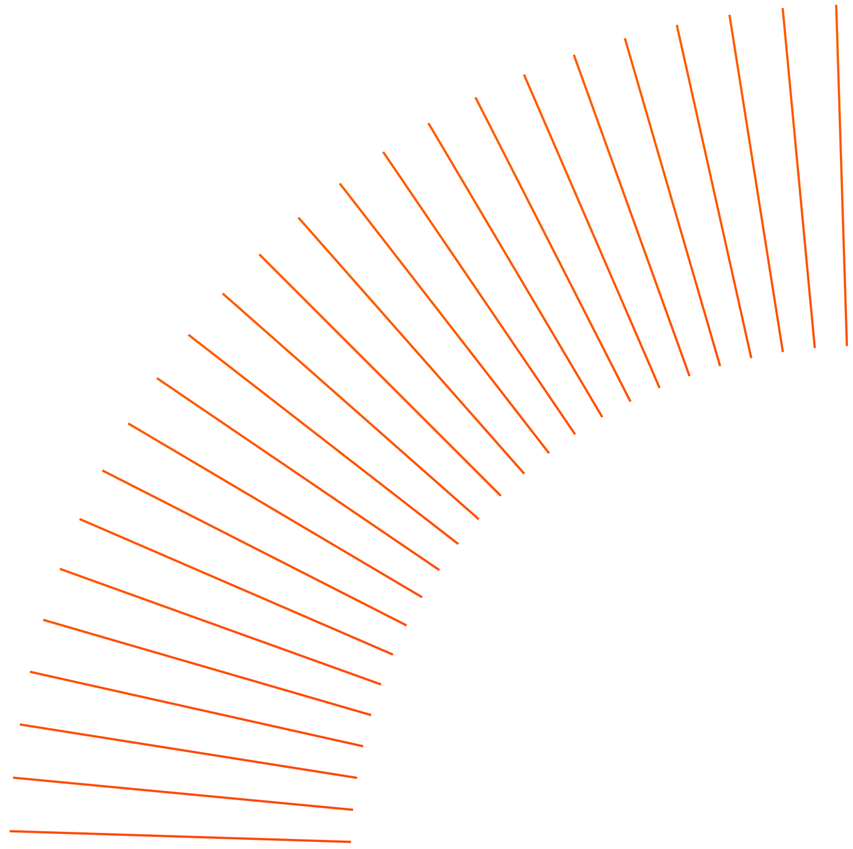
i2cat

The Internet
Research Centre

2023
Annual Report



Let’s move forward with determination to build the foundations of a solid organisation prepared for the new challenges ahead, with sustainability and equality as driving forces.

The year 2023 marked a significant milestone for the i2CAT Foundation. We proudly celebrated twenty years of research and innovation in digital technologies. Since its inception on September 22, 2003, i2CAT has served as a collaborative space involving the public administration, universities, the private sector, and society under a four-helix model. This model has paved the way for the uses and capabilities offered by the second generation of the Internet.

i2CAT's journey has always been intertwined with the evolution of advanced digital technologies. From early tests with nascent Wi-Fi networks promising ubiquitous connectivity and the emergence of IoT to the usability of broadband, the advancement of fibre optics, and the progression of mobile generations from 1G to our current investigations into 6G, our growth has mirrored the rapid advancements in technology. Digital research and innovation are i2CAT’s flagship, and today, this centre is a recognised player in the ICT ecosystem at the Catalan, national, and European levels; recognised by companies and the administration for its superior capacity to deliver high social and economic impact through transformative solutions.

We live in a time of profound transformations, experiencing an unprecedented evolution of technology. This poses new challenges, and we must ensure that we can all adapt to the rapidly changing technologies of the future. Our primary focus should be increasing the innovation and transfer of so-called deep-tech technologies, reducing the digital divide that could exacerbate social and economic inequality while strengthening gender balance in digital research.

Amid this digital revolution, it is crucial that we, as a country, have a consolidated ecosystem. Research must allow us to contribute to the development of an economy based on digital knowledge. i2CAT’s vision positions us as a key driver in ensuring Catalonia's prominence in the global digital revolution, with research excellence and collaboration serving as the cornerstones of its identity. Therefore, it is imperative that i2CAT's strategic position is capitalised on, along with its profound understanding of the principles of Digital Social Innovation. This unique positioning provides a significant opportunity to leverage it as a catalyst for humanising technology and fostering a symbiotic relationship between technological advances and societal digital well-being.

