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## CENTER FOR ENERGY EFFICIENCY AND SMART BUILDING (CeDInt)

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### Organizations collaborating with CeDInt

Light Prescriptions Innovators – Europe  
T-Systems Iberia  
Energy Research Institute  
Universidad de California en Merced (USA)  
Orbis Tecnología Eléctrica S.A.  
ENDESA  
Everis  
Eliop  
Home Systems  
Empresa Municipal de la Vivienda y Suelo (Ayto. Madrid)  
Fundación CARTIF  
FAGOR  
E-Controls  
Advanced Digital Design S.A.  
Unión Fenosa  
Acciona

BASF (Germany)  
Procter & Gamble (Belgium)  
Delft University of Technology (Holland)  
ETH Zurich (Switzerland)  
Wuppertal Institute (Germany)  
ENEO  
ACCEDA  
Escuela de Medicina Legal (UCM)  
AICIA – Universidad de Sevilla  
INDRA  
Ayuntamiento de Madrid  
Comunidad de Madrid  
Ministerio de Industria, Turismo y Comercio  
Ministerio de Educación  
Ministerio de Ciencia e Innovación

# CENTER FOR ENERGY EFFICIENCY AND SMART BUILDING (CeDInt)



CeDInt is a multi-disciplinary own R&D center of the Universidad Politécnica de Madrid (UPM) made up of researchers from different areas of both telecommunication engineering and computer science.

The main target of this center is to become a reference and support of the necessary technologies for domotic industry. This center consists of experts from the entrepreneurial sector and from the industry together with scientists and technologists from the university and it acts as an innovation booster and facilitates technological transfer to companies of the same environment.

CeDInt actively takes part in National Standardization Forums in the domotic area, such as AENOR (CTN133/SC2), Asociación Española de Domótica (CEDOM) y Comisión Multisectorial del Hogar Digital of ASIMELEC.

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# CENTER FOR ENERGY EFFICIENCY AND SMART BUILDING

## RESEARCH LINES



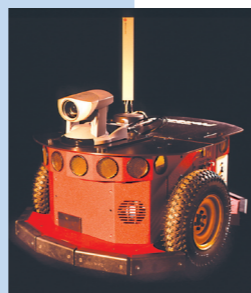
### DOMOTICS ENGINEERING

CeDInt has researchers with expertise in environmental intelligence that work on the design of automatic systems to control consumption in buildings and thus improve the energetic efficiency thereof. These systems reduce expenses in electrical energy, gas and water in buildings what implies an economic saving and a decrease in the greenhouse effect gases and CO2 emissions.



CeDInt works on communication systems, especially on wireless networks to connect sensors and actuators, that use both RF and optical signals. These networks are useful to connect measurement sensors and control mechanisms present in buildings and thus activate or deactivate the different electrical appliances (lighting, air conditioning, electrical household appliances, ...) in accordance to the consumption reduction strategy previously mentioned.

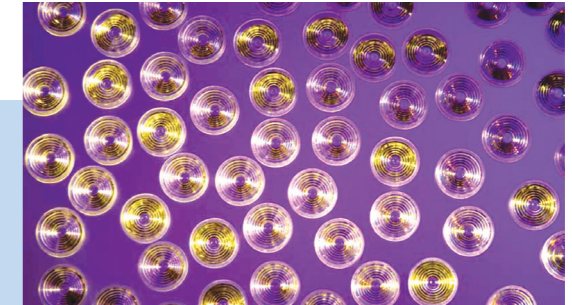
CeDInt works also on monitoring systems, so that users know at any time what the up-to-date consumption is. These works are supported by domotic usability tests which analyze user reactions when they are about to use these systems. The aim is to determine if systems are simple or complicated for users and thus manage to reduce technophobia as much as possible.



CeDInt also carries out an important biometric identification activity, working in high security applications mainly based on the iris pattern recognition, although it also develops other identification systems based on fingerprint and face. These systems are very useful to control people access to high security buildings (such as nuclear power station, a biological laboratory or other similar facilities).

### OPTICAL ENGINEERING

CeDInt develops advanced lighting systems based on LEDs (light-emitting diodes).



Another field of application of these optical systems developed at CeDInt relates to non-guided optical communications.

CeDInt also designs optical concentration systems to improve photovoltaic solar energy system output.

CeDInt designs and tests high effective-optical projection systems aiming to obtain ultra-compact projection displays ideal for domotic applications, especially for home-cinema.



### VIRTUAL REALITY

CeDInt works in virtual reality projects, carrying out research applied to domotics and housing in general (virtual visits to buildings). CeDInt also takes part in activities for the inclusion of disabled people and in medical applications, specifically in the field of legal and forensic medicine.