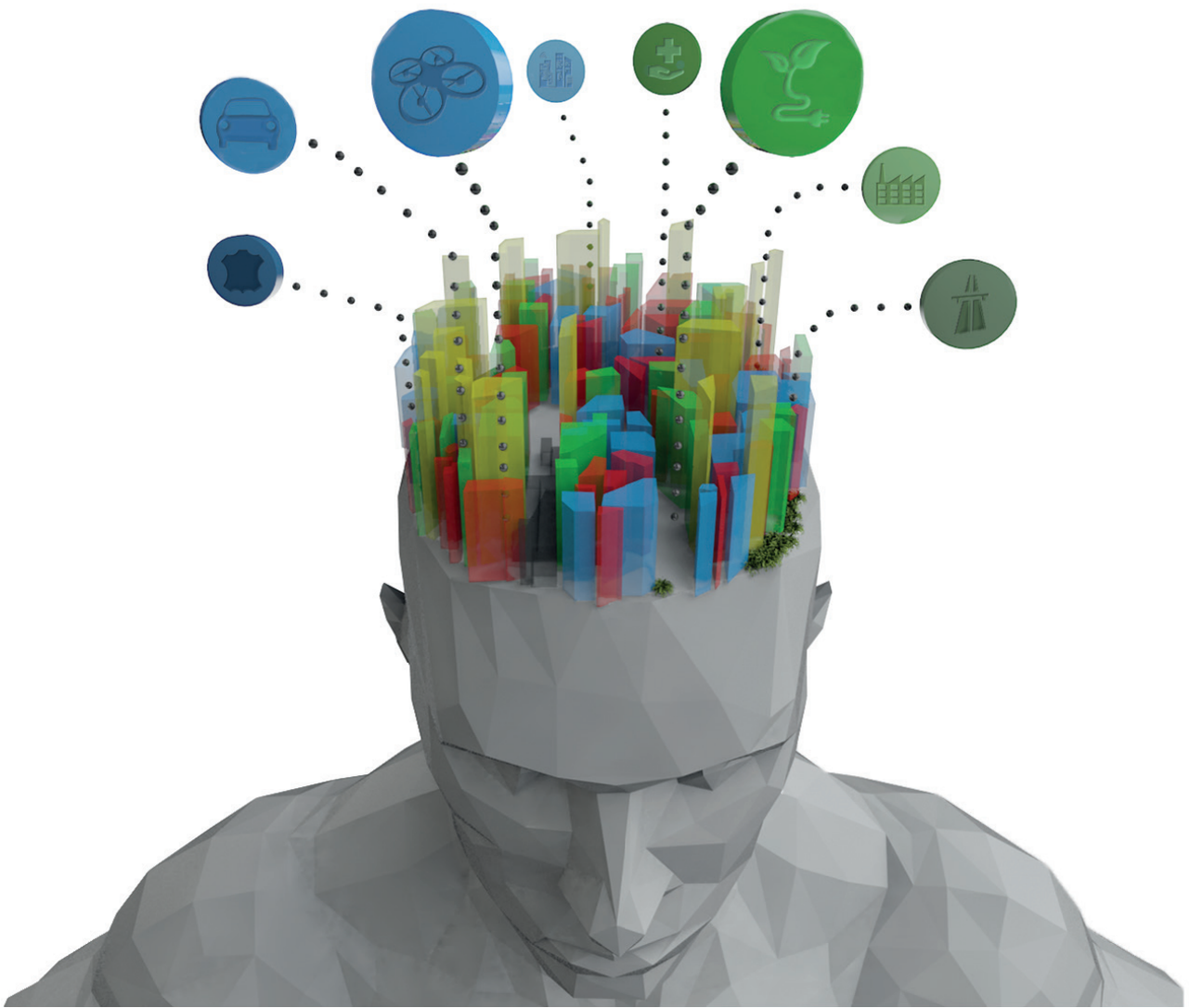
CIT UPC

TECHNOLOGY CENTER

UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

Annual Report **2015**



Annual Report **2015**

Technology Center (CIT UPC)
Til·lers Building (floor 1)
C/ Jordi Girona, 31
08034 Barcelona
Telephone: +34 93 405 44 03
www.cit.upc.edu | info.cit@upc.edu

Legal deposit:
DL B 26235-2014

SUMMARY

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LETTER FROM THE CHAIRMAN

1 LETTER FROM THE CHAIRMAN

THE VALUE OF APPLIED RESEARCH

The Technology Centre of the Universitat Politècnica de Catalunya (CIT UPC) aims to make knowledge stemming from university research available to companies. As the University's technology centre, CIT UPC stimulates this transfer and meets the needs of companies by offering them a comprehensive and multidisciplinary technology service based on the activity of UPC research groups involved in applied research.

CIT UPC was set up in 2011 as a means for the University to contribute to society and improve businesses' competitiveness. Since then, it has become an important part of the industrial ecosystem in Catalonia and a strategic ally of the more than five hundred companies with which it works and for which it has carried out over a thousand research, development and innovation projects in six technology areas: materials technologies; energy and the environment; ICTs; chemical and food technologies; production technologies; and medical technologies.

I wish to thank those involved in this transfer ecosystem that CIT UPC helps to stimulate at the UPC, particularly our researchers, who do an excellent job and are not always recognised as they deserve. I am also grateful for the work of CIT UPC that is reflected in this report, which gives an account of how this work has been managed in the last year.

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

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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 valorisation 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 centres 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 realisation that companies have an increasing demand for technology solutions. As a result, the UPC made a strategic commitment to founding the UPC Technology Center, following the steps of the top technical universities in the world.

CIT UPC'S OBJECTIVES

CIT UPC is a **foundation** that brings together **20 UPC research centres**. The centres 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 506 researchers, of which 47% are doctoral degree holders.

UPC research centres' capacity for technology transfer 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 UPC 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 CIT UPC research centres, 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 centres. CIT UPC is now the main technology centre in Catalonia in terms of research, technology and knowledge transfer, that is, in terms of **innovation**.

A technology centre 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 centres, 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 valorisation of technologies and research results generated by its member centres 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.

ORGANISATION

BOARD

Chairman	**Dr Enric Fossas** Rector of the Universitat Politècnica de Catalunya · BarcelonaTech
Deputy Chairman	**Mr Ramon Carbonell** Chair of the Board of Trustees of the Universitat Politècnica de Catalunya · BarcelonaTech
Board members	**Dr Esther Real** Vice-rector for Knowledge Transfer UPC
	Dr Antoni Ras Vice-rector for Univerity politics UPC
	Dr Fernando Orejas Vice-rector for Research UPC
	Ms Olga Lanau General manager UPC
	Dr Santiago Royo Director of CD6 UPC
	Mr Carles Sumarroca Appointed by the Board of Trustees of CIT UPC, COMSA
	Mr Manel Xifra Member of the Board of Trustees and president of the Comexi Group
Secretary (non-board member)	**Ms Anna Serra** Secretary of the Board of Trustees of the UPC

SCIENTIFIC ADVISORY BOARD

The Scientific Advisory Board comprises the directors of CIT UPC member centers:

Dr Santiago Royo
Director of CD6 UPC

Dr Carles Riba
Director of CDEI UPC

Dr Eduard Egusquiza
Director of CDIF UPC

Dr Marc Anglada
Director of CIEFMA UPC

Dr Antoni Sudrià
Director of CITCEA UPC

Dr Daniel Sempere
Director of CRAHI UPC

Dr Daniela Tost
Director of CREB UPC

Dr Josep Garcia Raurich
Director of CRESCA UPC

Dr Martí Crespi
Director of INNOTEX Center

Dr Assensi Oliva
Director of CTTC UPC

Dr Josep Lluís Larriba
Director of DAMA UPC

Dr Ferran Silva
Director of GCEM UPC

Dr Josep Casanovas
Director of InLab FIB UPC

Dr Esteve Codina
Director of LABSON UPC

Dr Joaquín Fernàndez
Director of LAM UPC

Dr Jordi Romeu
Director of LEAM UPC

Dr Juan Antonio Ortega & Dr Luis Romeral
Directores of MCIA UPC

Dr Joaquim Olivé
Director of SARTI UPC

Dr Pedro Rodríguez
Director of SEER UPC

Dr Lluís Padró
Director of TALP UPC

INDUSTRIAL BOARD

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

CIT UPC MEMBER CENTRES

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
Centre of Applied Research on Hydrometeorology