With this in mind, i2CAT is embarking on a new era that I am honoured to lead. We already have three strategic priorities underway: consolidation, focus, and impact. After several years of continuous growth, now is the time to consolidate i2CAT as a premier digital research centre in Catalonia and create a solid foundation for future growth. To achieve this, we must focus on the activities and verticals where we generate added value and can significantly impact Catalonia's productive fabric. Finally, we are working to maximise our impact on the territory and productive sectors, public administration, and society by defining a set of strategic indicators that strengthen i2CAT's link with the territory

Talent is central to i2CAT's success. The team of dedicated researchers, professionals, and board members constitutes the core of i2CAT's achievements. With the confidence of our Board and the CERCA institution, we accept this challenge, and I embrace it with responsibility and commitment. Being a part of the i2CAT Foundation means learning daily, solving complex problems, finding help and support in your teammates, working with dedication, and, above all, being proud of what we are achieving.

Our goal is to lead i2CAT towards achieving high-impact outcomes in academic and, especially, non-academic fields. This journey is guided by a strong commitment to values such as excellence, a human perspective, knowledge, cooperation, collaboration, integrity, trust, and the pursuit of happiness. Let’s move forward with determination to build the foundations of a solid organisation prepared for the new challenges ahead, with sustainability and equality as driving forces.

Sergi Figuerola, PhD

01
Facts & Figures

The most relevant figures from 2023. From funding to project consecution, new agreements with private companies and staff numbers.

Funding

TOTAL FUNDING

17.08M€

TOTAL PUBLIC COMPETITIVE FUNDING 53%

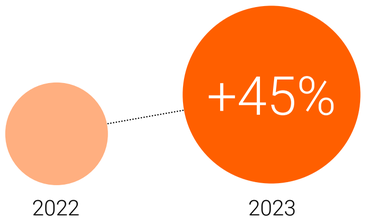
- European Comission 24%
- Goverment of Catalonia 2%
- Goverment of Spain 27%

GOVERMENT OF CATALONIA CORE FUNDING 15%

R&D SERVICES 7%

PUBLIC & PRIVATE CONTRIBUTIONS 25%

Growth rate



Research

HORIZON EUROPE

SUCCES RATE

24.27%

New projects 8

Coordinator

Tecnical leader

R&D PROJECTS

TOTAL

119

R&D On-demand services 14

Competitive projects 74

Projects and initiatives with public administration 31

COMPETITIVE PROJECTS

TOTAL

74

European projects 30

Spanish projects 33
5 projects oriented at developing new research infrastructures

Catalan projects 11

NEW PROJECTS

COMPETITIVE PROJECT PROPOSALS SUBMITTED

82

NEW COMPETITIVE PROJECTS

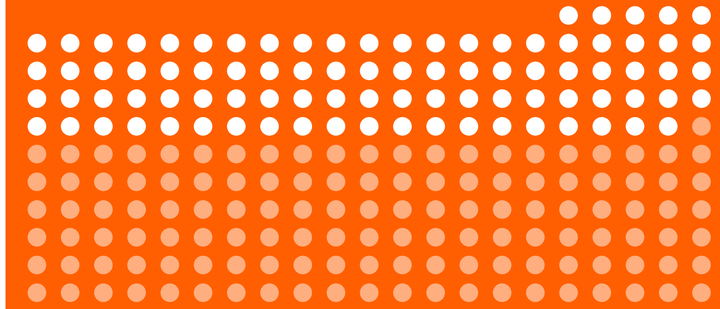
21

Our organisation

STAFF

Total 215 | Research 60% | PhD Staff 20%

37 doctors
23 pre-docs



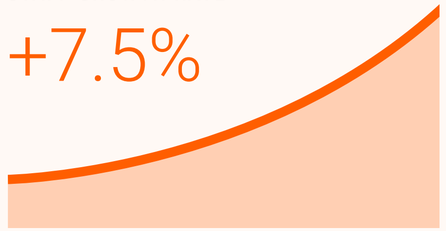
NATIONALITIES

Total

24

STAFF GROWTH RATE

+7.5%



WOMEN RATE

+31%

02
Highlights

In 2023, the i2CAT team achieved remarkable research outcomes, actively supported public digital innovation policies, and showcased cutting-edge assets through pilot projects. Their efforts provide a glimpse into the technological advancements that lie ahead.

