CTTC in numbers

TEAM MEMBERS

- **24** Nationalities
- **78%** Researchers staff
- **54%** PhD
- **27%** Women
- **45%** 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

- **55,83%** 2.682.249 € EUROPEAN ADMINISTRATION
- **29,64%** 1.423.796 € INDUSTRY
- **10,53%** 506.015 € SPANISH ADMINISTRATION
- **2,85%** 137.015 € CATALAN ADMINISTRATION
- **1,15%** 55.245 € OTHERS
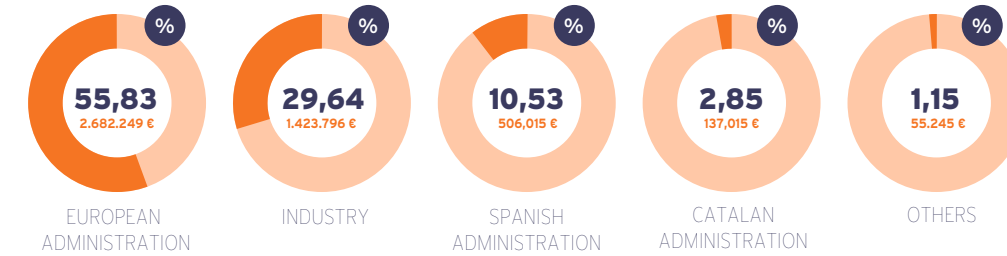
39% GROWTH RATE IN THE PAST 6 YEARS

Year	Amount
2015	2.946.687 €
2016	3.835.629 €
2017	3.520.600 €
2018	3.893.460,65 €
2019	4.298.208,27 €
2020	4.804.380,31 €
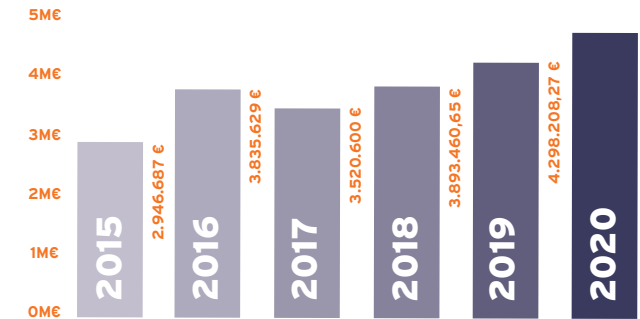
Social & Industrial Impact

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 — COMMUNICATION NETWORKS

ONS Optical Networks & Systems
MONET Mobile 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 — COMMUNICATION SYSTEMS

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

- 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 modems, system-on-chip SDR/HW prototyping
- Experimental platforms: hybrid satellite/terrestrial, GNSS/INS/Indoor (radio) positioning

CTD — COMMUNICATION TECHNOLOGIES

M2M Machine to Machine Communications
PHYCOM PHYLayer Implementation of High Performance Comms Systems
SMARTECH Smart Energy Eficient Comms 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 — GEOMATICS

RSE Remote Sensing
GEON Geodesy and Navigation

- 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
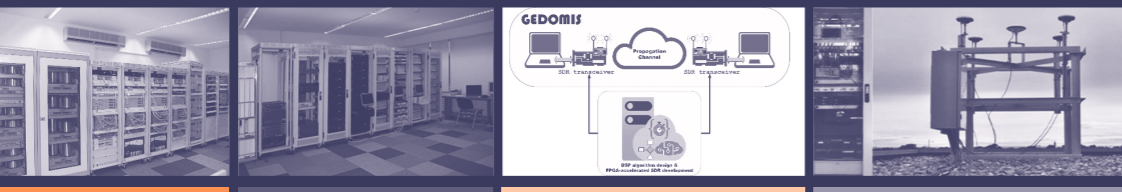
GEMMA NAVIGATION®
Generic, Extensible and Modular Multisensor navigation Analysis system

CASTLE PLATFORM®
Cloud Architecture for STandardization deveLopmEnt

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

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

Advanced research for everyday life

▸ cttc.es

cttc
Centre Tecnològic de Telecomunicacions de Catalunya