CREB UPC
Biomedical Engineering Research Centre

CRESCA UPC
Food Safety and Control Centre

INNOTEX Center UPC

CTTC UPC
Heat and Mass Transfer Technological Centre

DAMA UPC
Data Management Group

GCEM UPC
Electromagnetic Compatibility Group

InLab FIB UPC

LABSON UPC
Hydraulic and Pneumatic Systems Laboratory

LAM UPC
Multimedia Applications Laboratory

LEAM UPC
Acoustics and Mechanical Engineering Laboratory

MCIA UPC
Motion Control and Industrial Applications

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

SEER UPC
Renewable Electrical Energy Systems

TALP UPC
Language and Speech Technologies and Applications

3
KEY FIGURES

3 KEY FIGURES

KEY FIGURES 2015

12.096.852 €
total revenue

- **51%** corporate R&D
- **49%** projects funded through competitive calls

20
UPC research and technology transfer centres

563
projects

596
corporate clients

- **118** new corporate clients

506
projects

- **47%** doctors

ACCUMULATED DATA

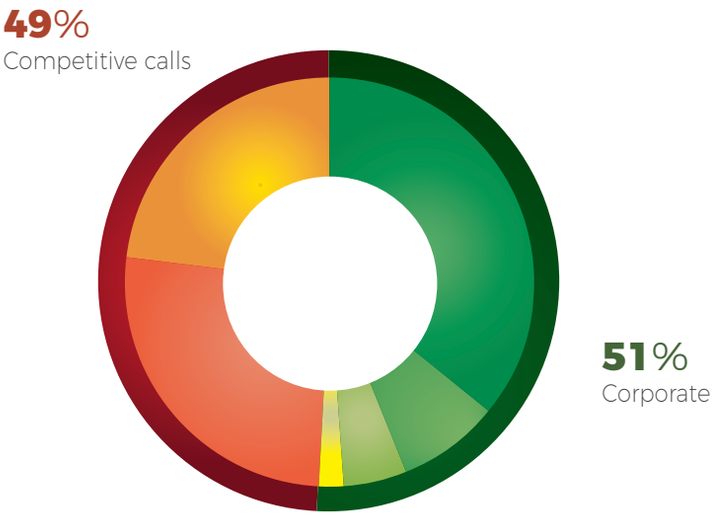
119
registered patents

25
spin-offs

60+
countries with projects carried out

INDICATORS ON PROJECTS CARRIED OUT

DISTRIBUTION OF INCOME BY SOURCE OF FUNDING



36%
Corporate R&D

8%
Corporate services

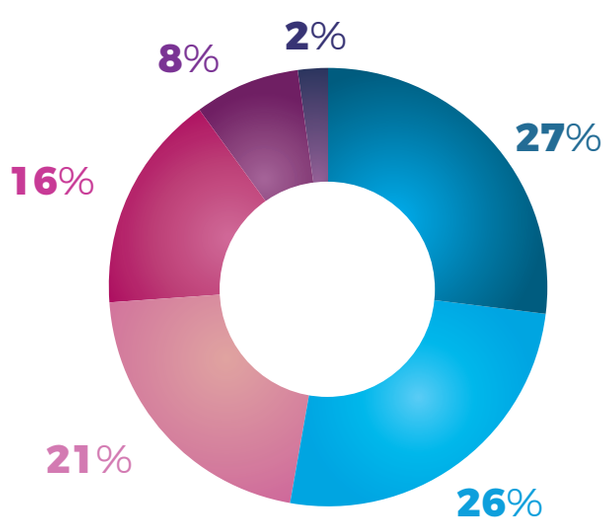
5%
Training for companies

2%
Other

23%
Spanish projects awarded in competitive calls

26%
European projects with business participation

DISTRIBUTION OF PROJECTS BY SECTOR



Advanced manufacturing technologies

Energy and environmental technologies

ICTs

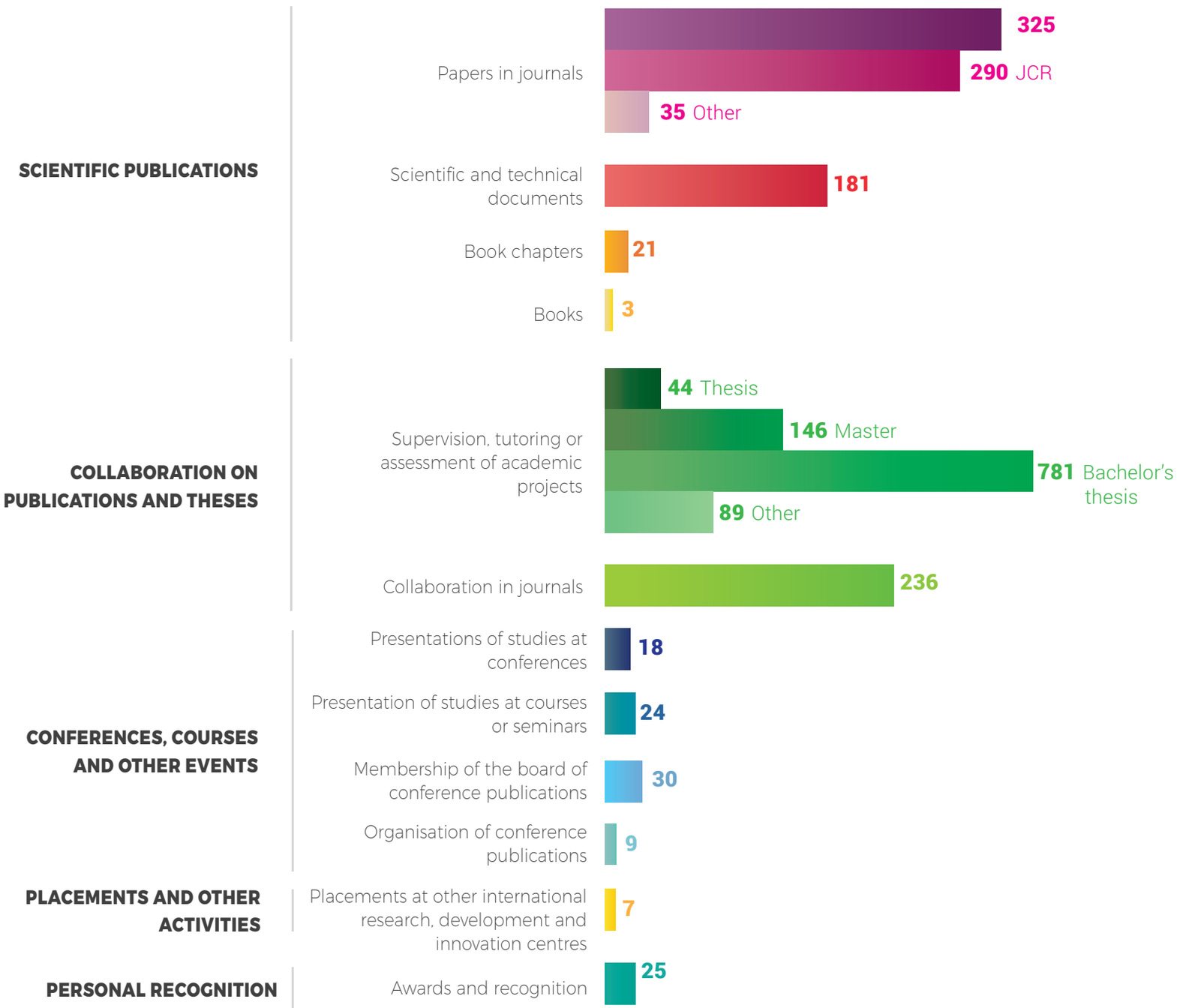
Biomedical engineering

Materials technologies

Chemical and food industry technologies

3 KEY FIGURES

MAIN INDICATORS OF CIT UPC MEMBER CENTRES' SCIENCE AND RESEARCH ACTIVITY

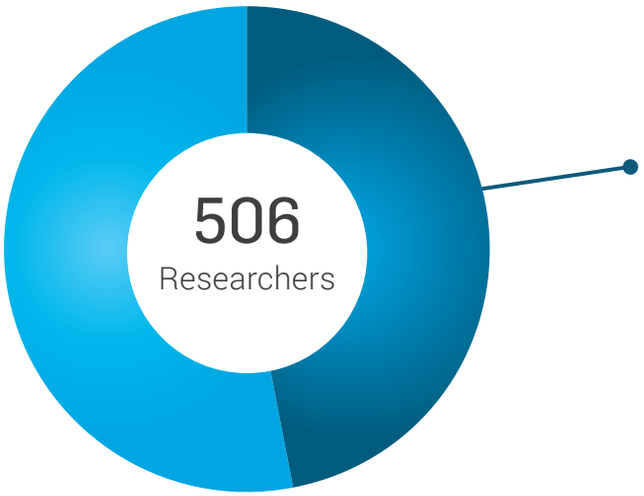


SPIN-OFFS CREATED

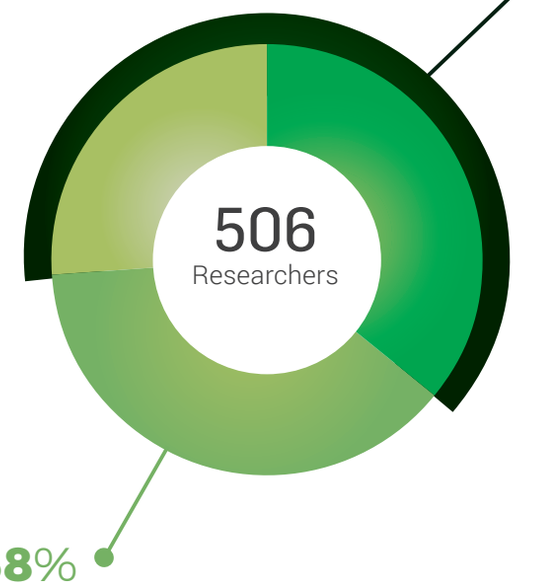
Up to 31 December 2015, **CIT UPC member centres have constituted 25 spin-offs**, which is another way of transferring technology to the market.

TECHNOLOGY MADE REAL

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



DISTRIBUTION OF STAFF



62%
Staff funded by centres through research projects

36%
Staff hired for projects

26%
Trainee staff

38%
UPC teaching and research staff (PDI)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PROJECTS

BIOMEDICAL ENGINEERING TECHNOLOGIES

A DEVICE FOR PELVIC FLOOR REHABILITATION TESTED IN EUROPEAN HOSPITALS

A launch meeting was held for WomenUP. This European project is coordinated by Dr Miguel Ángel Mañanas and Dr Juan Ramos, researchers at the Biomedical Engineering Research Centre (CREB UPC). It is the first European project in the field of urinary incontinence, a disorder that, according to the WHO, affects 56 million Europeans, most of them women. High performance technology patented by the UPC and the Hospital Clínic can be used to carry out pelvic floor rehabilitation at home. The technology will be improved, developed and then tested in three European hospitals, with the collaboration of top European specialists in urinary incontinence and the support of the European Urogynaecological Association (EUGA). The project received the best assessment from the European Commission in the 2014 H2020 Health Call, has a budget of 3.5 million euros and is expected to take three and a half years.

A NON-INVASIVE LASTER THAT DETECTS FOETAL PULSE IN REAL TIME

The Centre for Sensors, Instruments and Systems Development (CD6 UPC) developed a non-invasive, low-cost laser that can detect a foetal pulse in real time. Drawing on photonics, the foetal pulse is detected by analysing the mother's and foetus's blood flow with a laser sensor. Although the technology is at an early stage, it has already been patented in conjunction with the company BCB Electrónica y Control and has received a grant from the EU's SME Instrument.

GAMES4HEART: SERIOUS GAMES FOR TRAINING IN CARDIAC SURGERY

The project "Games4Heart: Serious Games for Cardiac Surgery Training" was completed. It was led by Dr Daniela Tost, the director of the Computer Graphics Division of the Biomedical Engineering Research Centre (CREB UPC), and the aim was to study games technology for surgical training based on real anatomical images. The main results of the project are the proposal of new techniques for geometric modelling and for the structural analysis of anatomical models, the design of techniques for removing bones, the analysis of interaction techniques for 3D graphic environments and the development of a simulation game engine. The project was funded by the Spanish Ministry of Economy and Competitiveness's National Research and Development Plan.

INTEGRAGAME: A SERIOUS GAME FOR WORK TRAINING DESIGNED FOR PEOPLE WITH MENTAL DISABILITIES

The Computer Graphics area of the Biomedical Engineering Research Centre (CREB UPC) developed a *serious game* to train people with intellectual disabilities to enter a real work environment. Through virtual training in a realistic 3D environment, the user learns in a personalised, safe way how to carry out cleaning tasks in the hotel and catering trade by memorising protocols and learning how to respond in unforeseen situations. The game strengthens social skills and is user-friendly. It also helps raise businesspeople's awareness about hiring people with intellectual disabilities. The Integragame project began in 2014 and has been funded by Indra and the Adecco Foundation.

QUIETER NEONATAL INTENSIVE CARE UNITS

The Language and Speech Technologies and Applications Centre (TALP UPC), in collaboration with the Sant Joan de Déu Hospital (HSJD), took part in a study of noise generated in neonatal intensive care units (NICU). Some noises may affect the neural development of premature infants, depending on their intensity and probably also on the type of sound. In NICUs, there are three main kinds of noise: voices and other vocalisations (for example, crying), alarms on monitoring equipment, and other sounds such as those produced by oxygen units, ventilation systems and the telephone. Some of these noises may increase newborns' stress and have a negative impact on their rest and sleep. Other noises, such as parents' voices, may have the opposite effect.

In the study, audio signals were recorded in the NICU at the HSJD. They were then classified and processed using automatic learning techniques to develop systems for detecting specific sounds such as alarms and vocalisations. The results were correlated with physiological variables to observe the effects of sounds on the registered newborns. The data are intended to contribute to the design of spaces, equipment and protocols that significantly reduce the exposure of newborns to damaging sounds.

