



I2Tech- **CAMPUS MONTEGANCEDO**
Universidad Politécnica de Madrid



POLITÉCNICA
"Ingeniamos el futuro"

**CAMPUS
DE EXCELENCIA
INTERNACIONAL**

SUMMARY

International Campus of Excellence (ICE) of the UPM in Montegancedo

Progress Report

2010-2013

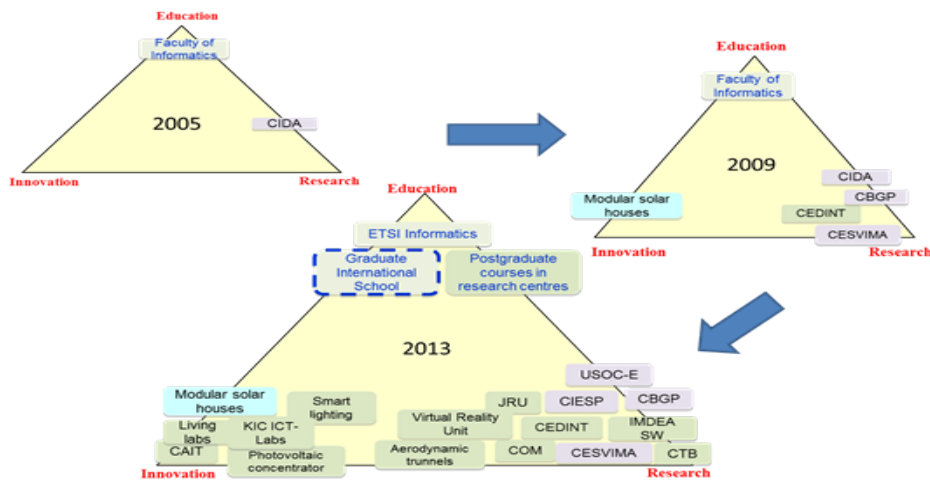
September 2013



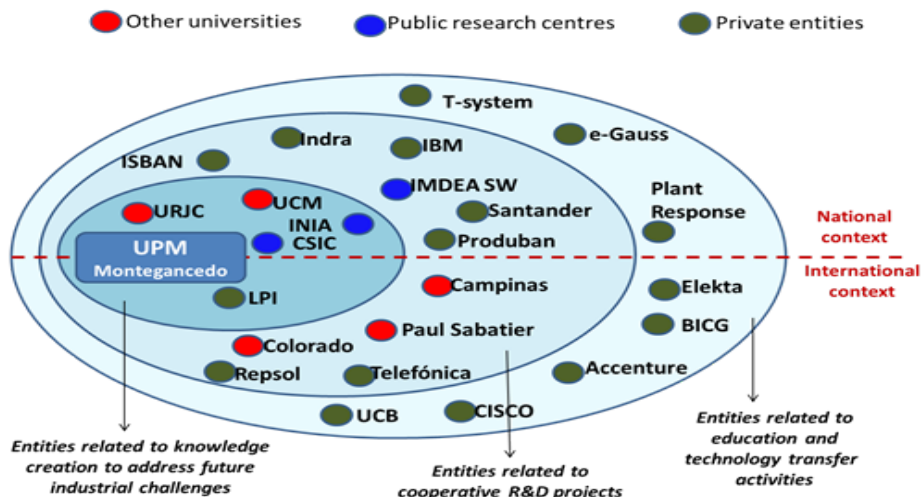
Evolution of the objectives of ICE Montegancedo

The essential objective of the **International Campus of Excellence of Montegancedo**: to increase the **support to technological innovation jointly with the business sector**, by using information and communication technologies (ICT) as a backbone and catalysing element through the empowering of the research activity is alive. Its privileged relationships with the business sector also reflect the UPM's commitment to making its generic objective of becoming **a strategic business partner to accelerate the innovation process** a reality.

The "units" available at the ICE Montegancedo and their main relationship with one of the perspectives of the aforementioned **knowledge triangle** have strongly evolved as shown in the figure:



The effort made until now has consolidated the **ICE Montegancedo** as an **"open innovation ecosystem"** driven by the UPM with the participation of aggregated entities. UPM and its aggregated entities jointly generate value through teaching, research and innovation activities. Figure corresponds to the **conceptual vision** of the generated innovation ecosystem.

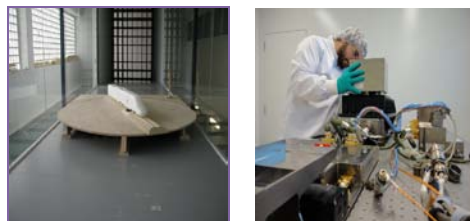


Evolution of research results of the ICE Montegancedo

The UPM has kept the economic investments effort as planned and today that figure is over **120 M€** since 2005. With those resources, the development of the research capacities in the **Campus** has evolved with the construction of several buildings for research and innovation centres: Business centre and its extension to locate the Centre of Support of Technology Innovation (CAIT) and the Centre for Heritage Research(CIESP); the building for the Centre of Home Automation (CEDINT) and the Centre for supercomputing and Visualisation (CESVIMA); building for the Centre of Biomedical Technology (CTB) and the Centre for Open Middleware (COM); building of the Centre for Biotechnology and Plant Genomics (CBGP); and the building for the Institute IMDEA Software.