INSTITUTIONAL HIGHLIGHTS ↘

i2CAT's 20th anniversary

In September, 2023, i2CAT celebrated **twenty years of research and technological innovation** in the field of the Internet and advanced digital technologies. In February, 2024, the centre gathered around 300 people from the field of innovation, research and the ICT sector in an event presided by the **Vice President of the Government and President of the Board, Laura Vilagrà Pons**.

WATCH THE VIDEO ↗

Special recognition from La Nit de les Telecomunicacions i la Informàtica

The i2CAT Foundation received special recognition during the 28th edition of La Nit de les Telecomunicacions i la Informatica, the reference event in the Catalan technological ecosystem. The distinction recognized the **work of the project's promoters, Sebastià Sallent, Artur Serra, and Xavier Peiró**, who launched i2CAT in 2003 with the support and commitment of the Generalitat de Catalunya and the Universitat Politècnica de Catalunya (UPC).

READ MORE ↗

Sergi Figuerola, PhD, appointed new director of the i2CAT Foundation

Sergi Figuerola Fernández, PhD, was appointed as the **new director of the i2CAT Foundation in January 2024 by a selection committee presided over by the CERCA institution**. Figuerola succeeded Josep Paradells, a professor at the Universitat Politècnica de Catalunya (UPC), who had led the institution since June 2015.

WATCH THE INTERVIEW ↗

Strategic Plan 2024-2027

i2CAT's 2024-2027 Strategic Plan was defined after a thorough participatory process involving governing bodies and staff members. **It defines the centre's activity and outlines an ambitious roadmap to guide i2CAT's activity** in the coming years through three main axes: **FOCUS, IMPACT and TEAM.**

The main strategic priority is to increase the impact generated by i2CAT's research and digital innovation activities on the local ecosystem and the public.

After experiencing exponential growth over the last four years, i2CAT's next strategic priorities involve **consolidating its operations and directing activities toward specific sectors and technologies**. This approach serves as a roadmap to effectively address the challenge of enhancing impact.

Programme contract 2024-2027 with the Government of Catalonia

In 2023, the **Government of Catalonia approved the programme contract between the Generalitat and i2CAT**. It is articulated through the Department of the Presidency and the Department of Research and Universities, and it allocates 12.7 million euros to i2CAT in the period 2024-2027.

This contract aims **to ensure that the centre continues to excel in research and innovation** in Internet and advanced digital technologies, generating impact and strategically contributing to the challenges and opportunities of the country's digital transformation per the European 2030 Digital Compass Strategy.

CERCA Research Centres

A

CERCA evaluation

The CERCA Institute coordinates an assessment of CERCA research centres every four years to analyse their mission fulfilment.

In 2023, an independent panel of renowned international experts evaluated the impact of i2CAT's activities from 2019 to 2023 on scientific production and productivity, knowledge and technology transfer activities, and management.

The reviewers awarded i2CAT an A and provided added-value recommendations to achieve maximum excellence and improve the centre's performance.

RESEARCH EXCELLENCE ↘

The i2CAT Foundation joins the Governing Board of the 6G-IA

Jesús Alonso-Zarate, Director of Research at the i2CAT Foundation, was elected to hold one of the 16 seats on the Governing Board of the 6G Smart Networks and Services Industry Association (6G-IA) during the 23rd General Assembly of the association, celebrated in March 2023. The new Governing Board will lead the association for the next two years. The 6G-IA brings together the leading European telecom companies (operators, manufacturers, verticals, SMEs, etc.), research centres and universities to promote R&D in 5G, advanced 5G and 6G.

Four new projects within the second call of the 6G Smart Networks and Services (SNS) Joint Undertaking (JU)

In 2023, i2CAT was awarded four new projects within the second call of the 6G Smart Networks and Services (SNS) Joint Undertaking (JU), the **Horizon Europe R&I programme directed at designing and facilitating technologies for the next generation of mobile networks and its advanced services**. With ten active projects in the 6G SNS JU, i2CAT is the first-top Catalan institution (the second at a Spanish level) regarding funding return within this programme.