MATERIALS TECHNOLOGIES

NEW BIOACTIVE DENTAL IMPLANT

The Biomaterials area of the Biomedical Engineering Research Centre (CREB UPC), in collaboration with KLOCKNER, a dental implant company, developed a new bioactive dental implant model called CONTAC-TI, which has an osteoinductive surface and much higher levels of osseointegration than current dental implants. The new implant has received CE marking, and its launch on the market is scheduled for September 2016.

The project was undertaken as part of the KLOCKNER-UPC Chair, which was set up in 2007 and renewed for the fourth time at the end of 2015. As a result of this collaboration, various processes have been developed, introduced and patented for preparing and coating implants and dental accessories to improve osseointegration and bactericidal effects.

JUTE THREAD FOR ESPADRILLES

The Innotex Center UPC carried out a project for Yutrensa to recycle cocoa and coffee bean sacks to obtain jute threads, initially to make espadrille soles. Yutrensa is a leader in the sector of footwear made with soles from plant derivatives.

Work is being undertaken in collaboration with various manufacturers of textile machinery to expand the field of application of these new recycled threads. The range of threads obtained could be used in textiles for the home and the fashion industry, as they are fine enough to make products with greater added value.

SPINNING BANANA TREE FIBRE

The Innotex Center UPC fine-tuned a system for spinning fibre from banana trees to obtain thread for technical applications, such as the manufacture of fabrics reinforced with resins to make composites. This use of the fibrous part of the banana tree saves recycling of plant waste and produces a new by-product with an industrial application.

One focus of research is how to apply this kind of thread in the fashion world.

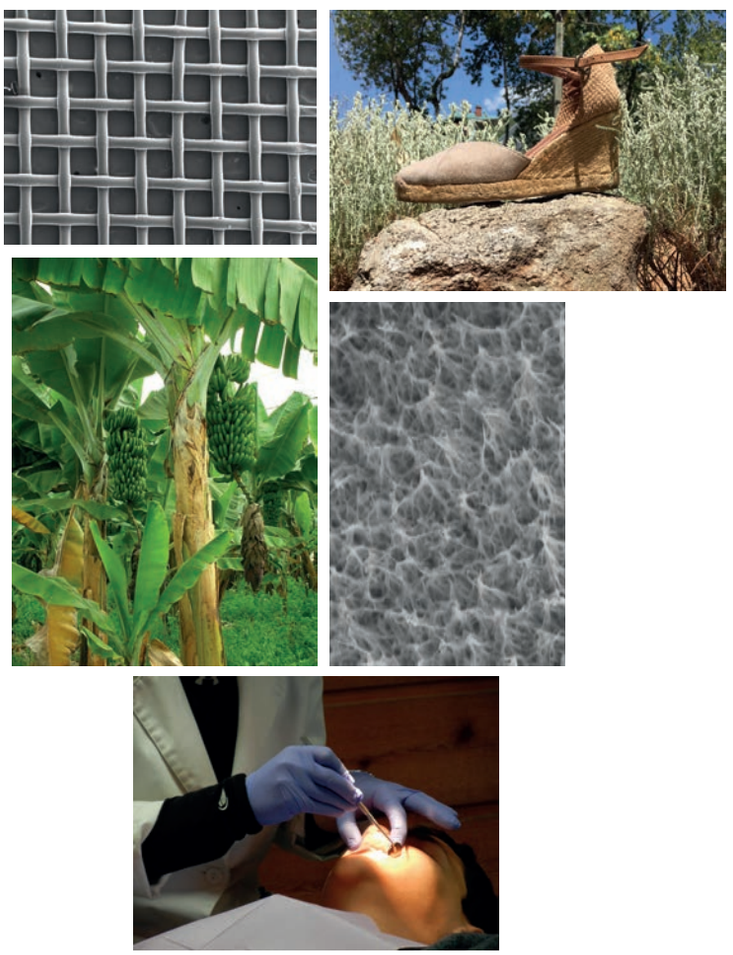
RESEARCH AND DEVELOPMENT OF NEW PHARMACEUTICAL SCREENER

The Biomedical Engineering Research Centre (CREB UPC) carried out an in-depth study for Sandoz Industrial Products on textile-based screeners for active principles used in certain drug manufacturing processes. The results were used to design new screeners that were more efficient for the relevant processes. They incorporate specific improvements of aspects such as the properties and materials of monofilaments, the construction of the mesh and the characteristics of the seams.

NEW ZIRCONIA MATERIAL FOR DENTAL APPLICATIONS WITH SURFACE MODIFICATIONS AND CONTROLLED ROUGHNESS

Zirconia doped with 3% moles of yttrium is one of a new generation of materials for specific dental applications, due to its appearance, biocompatibility and mechanical properties. The surface of crowns, bridges, implants and abutments should have a certain degree of roughness to improve adhesion to other materials (cements and porcelains) and induce better osseointegration. These modifications, which are made using techniques such as sand blasting, chemical attack or laser, may affect the structural integrity of zirconia parts, particularly in the long term.

The aim of this project developed by the Structural Integrity and Materials Reliability Center (CIEFMA UPC), was to study and design methods to prevent the failure of zirconia materials with rough surfaces by examining their micromechanics and correlating the damage produced with various parameters. In addition, zirconia with greater resilience to fracture and resistance to hydrothermal degradation was developed, with an appropriate distribution of grain size and composition that increases resilience without affecting resistance. Because of the small scales involved, in the order of a few microns, advanced microstructure and mechanical characterisation techniques such as nanoindentation and ion beam microscopy, and tomography for 3D reconstructions of regions of interest, were used.



ENERGY AND ENVIRONMENTAL TECHNOLOGIES

MORE EFFICIENT FLAT PLASMA LAMPS FOR WATER TREATMENT

The Motion Control and Industrial Applications (MCIA UPC) research centre, in collaboration with Fraunhofer and in the framework of a European project, designed and implemented an electronic power system for flat plasma lamps, which are used in industrial water treatment applications. These lamps generate large amounts of ultraviolet light that removes organic components from contaminated water. The system is based on an AC/DC power source with current mode control, and on two-level, single-phase full bridge inverters that attack high voltage transformers. The DSP-based control system enables the switching-on of lamps to be multiplexed by combining various pulse patterns. This makes the lamps highly efficient and increases the area of UV emission compared with existing systems on the market.

As a result of this project, a patent has been obtained in Germany to protect the system's structure and control methods. Experimental trials are currently being carried out with the aim of marketing the system on an industrial scale in the near future.

DESIGN METHOD FOR POWER PLANT CONTROL SYSTEMS

CITCEA UPC developed a design method for Power Plant Control (PPC) systems, which was implemented and validated by GreenPowerMonitor, a company specialised in the development and launching of monitoring and control systems for large photovoltaic power plants. The PPC software system enables renewable power plants, which generate a variable amount of energy depending on the amount of sun or wind, to be placed on an equal footing with conventional power stations, which generate energy more constantly. The system ensures compliance with the most demanding grid codes, which establish the actions that large renewable power plants should undertake to support the network and stabilise the system. Therefore, the electricity system, working as a smart grid, can ensure the correct supply of energy to the end user, and this supply has a higher proportion of renewable energies in the overall energy mix because these energies have been better integrated into the system.

Currently, the PCC control system developed by CITCEA UPC is running in GreenPowerMonitor plants in the United States, South Africa and Romania.

PROMOTING THE CONCEPT OF PROSUMER

CITCEA UPC began to participate in EMPOWER, a European project whose aim is to promote the concept of prosumer (one who is a producer and a consumer at the same time) and analyse which technologies and services are needed to create local electricity markets that allow energy exchange. To demonstrate the feasibility of an energy scenario in which citizens participate in energy management, three pilot studies will be implemented in Norway, Germany and Malta.

The project is part of the H2020 programme. It is funded by the European Commission, and seven organisations collaborate in addition to CITCEA UPC: eSmart Systems (eSmart), Schneider Electric, SmartIO-Smart Innovation Østfold, Fredrikstad Energi Nett - FEN, University of St. Gallen - UNISG, Malta Intelligent Energy Management Agency - MIEMA and NewEn Projects GmbH.

NEW TOOLS FOR ENERGY OPTIMISATION AND CONTROL

The Motion Control and Industrial Applications (MCIA UPC) research centre was involved in the development of two tools to assist in the design, management and operation of energy systems, air conditioning and electricity supply in tertiary sector buildings, particularly residential homes for the elderly, hospitals, sports centres, hotels and offices. The first tool consists of a web application designed to make fast calculations of a building's energy demands (heating, hot water, air conditioning and electricity) using economic, energy and environmental criteria. The second tool is an application that can be executed on a computer that helps to manage and oversee a building's energy systems. It reduces the time that users need to spend on these tasks by 70% and increases the reliability of the system's alarms.

The project was developed as part of the INNPACTO call for applications by the Spanish Ministry of Economy and Competitiveness. Other members of the consortium include Electromecànica Soler SL, Soler Global Service SL and Soler Energy Service SL, which are all part of the GRUPO SOLER, and the CTM.

NEW EXPERIMENTAL PHOTOVOLTAIC PLANT

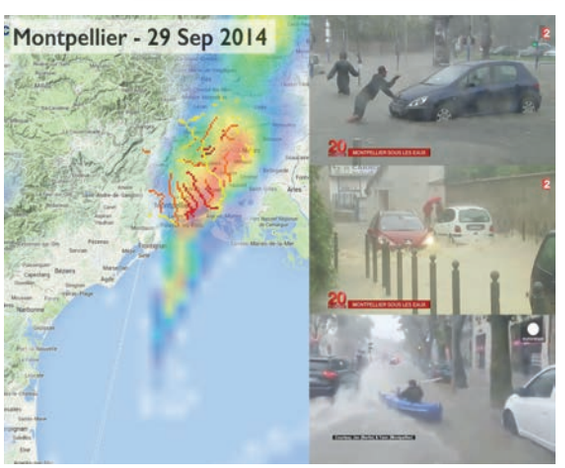
The Renewable Electrical Energy Systems (SEER UPC) centre, in collaboration with the Maintenance Service on the UPC's Terrassa Campus, set up an experimental photovoltaic plant at the Gaia Building that will be used for experimental studies of connection/disconnection from the grid, converter control and analysis of the impact of photovoltaic plants, both on grids and on self-consumption systems.

This 25-kW experimental plant is operated, monitored and controlled from the SEER UPC laboratories. As well as being used in research studies and technology transfer projects, it provides 12% of the energy used by the Building. Consequently, it contributes to meeting the UPC's emissions reduction and energy efficiency targets. An application collects the historic power generation and allows real-time tracking.

This plant is the only renewable energy facility of this scale at the UPC.

FORECASTING FLOOD RISK

The Centre of Applied Research in Hydrometeorology (CRAHI UPC) worked on developing innovative technology to support decision making regarding the risks that can arise as a result of heavy, unexpected flooding. Within overall risk management (prevention, preparedness, response and recovery), the technology developed can be integrated in real-time early warning systems; it identifies, at a high resolution, the areas that are most susceptible to floods. The tool was developed through two European projects: HAREN, which developed the proof of concept, and EDHIT, which tested its validity through a real-time demonstration. A third project, ERICHA, approved at the end of 2015, will integrate the new tools and products into the European Flood Awareness System (EFAS).



