and technicians, present the latest advances in the field, and discuss the main issues in the development of fusion as a source of safe and sustainable energy for the future.

19-21 November 2013

The UPC takes part in the Smart City Expo 2013

Through its Technology Center (CIT UPC) the UPC presented smart city technologies at its own stand at the Smart City Expo World Congress, which was held at the Fira de Barcelona. The expertise and technological capacities of the UPC and its research centers were presented in the fields of ICT, energy, the sustainable built environment, mobility, collaborative and resilient cities, and urban safety. Contact was made with over 40 companies and organizations in the sector, to promote potential R+D collaborations.




MIHealth
FORUM
Equipo Pluridisciplinar
CLÍNIC


Barcelona Fusion Center


UNIVERSITAT POLITÈCNICA
DE CATALUNYA
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UPC
saba


Spain
España
CATALONIA
biocat
Spain

6 CIT UPC networks

The **Government of Catalonia's TECNIO** network

Catalan Coordinator of Foundations (CCF)

Automotive Cluster of Catalonia

Spanish Federation of Innovation and Technology Centres (FEDIT)

ASTP - PROTON

MIT Industrial Liaison Program

CIT UPC
TECHNOLOGY CENTER
UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

7 Dissemination & Media

For our science and technology activities to achieve good results, they must be disseminated to society. In particular, we need excellent communication with companies, entities and business organizations. We use various channels to disseminate information about our member centers' projects, such as examples of business-university collaboration and the results and developments they have achieved, which are available for application.

Publications

Newsletter

We publish a monthly newsletter in three languages, which is currently sent to over 850 people.

Blog

In 2013, we launched a technology blog to share experiences and provide information on knowledge, technology and innovation. The blog is open to participation and aims to bring companies and the university into contact.

Presence in social networks

Twitter

Linked In
Company's Web
CIT UPC Group

YouTube

Facebook

7 Dissemination & Media

Press clipping

As a result of the dissemination of projects, technologies and results, in 2013 **we were mentioned in the media (written press, radio and television) over 220 times**.

CIT UPC
TECHNOLOGY CENTER
UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

7 Dissemination & Media

Publications

Every year we draw up various documents in order to provide information on the capacities and cross-cutting technologies of CIT UPC's member centers.

CIT UPC

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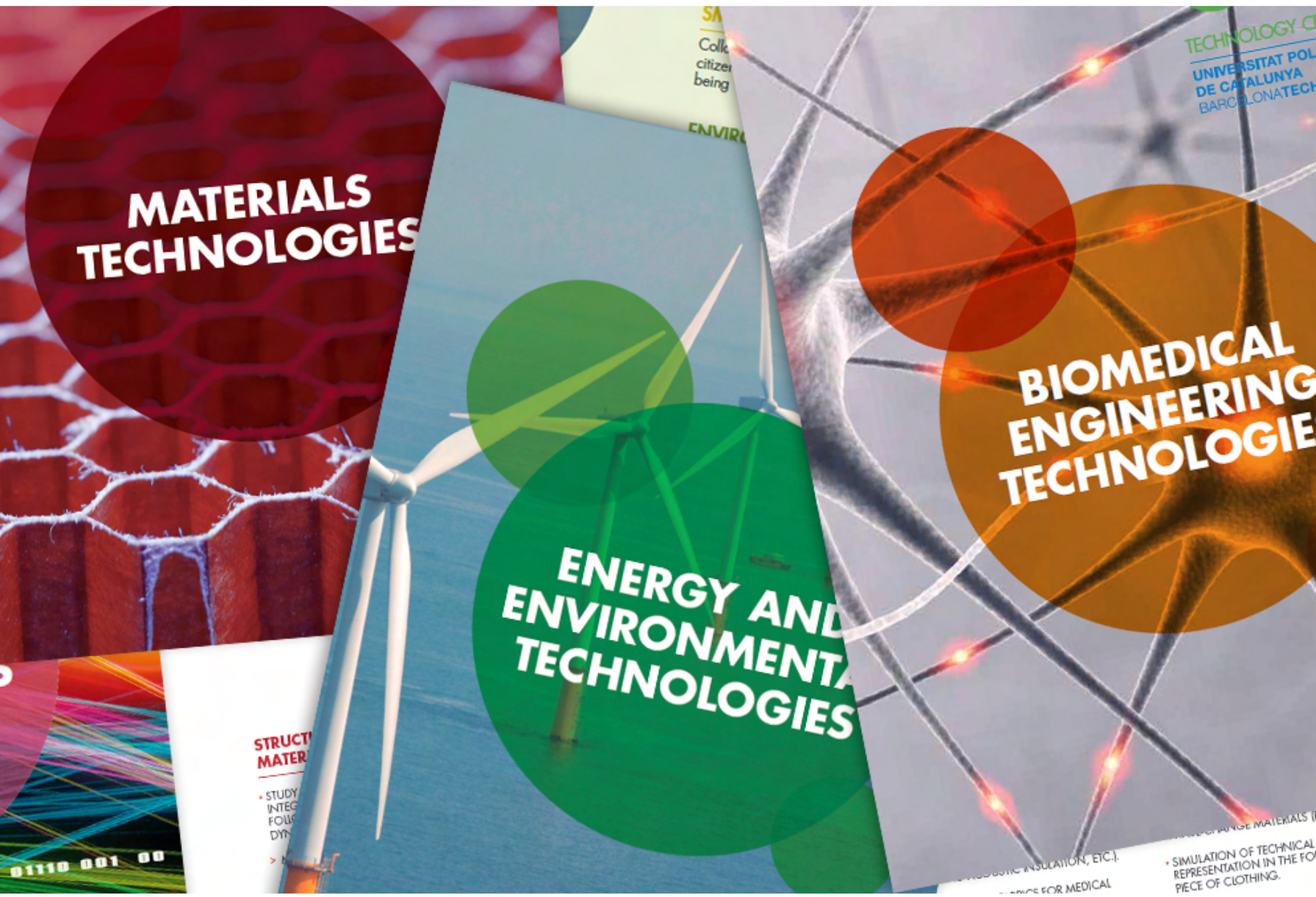

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