1st

Catalan institution, 2nd at Spanish level, that has attracted the most funds within the 6G Smart Networks and Services (SNS) Joint Undertaking (JU) programme.

Co-funded by the European Union

6GSNS

5GMED Demo Days

i2CAT researchers participated in the 5GMED Demo Days in October 2023 in the **cross-border section between Figueres and Perpignan** to demonstrate the project's progress. i2CAT is the technical coordinator of the project. The event was presided over by the European Commission and focused on **showcasing the functionality of the four use cases, oriented at designing a joint 5G infrastructure for roads and railways in the Mediterranean corridor**.

i2CAT co-chairs the the 29th edition of MobiCom

Xavier Costa-Pérez, PhD, Scientific Director at the i2CAT Foundation, participated as the Co-Chair of the 29th Annual International Conference On Mobile Computing And Networking. i2CAT was one of the sponsors of this conference.

10 million euro grants to deploy new laboratory infrastructure

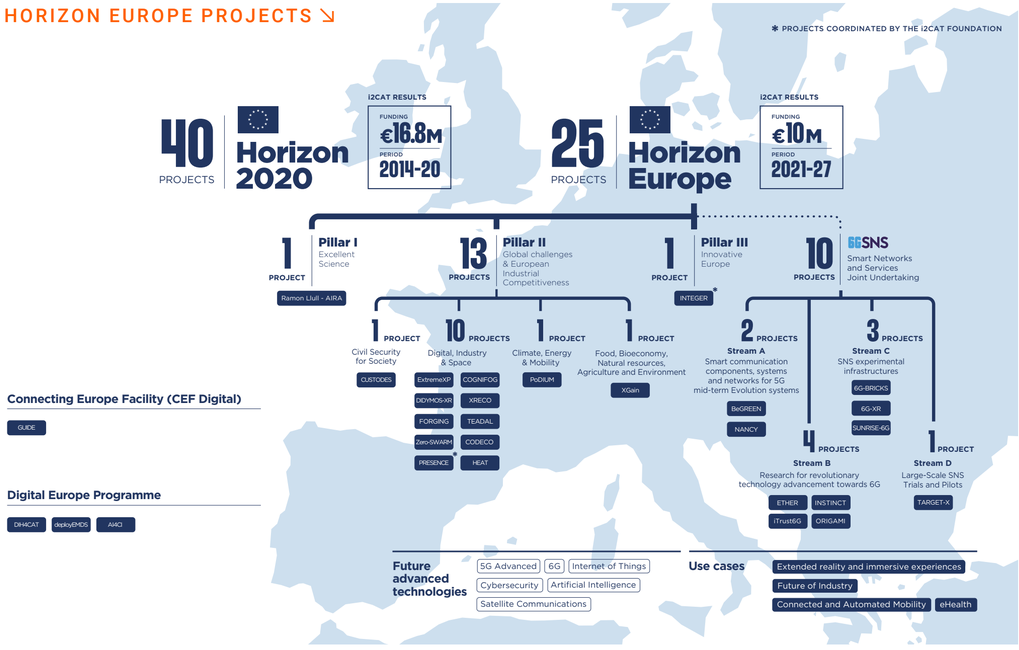
i2CAT obtained grants worth almost 10 million euros in the two calls of the subprogramme of infrastructures and scientific-technical equipment aimed at universities and research centres promoted by the Ministry for Digital Transformation of the Spanish Government. This sub-programme is part of the **UNICO I+D 6G programme**, promoted by the Spanish Government as part of the Recovery, Transformation and Resilience Plan with Next Generation EU funding.

With the acquisition of these new funds, **i2CAT will create new laboratory infrastructures to expand its research in strategic areas**, including intelligent, open networks, satellite communication networks, high-precision positioning technologies, vehicular communications, cybersecurity, and extended reality (XR) technologies.