ICTs

A NEW INTEGRATED TRAVEL EXPERIENCE WITH DIGITAL TECHNOLOGY

A kick-off meeting was held for IT2RAIL, a European project in which the Data Management Group (DAMA UPC) participates and whose objective is to improve coordination between long-distance rail, bus and air travel by integrating services and digital technologies in an open web framework and promoting competitiveness between transport services. The idea is to create a new travel experience that incorporates all of the services offered to users and provides transparent access to them with the help of the most innovative digital technologies. As part of the project, online applications are promoted that will foster the sustainability and continuous improvement of electronic services in the long term.

IT2RAIL has a budget of 12 million euros and forms part of the SHIFT2RAIL platform (that CIT UPC promoted during its preparatory phase) for coordinating innovation activities in the field of rail transport. This is a public-private initiative that is part of H2020, which has a budget of 450 million euros.

CO-CAR: A NEW CAR SHARING SYSTEM

For Volkswagen Research Group, InLab FIB UPC developed a system for analysing and assessing the impact of a car sharing system for a number of users who want to travel on the same or a similar route. The system is efficient and adapted to users' needs. It simulates the management of a fleet, the allocation of services and opportunities to make a route more flexible. The project, which is called Co-Car, analysed fleets of vehicles of a size that could absorb 10% of the journeys that are currently made in private vehicles.

AN APPLICATION TO DETECT WRITING PATTERNS

inLab FIB UPC developed the prototype of an application that can detect writing patterns through natural language processing (NLP) techniques. Using documents written by one person, the application infers a set of characteristic indicators of the way in which it is written (including words used, length of sentences, richness of vocabulary, and frequency of use of some words). From the patterns that are obtained, the application can determine whether a person authored a specific document or not and the probability of him or her being the author. Plagiarism can also be detected using classification algorithms such as Support Vector Machine and Knn, for example. The prototype was developed for the Open University of Catalonia (UOC).

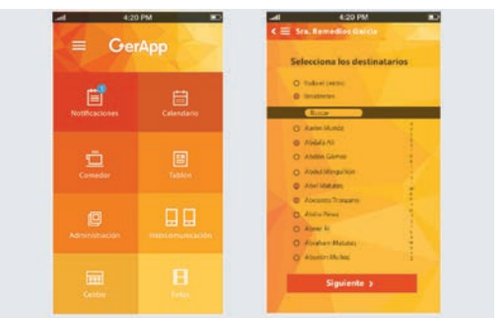
NEW APPLICATION FOR DEPENDENCY CARE

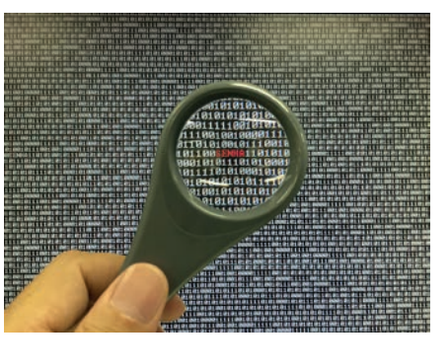
InLab FIB UPC developed GerApp, a mobile application that opens up a communication channel between elderly people who live in residential homes and their relatives. Through the smartphone application, relatives can check patients' daily progress at any time, including what they have eaten and how they are, and consult a record of past information. The notifications that families receive are encrypted to ensure privacy.

The project was awarded the 2014 Prize for the Best Innovation in Dependency Care and the Promotion of Personal Autonomy by the Catalan Association of Healthcare Resources (ACRA). It was developed by Smart Technologies Development (STD), and is already available on Google Play and at the Apple Store.

HEALTHCONSENSUS, A TOOL FOR THE ASSESSMENT OF CHRONIC CARE PROGRAMMES

In collaboration with Onsanity, the Multimedia Applications Laboratory (LAM UPC) designed and developed Healthconsensus for the assessment of chronic care programmes (HC-ACP). Healthconsensus is an online application created to promote and facilitate the participation of health professionals in defining a set of indicators that assesses the healthcare of chronic patients and manages areas for improvement in this field. The first prototype of the application was tested successfully, first in Catalonia and then in the context of the entire Spanish health system. Healthconsensus collected the contributions of over 800 health professionals from all over Spain who work in the areas of management, health planning and quality assessment, and facilitated the exchange of knowledge and the clinical experience of all of the stakeholders involved in the process. HC-ACP achieved high levels of participation and user satisfaction.





COLLABORATION WITH SEAT TO DEVELOP THE PARKFINDER APP

InLab FIB UPC collaborated with SEAT to develop the Parkfinder prototype, a mobile application that can be integrated with the Infotainment system of SEAT vehicles that have MirrorLink installed. The app can be used to find parking places using the information provided by the iCity platform developed in a European smart city project.

Using a standard application program interface for various cities, users can consult data such as the availability of parking places in real time. Once a user has selected a destination, the prototype communicates with the car's navigation system to provide real-time information on the estimated time of arrival and approximate distance to the selected zone. To ensure that the app is safe to use when the user is driving, a user interface has been developed that meets the requirements of distracted driving laws.

The prototype was tested successfully in the Les Corts neighbourhood of Barcelona and presented as an example of an iCity project at the 2015 Smart City Expo World Congress.

TECHNOLOGY THAT ANTICIPATES FASHION TRENDS

Innotex Center UPC chaired the first meeting of the SOMATCH European project, which it coordinates. The aim of the project is to increase the competitiveness of SMEs in the textile and garment industry by obtaining reliable, in-depth data on fashion trends. To achieve this, the project will develop an innovative tool to view large amounts of data obtained from image analysis technologies and to predict fashion trends from users' posts on social networks. This information will help textile and garment manufacturers to increase the speed of their reaction and adaptation to market dynamics.

The consortium, which has a budget of 1.2 million euros, includes seven other European partners, among them Sparsity, a UPC spin-off that has developed its own technology in collaboration with the DAMA UPC.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ADVANCED MANUFACTURING TECHNOLOGIES

OPTIMISATION OF THE DESIGN OF PROFESSIONAL OVENSEl

The Centre for Industrial Diagnostics and Fluid Dynamics (CDIF UPC) collaborated with Josper® Forns Brasa, a leading company in the design and manufacture of charcoal ovens and in the sector of professional kitchen equipment for the hotel and catering industry. The company specialises in manufacturing ovens, grills and other devices that run on charcoal.
CDIF UPC researchers worked with Josper®, through its R&D department, to undertake experiments to characterise the operation of their ovens and to assess new designs and alternatives to optimise existing designs using computer simulation tools that enable further improvements in the safety of ovens for kitchen staff.

PRESENTATION OF INITIAL RESULTS OF THE FLEXICAST PROJECT

The first results of Flexicast, a European project in the Seventh Framework Programme led by the Hydraulic and Pneumatic Systems Laboratory (LABSON UPC), were presented in Vic (Barcelona). The aim of the project is to introduce technological innovation in smelting processes, that is, a new method that integrates the various stages in the process of producing cast iron. Particularly noteworthy initial results of the DEMO activity, which accounts for 50% of the total budget, were the design, construction and operation of a flexible cell for smelting and casting and the automation of several production stages.

The results were presented at the headquarters of the Grupo Roquet, in Roda de Ter, with the 14 participants in the project in attendance. The Roquet Group is responsible for validating all of the methods and prototypes at the industrial level.

LOW-COST ELECTRIC MOTOR PLATFORM FOR CAR SHARING AND LIGHT VEHICLE APPLICATIONS

The Electric Low-Cost Vehicle for Car Sharing (VELOW) project successfully met the target of designing and developing a totally electric, low-cost urban vehicle for rent in the city. The Motion Control and Industrial Applications (MCIA UPC) research group participated in the development, construction, testing and functional validation of a power converter. Several noteworthy results of the project are the performance of the motor converter of over 90%, final maximum torque and mechanical power values of 90 nm and 12 kW, respectively, and speeds of up to 80 km/h on a maximum gradient of 7%. The vehicle has a range of 74 km, according to the NEDC. Units of the power train (converter-motor-control) that are flexible and can be scaled up for a range of light electric-motor platforms are expected to be marketed, and management software tools will be developed for car sharing applications.

The project was undertaken as part of the "Nuclis" call for applications by ACCIÓ. Other members of the consortium are IDIADA, Infranor, Klagan, Circontrol and CTM.

LABSON UPC COLLABORATES IN THE OLYMPIC TORCH RELAY FOR RIO 2016

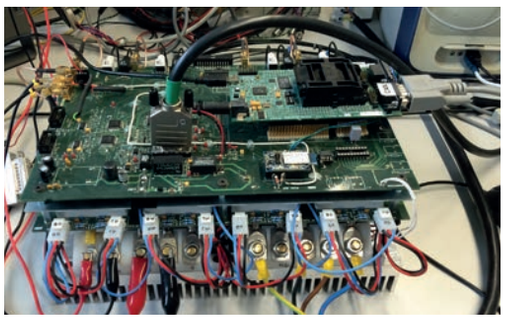
The Hydraulic and Pneumatic Systems Laboratory (LABSON UPC) collaborated in meeting the technical requirements for manufacturing the torch for the 2016 Olympic Games in Rio. The requirements for the flame were that it must measure between 20 and 25 cm; it must be visible from a distance of 200 m; it must be possible to light it at an altitude of 3,000 m; it must withstand downpours; and it must not be blown out by gusts of wind at 120 km/h or sustained wind of 75 km/h. The last of these requirements was tested in the LABSON UPC wind tunnel.

MODELLING THE VIBRATIONS OF THE LIMA-CALLAO METRO IN PERU

The Acoustics and Mechanical Engineering Laboratory (LEAM UPC) undertook a study using a 2.5 D FEM-BEM model of the levels of vibration caused by the future commercial use of Phase 1A, Line 2 of the Lima-Callao metro in Peru. The numerical model was developed by LEAM UPC to calculate the vibration of 3D periodic structures using 2D geometries, which leads to considerable savings in design time and calculations. The study determined which corrective measures, if any, the track superstructure needs to minimise vibration levels, in which sections of the route measures should be implemented, and the specific measures required to ensure compliance with current Peruvian regulations on maximum vibration levels in residential buildings.

In December 2014, the Consorcio Nuevo Metro de Lima, the company that won the building project, started work on 35 kilometres of new tracks, including 27 kilometres of Line 2, which are all underground and cross the city from east to west, as well as the first eight kilometres of Line 4. The first section of the works should be completed in 2016.

«Metro de Lima (Línea 1)» de Elelch



IMPROVED DESIGN OF THE BRINCO ELECTRIC BIKE

The Industrial Equipment Design Centre (CDEI UPC) worked on a project for Bultaco Motors to increase certain elements' resistance to fatigue in new versions of Brinco, the electric bike that is marketed by the renowned motorbike manufacturer. The project involved analysing the soldering of the chassis and rolling chassis in the electric bike, as well as potential changes in its sections, so that the new design has less strain and a longer fatigue life.

AERO-THERMAL ANALYSIS OF AN AIRCRAFT RAM-AIR FAN

The Heat and Mass Transfer Technological Centre (CTTC UPC) studied, in the framework of a European CleanSky project (EFFAN), the fluid-dynamic and thermal behaviour of an aircraft ram-air fan. The development of new aircraft that are more electric has created the need for an independent ram-air fan with new requirements: i) for it to cover an extended pressure-flow working range with no surge issues, and ii) for it to allow the working temperature levels to be increased.

