

## CTTC in numbers

### TEAM MEMBERS



Nationalities



Researchers staff



PhD



Women



Women in management team

**8,1M€**  
BUDGET

**8 FACILITIES** **280M2**  
LABORATORIES

**133**  
STAFF

R&D PROJECTS **91** Projects currently active

**187**  
EVENTS

**60**  
AWARDS

PROJECT RANKINGS

IN TERMS OF EC FUNDING

**22nd**  
in H2020  
in Spain

**25th**  
in LEIT-ICT  
(4th in Spain)

**2nd**  
in 5G-PPP  
(1st in Spain)

IN TERMS OF PROJECT PARTICIPATION

**27th**  
in H2020  
in Spain

**26th**  
in LEIT-ICT  
(6th in Spain)

**2nd**  
in 5G-PPP  
(1st in Spain)

**15** INDUSTRY INNOVATIONS

**26** GRANTED PATENTS IN FORCE

**1** SPIN-OFF

OPEN ACCESS

SCIENTIFIC PUBLICATIONS

**825**  
Journals (ISI Indexed)

**2.061**  
International conferences

**122**  
Books & Chapters

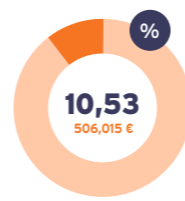
## Income projects 2020



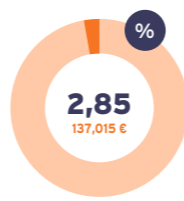
EUROPEAN ADMINISTRATION



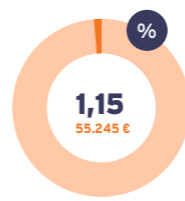
INDUSTRY



SPANISH ADMINISTRATION



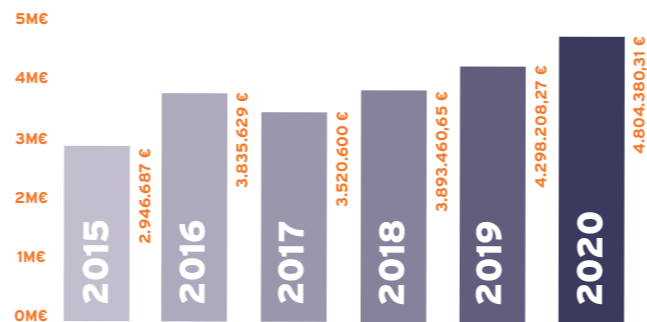
CATALAN ADMINISTRATION



OTHERS

**39%**

GROWTH RATE IN THE PAST 6 YEARS



## Social & Industrial Impact

AUTOMOTIVE & INTELLIGENT TRANSPORT SYSTEMS SMART MOBILITY SMART GRID AND ENERGY MANAGEMENT SMART CITIES SMART HEALTH SUSTAINABILITY ENHANCED MEDIA INDUSTRY 4.0 RURAL ENVIRONMENTS DRONES DEEP SPACE EXPLORATION CIVIL ENGINEERING EARTH SCIENCES CIVIL PROTECTION ENVIRONMENTAL AGENCIES

## Research divisions

**CND**  
ONS Optical Networks & Systems  
MONET Mobile Networks

COMMUNICATION NETWORKS

- Machine learning based multi-layer and multi-domain network management
- SDN/NFV/MEC for verticals
- Coexistence of fixed and mobile networks (incl. NR-U, LAA, mmwave)
- Software-defined optical transmission and performance monitoring
- Optical systems and subsystems exploiting novel photonic technologies
- Testbed development and ns-3 mobile LTE/NR simulation/emulation framework

**CSD**  
ASIP Advanced Signal and Information Processing  
A&MSP Array and Multi-Sensor Processing  
SI Statistical Inference for Communications and Positioning

COMMUNICATION SYSTEMS

- Signal and information processing for the communications systems air interface
- Positioning and tracking: C-ITS, high precision agriculture, advanced GNSS SDR receivers
- Spectrum sharing techniques, machine learning for communications, signal processing for big data and the smart grid
- Technologies: 5G, satellites (GEO/LEO), URLLC, MIMO/arrays, spectral efficient/robust moderns, system-on-chip SDR/HW prototyping
- Experimental platforms: hybrid satellite/terrestrial, GNSS/INS/Indoor (radio) positioning

**CTD**  
M2M Machine to Machine Communications  
PHYCOM PHYLayer Implementation of High Performance Comms Systems  
SMARTECH Smart Energy Efficient Comms Technologies

COMMUNICATION TECHNOLOGIES

- Analog devices for wireless communications and sensors for vertical applications
- 5G/B5G AI-enhanced transceiver front-end prototyping
- Cooperative-Intelligent Transportation Systems based on V2X networks
- Data driven and slicing solutions for B5G/6G networks
- Design of Energy Efficient Management for 5G and Beyond networks
- Experimental framework for 5G-ready vertical services

**GD**  
RSE Remote Sensing  
GEON Geodesy and Navigation

GEOMATICS

- Radar remote sensing
- Optical remote sensing
- Deformation monitoring
- UAV mapping
- Multi-sensor navigation
- Sensor orientation and calibration
- Geodetic trajectory determination

## ▶ Testbeds

### ADRENALINE Testbed®

SDN/NFV Packet/Optical Transport Network and Edge/Core Cloud Platform for End-to-End 5G and IoT Services

### EXTREME Testbed®

SDN/NFV/MEC-based testbed for 5G Mobile networks

### GEDOMIS®

Platform to develop, test and validate the PHY-layer of 5G wireless communication systems

### GESTALT®

Open source Global Navigation Satellite Systems Signal Testbed

### GEMMA NAVIGATION®

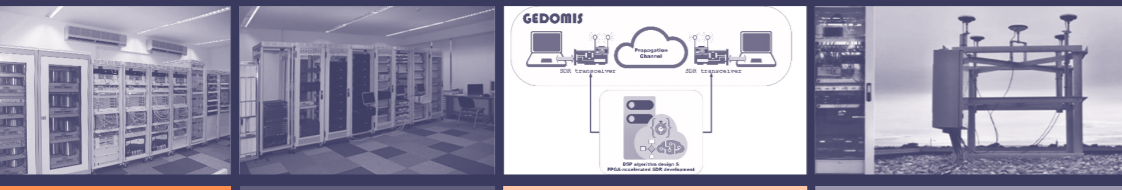
Generic, Extensible and Modular Multisensor navigation Analysis system

### CASTLE PLATFORM®

Cloud Architecture for STandardization deveLopmEnt

### IoT WORLD®

End-to-End testbed for the Internet of Things (IoT)



#### TRUSTEES



#### SUPPORTED BY



#### MEMBERS OF



#### AWARDED WITH



#### CERTIFIED BY



#### ACCREDITED BY



UNLICENSED LTE/NR VIRTUALIZED DSP SDN/NFV RADAR  
WDM/SDM O-RAN 6G FUNCTION SPLIT GREEN ICT  
MANO 6G/5G TESTBEDS 5G TRIALS D2D PROSE  
CLOUD SERVICES DPD PUBLIC SAFETY IOT GNSS RECEIVERS  
GNSS C-ITS NR SIMULATION SDN/NFV ENERGY HARVESTING  
MEMS LAA/LTE-U/NR-U ARTIFICIAL INTELLIGENCE  
REMOTE SENSING ORCHESTRATION INDOOR POSITIONING  
OPTICAL DISAGGREGATION BEYOND 5G TRANSCEIVER DESIGN M2M

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