Relevant telco companies and research entities join the UNICO I+D 6G projects

Almost **thirty companies and public sector entities have won the public tenders opened by the i2CAT Foundation for the joint development of six coordinated projects within the UNICO I+D 6G programme**. Among the entities benefiting from the tenders for the joint development of these research projects are large companies from the ICT and industrial sector (Orange, Ericsson, Aimsun, Abertis, Applus IDIADA, Autopistas, Atos, Telefónica, Acisa, Bosch, NEC, Minsait, Keysight Technologies and Ficosa), SMEs (Neutroon, Trimek, Open Cosmos, MWSE, Wooptix, Optare Solutions, Open Nebula, Osmium and Brainstorm) and universities and research centres (Universitat Politècnica de Catalunya, Universitat Oberta de Catalunya, Universidad Politécnica de Madrid, Vicomtech, Gradiant and the Innovalia Association).

HORIZON EUROPE PROJECTS ↘



Publications

24
Journals
15 Q1 Journals

43
Conferences
2 A and A+

14
Workshops

4
Book chapters

New Scientific Advisory Board member

In 2023, Antonio Skarmeta, full professor at the Faculty of Informatics of the Universidad de Murcia, joined the Scientific Advisory Board of i2CAT.

TECHNOLOGY TRANSFER ↘

DOWI patent granted

In 2023, i2CAT patented the DOWI technology. **This innovative system increases the performance of wireless access networks in high-density scenarios, significantly improving the user experience in video streaming**.

DOWI is based on an innovative algorithmic solution that facilitates a proportional allocation between users of video streaming systems to consume videos on demand. The system optimises resources among different users of the same wireless network according to the characteristics and state of the network and the properties of video streams. It improves the performance of adaptive video services such as the popular DASH (Dynamic Adaptive Streaming over HTTP) or HLS (HTTP Live Streaming).

Patents

2
Patent requests

SOCIAL AND TERRITORIAL IMPACT ↘

15
Open innovation sessions

10
Pilots and PoC

1,300
Attendees

650
Organisations participating in activities

Through the Col·laboratori Catalunya, Àrees Digitals or the Government of Catalonia Local Innovation Laboratories, **i2CAT promotes citizen training and digital empowerment**, identifies local challenges and favours collaboration between territorial agents. The final objective is to grant that a positive social and economic impact reaches all corners of Catalonia.

Col·laboratori Catalunya · ÀreesDigitals · DIH4CAT Digital Innovation Hub de Catalunya

PUBLIC SECTOR DIGITAL TRANSFORMATION ↘

Digital Catalonia Aliance

546
Members

20%
Growth

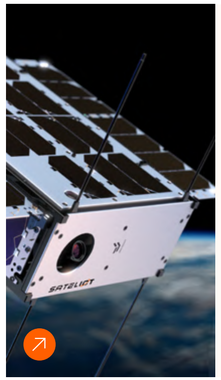
43%
of the Catalan emerging tech sector

DCA Digital Catalonia Alliance

MARKET-ORIENTED INNOVATION ↘

28 new agreements

2023 was a fruitful year regarding strategic alliances with private companies, with 28 new agreements to uncover innovative market-oriented solutions based on advanced technologies, **focusing on Space Communications and Connected and Autonomous Mobility**.



i2CAT plays a relevant role in the NewSpace Strategy of Catalonia, managing the main operations and directly impacting the strategy's lines of action. With the NewSpace Strategy, i2CAT has gained a new dimension and opportunities, expanding its knowledge and operation in collaboration with the private sector. i2CAT and Sateliot, a Barcelona-based satellite communication service provider, began cooperating in 2020. The partnership, a win-win situation and a success story, was featured in The Barcelona Startup Ecosystem 2023 study, a report by Mind The Bridge and Tech Barcelona.

i2CAT leverages its broad approach to mobility by developing systems based on novel technologies. Some examples of technologies that will be the stepping stones for innovative products are detection, high-precision positioning, and tracking vehicles with artificial vision, radio and satellite technologies, AI, security in inter-vehicular communications, intelligent traffic analysis, and data spaces.