CTTC UPC was particularly active in the thermal analysis of the fan motor and devised a new calculation method based on previously developed numerical techniques such as the immersed boundary method and adaptive mesh refinement. This numerical strategy is able to simulate the intricate 3D geometry inside the fan motor with great flexibility (materials, thin elements, etc.). The simulation also considers the external flow's convective heat transfer and the motor's internal heat generation.

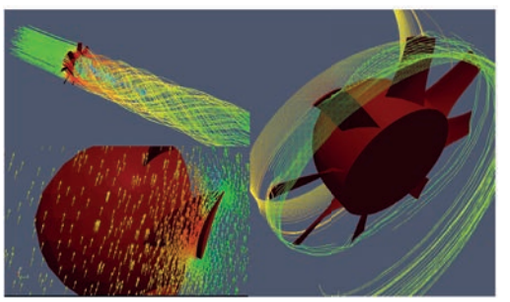
NEW SYSTEM FOR CALIBRATING VIBRATION SENSORS

The Technological Development Centre for Remote Acquisition and Data Processing Systems (SARTI UPC) worked with the Department of Maintenance, Inspections and Testing of the Ascó nuclear power station to develop a system for calibrating vibration sensors. The PC-based system that works via an application developed in LabVIEW automatically calibrates these sensors against ISO 16063-21 and ANSI S2.11 standards. The calibrations enable the correct operation of the sensors to be calibrated in the nuclear power station's calibration laboratories, to confirm whether the measurement error is within the margins defined by the manufacturer or for a specific measurement task in the power station.

The research led to the development of a driver to control OROS acoustic and vibration analysers in the LabVIEW programming environment, the instrumentation that was used in the project to generate the vibration signal and acquire the sensor measurement to be calibrated.

ELECTROMAGNETIC ASSESSMENT OF MECALUX PRODUCTS

The Electromagnetic Compatibility Group (GCEM UPC) provided technical support for the final report verifying that Mecalux's products meet the essential requirements of the European Electromagnetic Compatibility Directive and can therefore be introduced in the European Economic Area. GCEM UPC assessed the electromagnetic radiation of Mecalux equipment, including electromagnetic disturbances transmitted through cables and those that are propagated through the air in the form of electromagnetic waves. To achieve this, the tests and measurement procedures defined in international regulations were used to ensure that there was no interference with other equipment or telecommunication systems.
Mecalux strongly supports innovation, which is why the company collaborates permanently with the UPC on research and training projects to develop new solutions that can be applied to the logistics sector.



5
HIGHLIGHTS

HIGHLIGHTS

UPC PROJECTS AND TECHNOLOGY AT FOMENT DEL TREBALL NACIONAL

2 FEBRUARY 2015

A session led by CIT UPC entitled "Technologies for Optimising Industrial Production: Exploring Ideas to Create Value" was held at the headquarters of Foment del Treball Nacional (an employers' association). During the session, CIT UPC presented advanced production technologies developed by its member centres, particularly technologies aimed at increasing industrial competitiveness by redefining energy saving processes or introducing new fault detection systems for production lines. The event was attended by over 40 participants.

CIT UPC IN THE MOTORCYCLE CLUSTER

10 FEBRUARY 2015

The UPC Technology Center (CIT UPC), through the Motion Control and Industrial Applications (MCIA UPC) research centre, has formally joined the Cluster for Advanced Motorcycle Technology and participates regularly in the activities that the cluster organises.

The Cluster is composed of 53 Spanish motorcycle and motorcycle component manufacturers and service providers. The aim is to make innovation the main competitive advantage of companies in the sector.

SIXTH NATIONAL CONFERENCE OF LEGIONELLA AND ENVIRONMENTAL QUALITY

11-12 FEBRUARY 2015

The Sixth National Conference on Legionella and Environmental Quality was held in Terrassa. The Conference was organised by CRESCA UPC and was a space for debate covering current legislation, existing detection methods (both traditional and new) and treatment, with an emphasis on prevention, training and protection. There were two parts to the Conference: the first dealt with Legionella, specifically government legislation and management, analysis and diagnosis, and treatment of installations; the second was on environmental quality and covered legislation, water safety and new trends. The Conference was attended by over 160 people from all over Spain.

FIRST JOINT SESSION OF CIT UPC AND THE BARCELONA NAUTICAL CLUSTER

13 FEBRUARY 2015

The Barcelona School of Nautical Studies (FNB) hosted a working session entitled "Technologies in the Maritime, Nautical and Port Environment", which was organised by the Barcelona Nautical Cluster in collaboration with the UPC through its technology centre. The session, which was attended by around 40 companies from the sector, presented several technology projects carried out by private sector companies through agreements with the UPC. Technologies were presented by the Centre for Sensors, Instruments and Systems Development (CD6 UPC) in optics and photonics, by the CITCEA UPC in mechatronics and enertronics and by the Technological Development Centre for Remote Acquisition and Data Processing Systems (SARTI UPC) in fishing and oceanography. Several technologies were also presented by the FNB's CIMNE Classroom.

RENEWAL OF THE GIRBAU CHAIR

9 MARCH 2015

The UPC and the Girbau Group renewed the Girbau Group Chair at the UPC for a further three years. The Chair was created in February 2012 to promote research, innovation, technology transfer and training in industrial laundry technology. Its priority is to protect the environment and promote sustainable technology. The Girbau Group Chair is led by Dr Carles Riba, the director of the Industrial Equipment Design Centre (CDEI UPC).

THIRD EDITION OF THE GRAPH-TA WORKSHOP

18 MARCH 2015

The Data Management Group (DAMA UPC) held the third edition of the Graph-TA (Graph Technology and Applications) Workshop, a space for presenting and discussing the most advanced results in graph research. The workshop was attended by international experts, including science researchers in the fields of database technologies and management, pattern recognition and graph algorithms; professionals who use graphs in their applications; and researchers in mathematics and the physical sciences. The opening address was given by Dr Fernando Orejas, the UPC's vice-rector for Research Policy; other contributors included Dr Xavier López, senior director and product manager of Oracle, and Dr Yinglong Xia, a researcher at IBM.

II WORKSHOP ON R & D MANAGEMENT

9 DE ABRIL 2015

CIT UPC helped to organise the second edition of the Workshop on R&D Management at the UPC School, which teaches a postgraduate programme on the same topic. The opening presentations described international good practices in professional research and were given by the CIT UPC and the Sant Joan de Déu Hospital. The aim was to show how the activity of a research centre or group can be optimised. The workshop comprised over 15 short interventions, through which key aspects of research management and project life cycles were discussed. Other collaborators were BDigital and the University of Coimbra.

COMPLETION OF THE METAL-INNOVA PROJECT

15 APRIL 2015

The final meeting of the Metal-Innova project was held. Results were presented for the past three years of collaboration on promoting innovation projects for companies in the metal sector. During the session, innovation experiences were presented by the companies INDO and Industrias Puigjaner, as well as projects carried out by the CIM Foundation and Tecnalia. The company JJUAN, the partners in the ViaMéca project and the French Institute for Advanced Mechanics (IFMA) presented projects that have arisen as a result of work carried out as part of Metal-Innova. Participants reflected on the possible continuity and funding of the project.

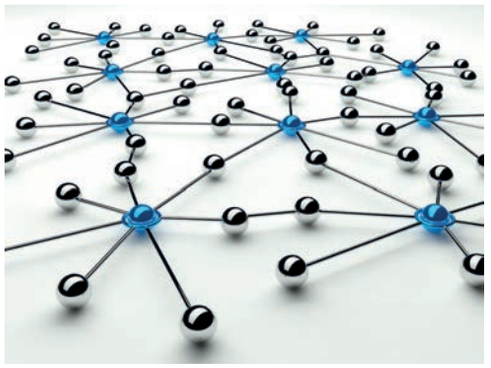
Metal-Innova formed part of the European Interregional Cooperation Project (INTERREG IV B SUDOE). The partners included the CIT UPC, UPM (coordinator), FVEM, ViaMéca, AIDA and the IFMA.

FIRST MEETING OF CATALAN RESEARCH AND TECHNOLOGY FOUNDATIONS

6 MAY 2015

The First Meeting of Catalan Research and Technology Foundations of the Catalan Foundations Coordinator (CCF), of which the CIT UPC Foundation is a member, took place in the headquarters of the Cercle d'Economia. The meeting was opened by Antoni Castellà, the Government of Catalonia's Secretary for Universities and Research. It addressed strategic and operational topics that are of interest to the 84 foundations that are members of the CCF and work in this sector. The main results of the European Foundations for Research and Innovation were presented by the Center for Philanthropic Studies of the VU University in Amsterdam, and experiences and approaches to labour and taxation were shared.

CIT UPC chaired the CCF's Technology and Research Committee for a year. The Committee was founded to bring together and engage the foundations involved in this field. It aims to increase the visibility of the foundations' work, to act as a meeting place for the sharing of experiences and to contribute to professional development. The remaining members of the Committee are the ICFO Foundation, the International Josep Carreras Foundation, the Parc Taulí Foundation, the EADA Foundation, the Daniel Bravo Foundation, the EDUCABOT Foundation and the Borja Institute of Bioethics Foundation.



PARTICIPATION IN THE SECOND CONVENTION ON SMALL AND MEDIUM-SIZED COMPANIES IN THE PENEDÈS AND THE GARRAF

3 JUNE 2015

CIT UPC gave a presentation at the Second Convention on Small and Medium-Sized Companies in the Penedès and the Garraf, which was organised by the Garraf, Alt Penedès and Baix Penedès Business Association (ADEPG) and Vilafranca del Penedès Town Council. The programme included talks on executives' experiences in different areas and talent in human resource management. Over a hundred businesspeople and executives from the area attended the Convention.

SMART RURAL GRIDS SYMPOSIUM

9 JUNE 2015

CITCEA UPC organised a symposium on "Smart Rural Grids" at the Barcelona School of Industrial Engineering (ETSEIB) as part of a European project of the same name that has received 3.2 million euros in funds from the EU's Seventh Framework Programme. Presentations covered topics such as control algorithms, communication systems, power electronics devices and storage systems developed for smart rural grids and implemented in Vallfogona del Ripollès (Girona). The project supports the transition to sustainable energy with greater incorporation of renewable energies, through a new decentralised model of energy supply for the rural environment. The consortium involved in the project includes Estabanell Energia, ZIV Communications, Xarxa Oberta de Comunicació i Tecnologia de Catalunya, KISTERS, Stadtwerke Rosenheim Netze, CG Power Systems Ireland and Smart Innovation Østfold.

CIT UPC JOINTLY ORGANISES THE TENTH EDITION OF BARCELONA GLOBAL ENERGY CHALLENGES

18 JUNE 2015

The Tenth Edition of the Barcelona Global Energy Challenges Conference, which is jointly organised by the MIT ILP, the IREC, b_TEC and the UPC through its technology center, CIT UPC, was held in Barcelona. This is an important meeting in the energy sector, as it brings together leading experts and promotes synergies between prestigious universities and research centres. Dr Enric Fossas, rector of the UPC, and Josep M. Martorell, the Catalan government's director-general for Research, opened the conference. Also on behalf of the UPC, Dr Albert Cuchí, a member of the GBCe group, participated in the plenary session. In the afternoon, CIT UPC led the *Workshop* on Energy Efficiency in Buildings, with the participation of Dr Pau Fonseca from inLab FIB UPC, as well as Oscar Subirats and Lidia Sala from the ETSAV UPC.