These activities have been accompanied by the different **acquisitions of new scientific equipment** such as the five-face, virtual reality cave at CEDINT, the magneto-encephalography system of the CTB, the Magerit-2 supercomputer of the CESVIMA, the astronomic observatory at the *ETSI Informáticos*, the automated greenhouses at the CBGP, or the cross-beam microscope of the CTB. Some of the most recent equipment purchased in the 2012-2013 period was as follows:

1. Acquisition of the **Magerit 2 supercomputer** and its location in the CeSViMa
2. Facilities for **plant cultivation in controlled conditions** in the CBGP
3. Acquisition and installation of a **P3 level biological security laboratory** at the CBGP
4. Acquisition and installation of a **metabolomic platform** in the CBGP.
5. Installation and putting into effect of new **wind tunnels** at the IDR/UPM
6. Installation of a **clean room for trials** at the CIDA for the USOC-E
7. Installation of the Functional Characterization of **Magnetic Nanoparticles Platform**
8. **Pilot Fermentation Plant** at the CBGP (facility funded by *Melinda & Bill Gates Foundation*).
9. **Concurrent engineering room** at the IDR/UPM (agreement with the ESA).



RESUMEN CEI Montegancedo

Evolution of the ICE in the exploitation of results

The evolution in the **number of patents granted to the UPM** by the OEMP (50 in 2012), the **knowledge and technology licenses** and the revenues derived from them (0.4 M€ in 2012), and the evolution in the number of **technology based enterprises** (17 in 2012) show a continuous positive increase of the UPM performance in this field.

In March 2013 the finalization of the construction process of the **Centre of support of Technology Innovation** (CAIT) has allowed the launching of the **Innovatech** programme for UPM technology commercialisation and the location of technology demonstrators. Today, a TV 3D demonstrator and an experience lab on “Spaces of the future” are available. A new living lab with the Santander Group on technologies and services for the banking sector will enter into operation at the end of 2013.



Other technology demonstrators are also in progress: Pilot plant for **photovoltaic concentration**, demonstrator for **smart lighting in open environments**, and the **modular housing demonstrator** with individual houses fed with photovoltaic solar energy built by the UPM in the **Solar Decathlon** contest.

Evolution of the internationalization process of the Campus

The percentage of foreign students increased from 12.36% in 2009 to 21.08% in 2011 and to 49.52% in 2013. Likewise, the number of international FP7 projects in execution in the ICE Montegancedo has evolved from 4,497,682 in 2009 to an accumulated figure of 10,590,953 in 2013. To these figures, the UPM adds new international actions; the following ones are relevant: creation of a **European Laboratory Associated to CNRS** and the **University of Toulouse**, creation of a Joint Research Centre in **Bioenergy with the University of Campinas** (Brazil) and also some agreements signed with the following entities: **University of Colorado (Denver, USA)**, **Forschungszentrum Jülich - FZJ (Jülich Research Center)** in Germany, **Foundation Bill&Melinda Gates (USA)**, the **Research Centre of Complex Systems** of the **CNR (Florence, Italy)**. During 2013 the Campus of Montegancedo is creating an Associated Node to the **KIC ICT-Labs** of the European Institute of Technology and Innovation (EIT), with the participation of the IMDEA SW (coordinator) and the UPM, and the participation in the **Human Brain Project** (FET Flagship of the European Commission) coordinated by the UPM through CTB.

Consolidation of the relationships with aggregated entities

A **key element** of ICE Montegancedo is its orientation towards **aggregations with the private sector**. In this line, it should be emphasised the creation of joint units as the virtual reality cave with T-Systems, or the magneto-encephalography system with **Elekta**. Other formalised agreements were: with the ESA for the concurrent engineering facility, with **IBM** for the use of the **Magerit-2 supercomputer**, with the **Santander Group** to boost the "**open middleware**" **innovation ecosystem**, and other institutional agreements with the following entities: **INDRA, ITP, UCB Pharmaceuticals, Telefónica I+D, Frontiers research, CISCO/CITRIX, REPSOL, KIC ICT-Labs** with **INDRA, Telefónica, and ATOS** demonstrate the open innovation feature of the Campus.

Human resources and advanced training policies

The **post-docs recruitment programmes** funded through a number of **agreements and European programmes**: with BBVA Foundation, in COFUND (FP7 PEOPLE) programmes: UNITE, PILOT-INN, AMAROUT I y AMAROUT II, in the post-doc UPM in four research centres of the Campus and the recruitment of researchers in Montegancedo has allowed over **350 researchers** working in the Campus in 2013.

The doctorate programmes related to ICE Montegancedo with **recognition of excellence** are: Advanced Computing in Science and Engineering – Artificial Intelligence - Software and Systems. Biotechnology and genetic resources of plants and associated microorganisms; Photovoltaic solar energy (with the ETSI Telecomunicación), Technologies and communication systems (with the ETSI Telecomunicación), Biomedical Engineering (with ETSI Telecomunicación) and Aerospace Engineering (with ETSI Areonáuticos).

Future evolution

The UPM had to encompass the development of the ICE to the availability of economic resources without modifying its essential strategic objectives. As this report demonstrates, **a large part of the strategic objectives proposed by the UPM in the initial proposal of the I2Tech project have been achieved** through which demonstrating the validity of the institutional commitment made.

In short, we find ourselves before a **Campus, original in its conception, promoting an international excellence based on technological innovation, promoting alliances with private entities, incorporating one of the seats of the UPM Park, and developing harmoniously with an area of natural beauty in the upper basin of the River Manzanares.**