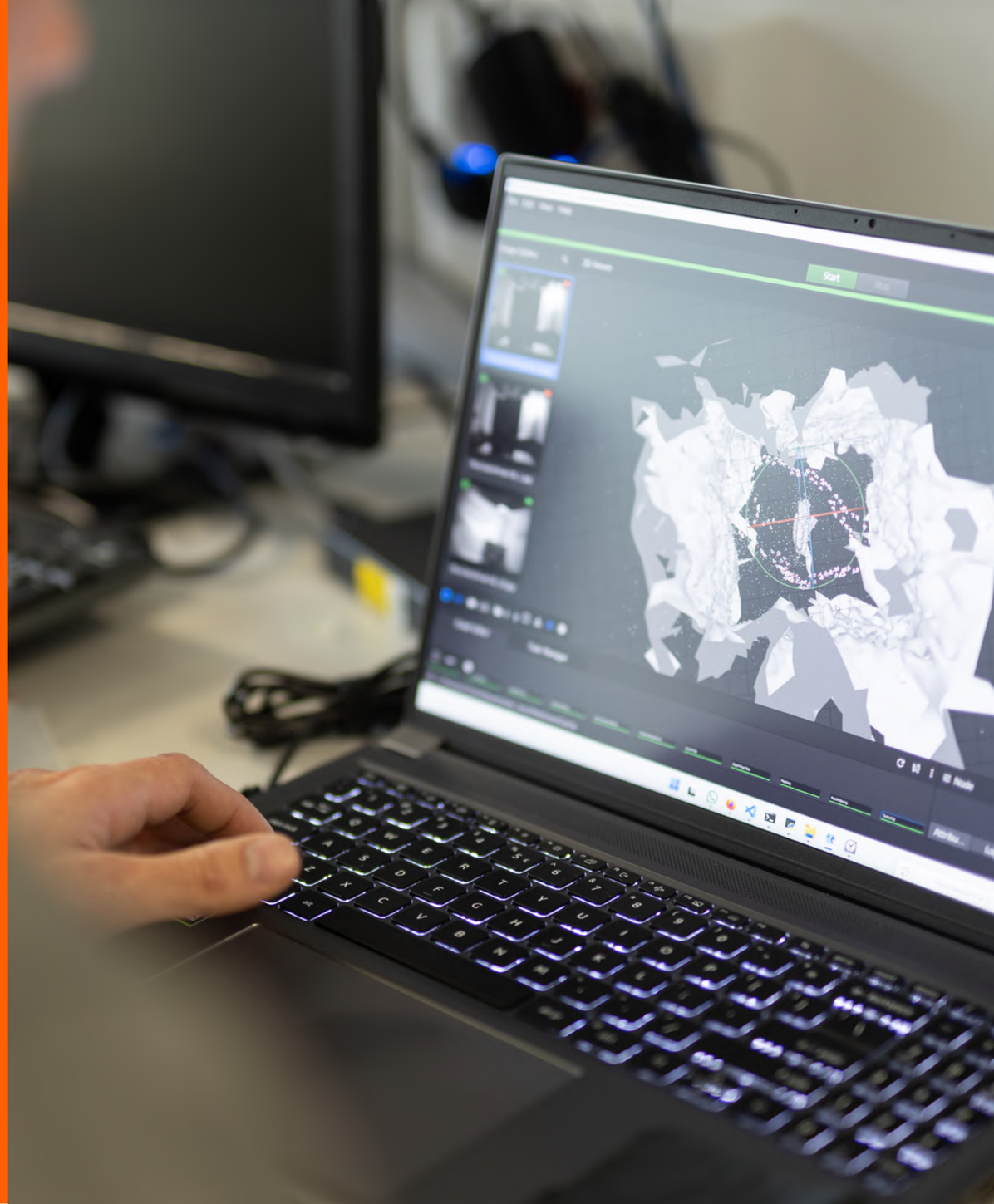
At SCEWC 2023, i2CAT and ACISA demonstrated safer and more comfortable mobility by showcasing a demo of the SAVE V2X project, reaffirming i2CAT's position as one of the centres with the most knowledge on vehicular communications technologies.

03

Research Impact

After over twenty years of activity, the i2CAT Foundation has become a major player in the European research and innovation ecosystem for advanced digital technologies. Since 2006, the centre has participated in 100+ European research projects and has secured more than €36 million in funds from the European Commission.

In 2023, i2CAT's research activities supported the development of pioneering solutions targeting the fields of Digital Administration, Telecommunications Infrastructure, Media, Digital Health, New Space, Sustainability, Autonomous and Connected Mobility, and Industry 5.0.