TALK ON LASER ADDITIVE MANUFACTURE

7 JULY 2015

The Structural Integrity and Materials Reliability Centre (CIEFMA UPC), together with the Barcelona School of Industrial Engineering (ETSEIB), held a talk entitled "Laser Additive Manufacture" on challenges and opportunities in additive manufacturing and 3D printing. The talk was given by Professor Milan Brandt, from the RMIT University (Australia). The state of research in the field was also addressed, as well as the challenge of meeting increasing demand.

CREB UPC - TELSTAR COLLABORATION SYMPOSIUM

15 OCTOBER 2015

The Biomedical Engineering Research Centre (CREB UPC) and Telstar organised a symposium entitled "Introduction to Software as a Healthcare Product" at the UPC. At the session, which focused on medical technologies, existing regulations and opportunities to protect software were analysed. Speakers included Carlos Fernàndez and Pablo Rodríguez from Telstar and Manel González from the CREB UPC. This was the second symposium held with Telstar to resolve issues related to marketing and transferring the medical technologies developed at the University when they are launched on the market.

OPENING OF A CENTRE FOR VISION DIAGNOSIS AND TREATMENT BASED ON COMPUTER GAMES

16 OCTOBER 2015

Davalor Salud opened the Davalor Research Centre, a research and development centre for optics and vision that develops leading technology for eye tests using 3D computer games. The technology can be used to measure up to 75 sight parameters objectively and automatically. Traditional methods measure fewer parameters and generally do so in a subjective way that requires the patient's involvement.

Located in the Gaia Building, the new centre is directed by Dr Jaume Pujol, a researcher at the Centre for Sensors, Instruments and Systems Development (CD6 UPC). CD6 UPC collaborated with DavalorSalud from the outset, developing the technology, starting up the Centre and coordinating the clinical board, which is composed of scientific experts and optometrists in the area of visual function.

The Davalor Research Centre has several strategic agreements for scientific research with the UPC at the Terrassa Campus. Partners include Jofemar, Microsoft, IBM, HP, Cisco Systems and Telefónica.

CIT UPC PARTICIPATES IN THE INFO DAY ON ICT

20-22 OCTOBER 2015

CIT UPC took part in the ICT 2015 meeting in Lisbon that was organised by the European Commission and the Fundação para a Ciência e a Tecnologia. Parallel sessions included a conference in which the Commission's new policies and initiatives in research and innovation in ICT (Horizon 2020) were presented, an interactive exhibition to demonstrate the impact and results of research and innovation, and various networking activities to foster potential collaborations and funding opportunities.

Several UPC researchers attended, including Dr Josep Lluís Larriba, the director of DAMA UPC, who presented Sparsity, a spin-off from the research group that won an award for the SME with the greatest ICT innovation capacity in Europe in the first Innovation Radar Report published by the Joint Research Centre of the European Commission. On this occasion, Sparsity was a candidate for the IR Prize for Innovative Companies.

PARTICIPATION IN THE CONNECT-EU DAY

27 OCTOBER 2015

The fifth edition of the Connect-EU Day, organised by the Government of Catalonia, the Agency for the Management of University and Research Grants (AGAUR) and ACCIÓ, was held at the Barcelona Conference Centre in Montjuïc. At the event, which brought together over a thousand participants, presentations focused on opportunities to participate in European research, development and innovation projects through the new 2016-2017 calls for the Horizon 2020 programme, and the services offered by ACCIÓ and the Enterprise Europe Network (EEN) network to small and medium-sized companies, in relation to policies and business opportunities in European Union (EU) countries.

SMART INVERTER TESTING AND INTEROPERABILITY SYMPOSIUM

27-28 OCTOBER 2015

The Renewable Electrical Energy Systems (SEER UPC) research group and the NRG.LAB (a spin-off of SEER UPC) organised the Smart Inverter Testing and Interoperability Symposium in Bilbao. Over 50 representatives from 32 companies and research centres attended the event. During the Symposium, the constant development and variety of grid codes on a global scale that leads to new challenges for the validation and certification of inverters was described. The Symposium focused on the analysis of new technology solutions developed for trials, internal pre-certification procedures for products, the validation of control systems, the integration of simulation systems in real time and compliance with the requirements of network operators. In addition, the latest technological advances in the automation of grid code compliance testing and certification processes for future smart inverters were presented.

CHALLENGES IN URBAN MOBILITY
16 NOVEMBER 2015

The Universitat Politècnica de Catalunya (UPC) and the Technische Universität Braunschweig organised the Challenges in Urban Mobility Symposium, an event sponsored by CARNET and the NFF that was attended by over 100 people. CARNET is a strategic project promoted by the UPC, Volkswagen Group Research and SEAT to develop collaborative projects related to future urban mobility. Industrial partners in the project include Altran, Applus Idiada, Ficosa, RACC and Rücker Lypsa.

In addition to experts from the UPC and TU Braunschweig, participants in the Symposium included international experts from KTH Stockholm, Aalborg University, TU Clausthal, Czech Technical University in Prague, TU Crete, representatives of companies such as Volkswagen Group Research, Airbus, Scania and the Royal Automobile Club of Catalonia (RACC), and institutions such as Fraunhofer IESE and the German Aerospace Centre DLR. New proposals were presented in the areas of connectivity, mobility concepts and services, and urban planning related to the global challenge of improving mobility in our cities.

CIT UPC AT THE SCIENCE | BUSINESS ANNUAL SUMMIT
20 NOVEMBER 2015

CIT UPC attended the 2015 Science | Business Annual Summit held in Barcelona. The meeting was attended by important academic, industry and political representatives, who discussed how to stimulate and promote technology innovation in Europe. At the Summit, a declaration was made that highlights how important research and innovation is if we are to face climate change and ensure sustainable growth.

Dr Josep Lluís Larriba, director of the Data Management Group (DAMA UPC), took part with a talk entitled "The Future of Urban Mobility", as part of the presentation of new ideas on how to attain sustainable growth.

CONFERENCE ON NEW TECHNOLOGICAL DEVELOPMENTS IN EMC
30 NOVEMBER - 1 DECEMBER 2015

The Electromagnetic Compatibility Group (GCEM UPC) and the Aragon Institute of Technology (ITAINNOVA) organised the New Technological Developments in EMC conference in Zaragoza held from 30 November to 1 December. To encourage technology transfer between companies and universities/technology centres on new developments in electromagnetic compatibility, experts from the following sectors were invited: terrestrial transport, aeronautics, aerospace and particle accelerators. Participants presented the complex electromagnetic interference problems they tackle, as well as potential solutions and future challenges. In addition, new EMC developments at universities, companies and technology centres were presented.

The event, which was attended by 70 people, had collaborators such as the Spanish EMC chapter of the IEEE.

CIT UPC AT THE PRESENTATION OF THE EUFORI STUDY
14 DECEMBER 2015

CIT UPC attended the official presentation of the EUFORI study in Brussels at the headquarters of the European Commission's Directorate-General for Research and Innovation. The study, which was coordinated by the Center for Philanthropic Studies (VU University), quantifies and assesses the contribution of foundations to research and innovation in EU member states, Norway and Switzerland. The study includes an individual analysis of each country, a comparative analysis, and an indication of future challenges and trends in the sector.

As part of the presentation of the study, CIT UPC described the Catalan Foundations Coordinator (CCF), of which it is a member, as an example of a network that fosters collaboration between foundations.

COMPANY DAY IN THE GARROTXA

17 DECEMBER 2015

La Garrotxa Desenvolupament organised an event entitled "Exploring Ideas to Create Value" held by the INNOTEX Center UPC for companies in the textile sector. At the event, which took place in Olot, INNOTEX Center researchers presented the latest advances in the use of new natural and biodegradable fibres, studies on the development of machinery and mechanical textile processes, and the manufacture of prototypes for the entire textile chain. INNOTEX Center presented its technologies for removing dye and reusing textile effluent, as well as the results of the ECUVal project, as examples of industrial applications. In addition, CIT UPC presented different ways of collaborating with the University and the funds that are available for companies.

PARTICIPATION IN TRADE FAIRS

THE UPC AT THE 4YFN FAIR IN BARCELONA

2-5 MARCH 2015

The UPC took part in the international meeting 4 Years From Now (4YFN) in Barcelona, which was promoted by the Mobile World Capital Barcelona (MWCB) and held at the same time as the Mobile World Congress (MWC). On a stand located in the Catalonia-Barcelona pavilion, in the Montjuïc exhibition centre, the UPC presented its technological innovations in mobile communications, in the areas of 4G telephone systems, software radio, mobile operating systems, MPLS and Ethernet, NFC, optical technology, human computer interfacing, WiFi, M2M technology and cloud computing, among others. The UPC participated through CIT UPC, the Innovation Management Service (with the Patents and Licences Office) and Parc UPC.

CIT UPC AT CEBIT 2015

16-20 MARCH 2015

The UPC, through its technology center, CIT UPC, had a stand at the CeBIT 2015 fair in Hannover, a leading event in the information and communications technology (ICT) sector. It presented leading technologies in the ICT field, including new data mining techniques that make information available to editors, a business intelligence application, media monitoring, and software that analyses the life cycle of a building from its construction to its demolition, taking into account construction materials, design, orientation and the energy consumption of buildings and their compliance with European law.

CIT UPC AT HISPACK AND BTA 2015

21-24 APRIL 2015

The UPC, through its CIT UPC technology centre, took part in the 2015 Hispack and Barcelona Food Technologies (BTA) fairs. During meetings with companies present at the fairs, technologies related to these sectors were presented, particularly those related to reducing energy consumption and the development of new industrial machinery.

CREB UPC ATTENDS THE 2015 BIO INTERNATIONAL CONVENTION

15-18 JUNE 2015

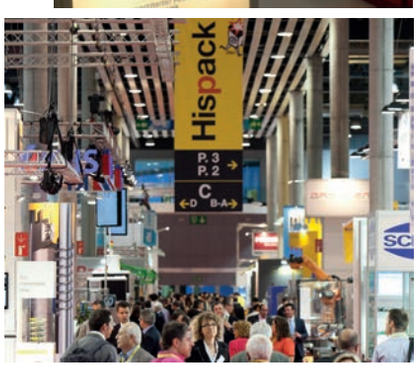
The Biomedical Engineering Research Centre (CREB UPC) attended the 2015 Bio International Convention, the main biotechnology trade fair that brings together leaders in the biopharmaceutical and biotechnology sectors, in Philadelphia. CREB UPC presented its technological capacities and the patents that it currently markets, including a new control system for a knee orthosis. This technology can be used to actuate or lock knee rotation during gait by means of a single motor and a ball-screw transmission.

A total of 37 Catalan companies and institutions participated in the Spanish pavilion at the Bio Convention in Philadelphia under the banner Biocat.

CIT UPC AT THE 2015 IoT SOLUTIONS WORLD CONGRESS

16-18 SEPTEMBER 2015

CIT UPC participated in the IoT Solutions World Congress, which took place between 16 and 18 September in Fira de Barcelona's Gran Via exhibition site. The CIT UPC presented its technologies and the results of projects developed in relation to the Internet of Things in the areas of energy optimisation, advanced textiles, mobility, big data, advanced manufacturing, health and internet security, among others. CIT UPC, which is a member of the TECNIO network, took part in the Catalan pavilion organised by the Government of Catalonia and supported by ACCIÓ.



THE UPC AT THE SMART CITY EXPO WORLD CONGRESS 2015

17-19 NOVEMBER 2015

The UPC, through its technology center, took part in this year's edition of the Smart City Expo World Congress, at which it presented smart city technologies developed at the University. Its stand also provided information on the advances in robotic solutions for smart cities obtained in the Echord++ project and the courses offered by the UPC School in this field. Dr Jaume Barceló (from inLab FIB UPC) and Dr Roberto Villafáfila (CITCEA UPC) participated in activities in the Speaker's Corner on urban mobility and solutions for public space and infrastructure, respectively.

Dr Pau Fonseca from inLab FIB UPC spoke at the Congress on sustainable cities and innovative urban planning. Rosa Maria Martín and Dr Manel Medina, who are also from inLab FIB UPC, chaired talks on new technologies for social well-being and the creation of technologically safe cities, respectively.

AWARDS

NEW DIRECTOR OF CREB UPC

JANUARY

On 1 February 2015, Dr Daniela Tost, head of the Computer Graphics and Serious Games area of the Biomedical Engineering Research Centre (CREB UPC), took over as the Centre's director from Dr Pere Caminal, who has held the post for the past eight years. Dr Caminal's leadership contributed to making CREB UPC one of the leading centres in the field of biomedical engineering. He will continue as head of the Biomedical Signals and Systems area. Dr Tost holds a PhD in Industrial Engineering and is specialised in the application of computer graphics and the development of serious games. We would like to take this opportunity to thank Dr Caminal for all the years he has devoted to leadership and to wish Dr Tost all the best in her new position.

JORDI MONTERO, SELECTED AS AN EXPERT FOR THE BARCELONA SMART CITY APP HACK

ABRIL 2015

Jordi Montero, a researcher with inLab FIB UPC, has been selected to form part of the group of experts who will guide and support participants in the Barcelona Smart City App Hack, an international project led by Barcelona that seeks to find digital solutions for smart cities. It will focus on five areas: urban mobility; energy and emissions; culture and tourism; shopping and retail; and the collaborative city. The winners were announced at the Final Gala of the Smart City Expo World Congress.

SPEAKER AT APIdays MEDITERRANEA

MAY 2015

Dr Lluís Padró, the director of the Centre for Language and Speech Technologies and Applications (TALP UPC), was a speaker at APIDays Mediterranea. APIdays is the main independent conference on application programming interfaces worldwide. Padró presented TextServer, the new web services platform for linguistic analysis that the Centre is working on. APIdays Mediterranea is the southern European edition of APIdays and it brings together developers, IT administrators, new companies, corporations and those involved in the API industry to learn, discuss and share information about the future and the API industry at the Mobile World Centre in Barcelona.

DR SANTI ROYO, PRESIDENT OF EOSOME 2015

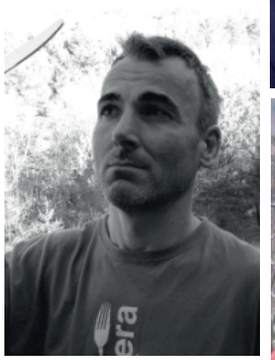
JUNE 2015

Dr Santiago Royo, director of the Centre for Sensors, Instruments and Systems Development (CD6 UPC), chaired the European Optical Society Conference on Optomechanical Engineering (EOSOME 2015), which was held in Munich on 24 and 25 June. The Conference is organised as part of the World of Photonics Congress 2015, which is a leading international congress on optical technologies.

RECOGNITION OF "ENTREPRENEUR OF THE YEAR" FOR DAMA UPC

NOVEMBER 2015

The Data Management Group (DAMA UPC) was recognised as 2015 Entrepreneur of the Year at the Academic Ceremony of the Barcelona School of Informatics (FIB), held on 26 November. During the event, which was attended by over 400 people, students graduating in the 2014–2015 academic year were presented with their degree certificates, and staff who have worked at the UPC for over 25 years, the best academic record and the best bachelor's thesis were recognised as well.



SPIN-OFFS

SPARSITY, THE SME WITH THE GREATEST INNOVATION CAPACITY IN THE ICT FIELD IN EUROPE

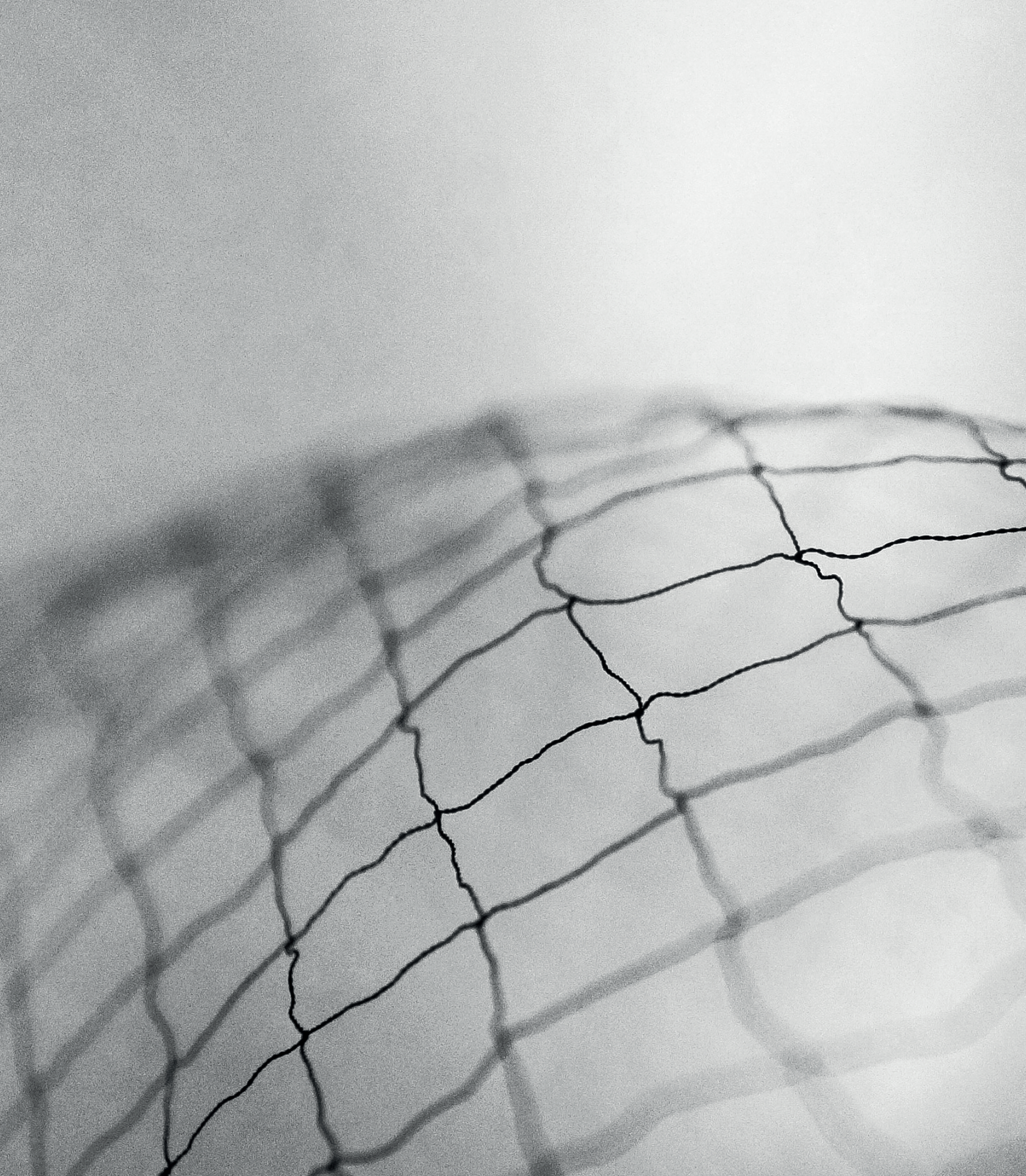
Sparsity, a Data Management Group (DAMA UPC) spin-off, is the SME with the greatest innovation capacity in Europe, according to the first Innovation Radar Report published by the European Commission's Joint Research Centre. The report analysed a total of 279 ICT projects carried out between May 2014 and January 2015, which resulted in 517 innovations delivered by 544 European organisations. Sparsity was also in third place in the general innovation ranking, just behind the University of Cambridge and Fraunhofer, a German institute.

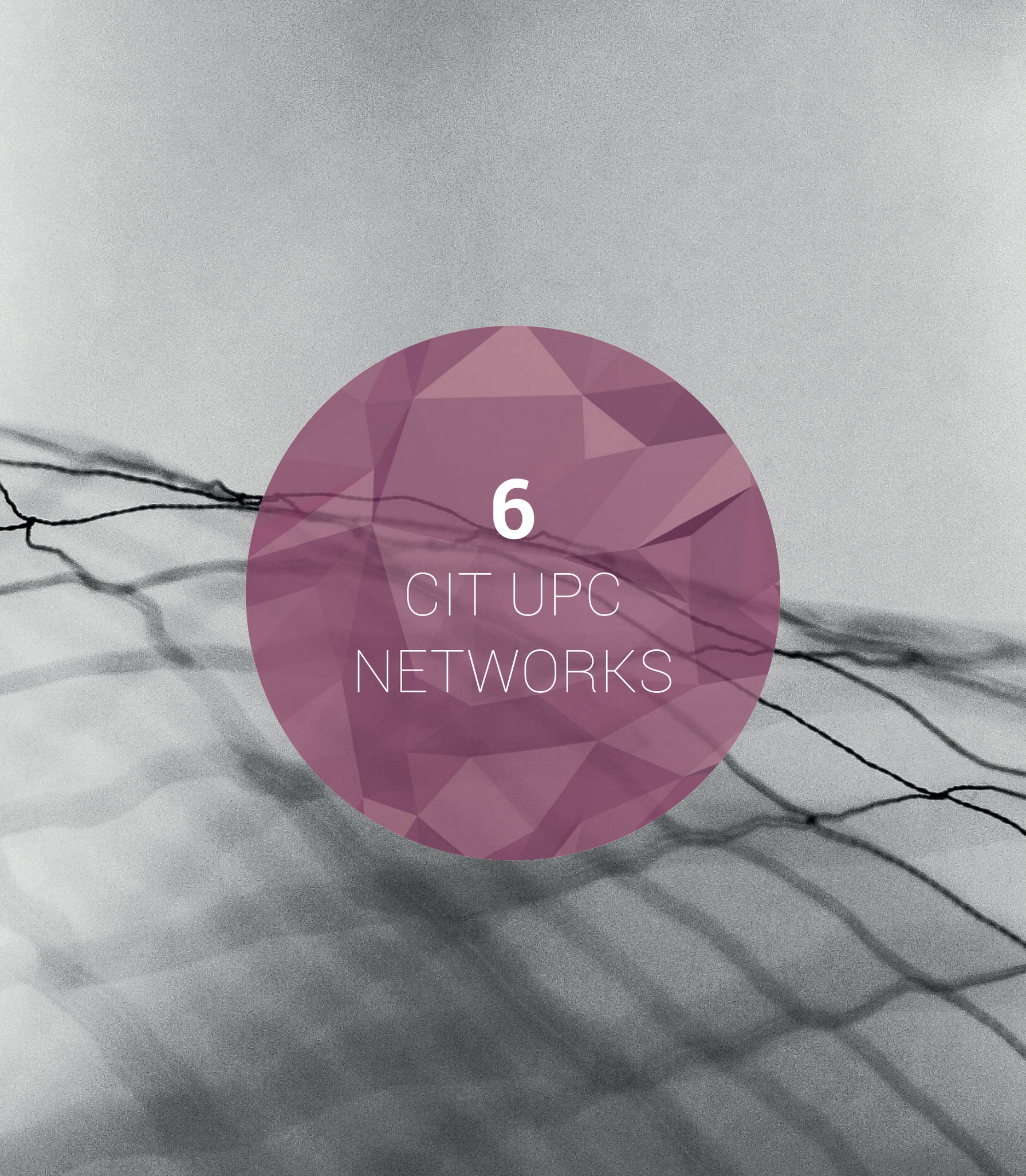
Sparsity was founded in 2010. It focuses on the exploration of large volumes of data to answer specific questions in a reasonable amount of time and is based on a relational system.

NRG.LAB: NEW SEER UPC SPIN-OFF

NRG.Lab was created by the Renewable Electrical Energy Systems (SEER UPC) centre as a result of research carried out by the centre and promoted by Dr Álvaro Luna, Dr Jose Ignacio Candela and Dr Juan Rocabert.

NRG.Lab offers engineering services related to advanced management tools for power control and processing in the area of electrical systems. It provides solutions for the advanced development of prototypes, demonstrators, trial equipment and systems that contribute to the search for future electrical systems.




6
CIT UPC
NETWORKS

6 CIT UPC NETWORKS

Government of Catalonia's **TECNIO** network

Catalan Coordinator of Foundations (CCF)

Automotive Cluster of Catalonia

Health-Technology Cluster (HT Cluster)

Spanish Federation of Innovation and Technology Centres (FEDIT)

ASTP - PROTON

MIT Industrial Liaison Program

Cluster Moto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7
DISSEMINATION IN THE MEDIA

7 DISSEMINATION IN THE MEDIA

PUBLICATIONS

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 organisations. We use various channels to disseminate information about our member centres' projects, such as examples of business-university collaboration and the results and developments they have achieved, which are available for application.

NEWSLETTER

We publish a monthly newsletter in three languages, which is currently sent to over **1000 people**.

BLOG

Since 2013, we publish 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.

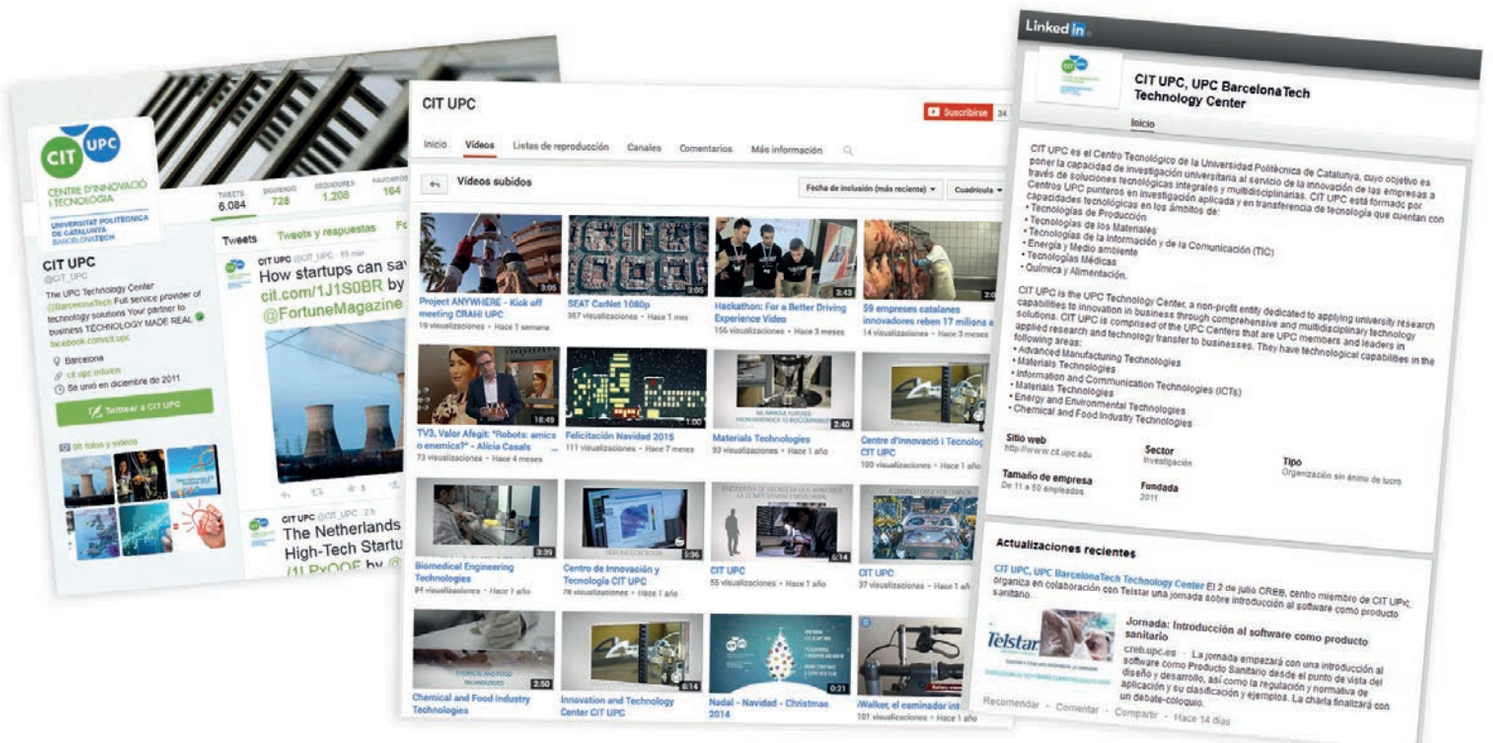
SOCIAL NETWORKS

Twitter

Linked In
Company Page
CIT UPC Group

YouTube channel

Facebook



PRESS CLIPPINGS

As a result of the dissemination of projects, technologies and results, in 2015 **we were mentioned in the media (written press, radio and television) over 200 times**.

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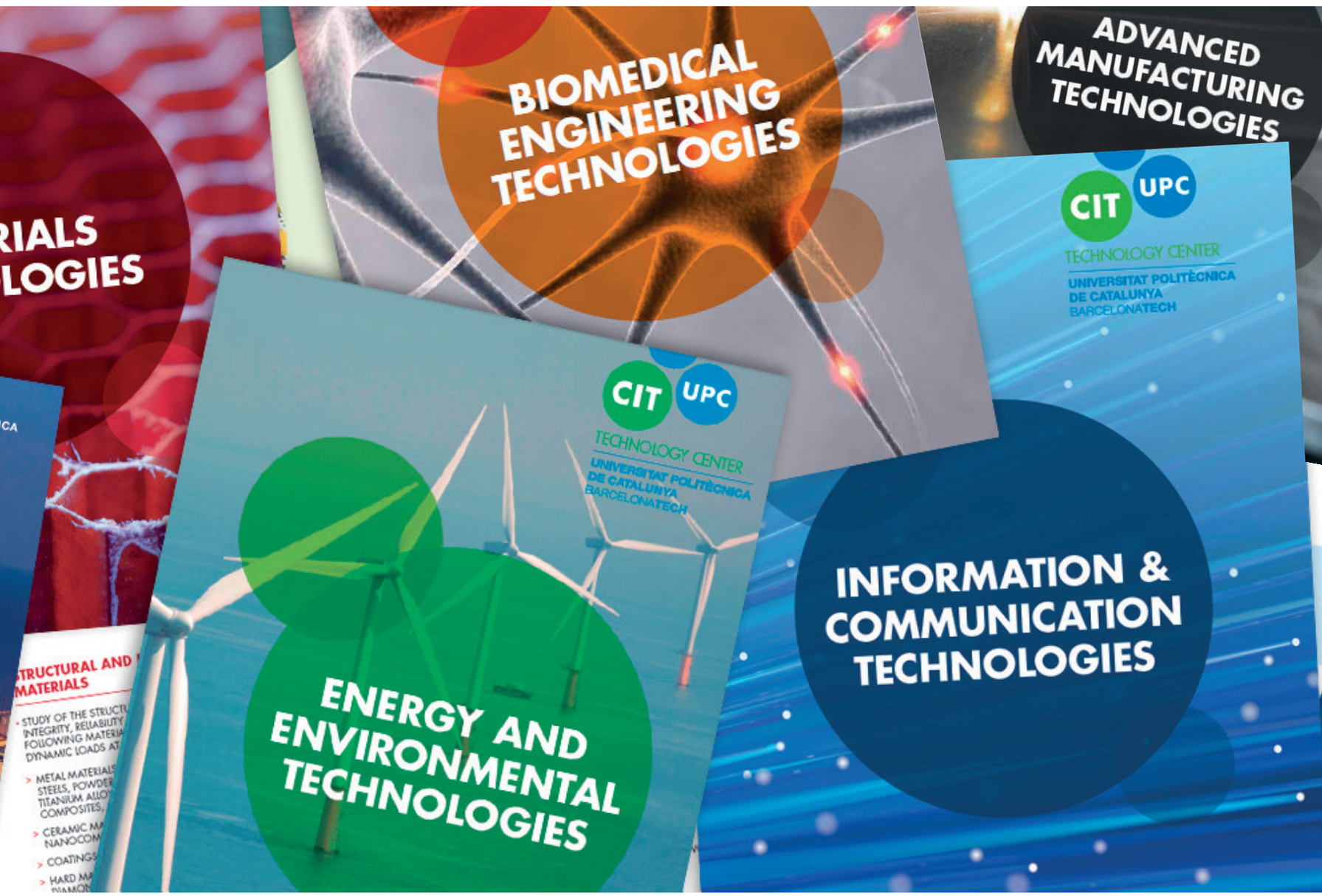
nergètics a
productors
a elèctric haurà d'adaptar-se a
de generació descentralitzada
INNOVAticias.com
LÍDERES... 660.000 VISITAS/año
PORTADA
FORMACIÓN
EVENTOS
Sparsity, la pyme con más capacidad de innovación del ámbito TIC en Europa
¿Qué se llevará este invierno?
La UPC desarrolla un software capaz de predecir las tendencias de la moda
Redacción
ostelecinco.com
Tecnología
Sociedad
Deportes
Elecciones 20D
Desafío soberanista
aser no invasivo que detecta
en tiempo real
TECNOLOGIES DE LA INFORMACIÓ
Grafs per entendre les xarxes socials
CIT UPC, model de la relació universitat-empresa
PROJECTES DESTACATS

CROSS-TECHNOLOGICAL APPROACH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