Research areas roadmap

As a mission-driven research and innovation centre, i2CAT stands for technological sovereignty and wants to strengthen the European research arena. To this end, during 2023, the different centre's research areas reinforced their R&D activities in 5G/6G, IoT, immersive and interactive technologies, cybersecurity, blockchain, artificial intelligence, space communications and digital social technologies.

PRINCIPAL PARTNERS

AI-Driven Systems

PROJECTS

ORIGAMI | INSTINCT

- Sustainable 6G vRANs
- Gen AI for RANs
- AI/ML-driven 6G RAN Automation
- vRANs Cost/Energy-efficiency
- vRAN+Smart Surfaces
- 6G Integrated Sensing and Comms (ISAC)
- Cellular/RIS-based localization
- Collaborative Mobile Robotics
- Wireless XR/VR
- Precision Medicine

Mobile Wireless Internet

PROJECTS

5GMED

- O-RAN architecture for energy efficiency beyond 5G networks
- Regenerative architecture IoT NTN with support for store & forward
- 5G/6G exposure capabilities to support XR, industry and vehicular verticals
- Vehicular Digital Twins to Enhance Traffic Efficiency
- Smart edge-based V2X gateways

Software Networks

PROJECTS

SUNRISE-6G

- Intelligent Application/Service Orchestration for Cognitive Cloud Continuum [incl. extension to NTN]
- Intent-based Networking
- Intelligent slice management
- Distributed and secure Marketplace for 5G/6G resources
- Multi-agent communications protocols

Space Communications

PROJECTS

ETHER

- Interoperability among TN and NTN by supportive AI-driven task scheduling
- In-orbit virtualization mechanisms towards flexible and regenerative payloads
- Space-and-time-aware NTN management and orchestration
- Hybrid Inter-Satellite Link Towards Enhanced Optical Satellite Networks
- Simulation engine to support satellite network protocols research
- Contributions towards Quantum Key Distribution Satellite Networks

Cybersecurity & DLT Blockchain

PROJECTS

iTrust6G

- Cyber Security as a Service
- Risk Assessment and Management
- Privacy Enhancing Technologies (PET) for Data
- Zero-Knowledge Proof (ZKP) & Verifiable Computation
- Identity Management Self-Sovereign Identity (SSI)
- Robustness of AI Systems
- Decentralised solutions and service automation for 5G/6G network management
- Data Sharing and monetisation while preserving privacy & control

Distributed AI

- Predictive models for risk detection from data logs
- Deep Reinforcement Learning for Swarm Systems
- Audio classification with Deep Learning methods from cloud to Tiny ML
- Multi-detection and multi-tracking of objects with multi-modal Computer Vision
- Deep Learning for calibration, compression, recognition and generation of volumetric content
- Data Spaces Components based on IDSA and Gaia-X architectures
- Cognitive clouds functions based on AI
- Stretched distributed and federated Data Lakes

Internet of Things

PROJECTS

IoTNGIN | RESPOND-A

- Ambient Intelligence
- RINA for IoT
- Precise positioning based on Visible Light and RF

Media Technologies

PROJECTS

PRESENCE

- Real-time multi-user holoportation
- Immersive video
- Volumetric video
- Scalable communications
- Point Cloud Compression
- Stream Synchronization
- Multi-camera 3D reconstruction
- Supersampling and denoising
- Quality of Experience
- Adaptive and low-latency streaming

Digital Social Tecnhologies

PROJECTS

INTEGER

- Social Digital Innovation
- Innovation Ecosystems Design and Development
- Collaboratories for Co-Participation, Co-Design, and Co-Creation
- Systemic Transformation of Society
- Facilitation techniques and Methodologies for the adoption of new technologies aligned with healthy lifestyles and cultural values
- Open living Labs and open innovation as methodologies for social, economic, industrial and sectoral transformation
- Impact of social digital technologies and qualitative studies
- Techno Anthropology
- Gender and Intersectionality research and analysis
- Design, implementation and evaluation of innovation policies and strategies for social and digital transformation
- Rights and Responsibilities in the development and use of technology and digital solutions

EU funding programmes for research and innovation

i2CAT has a leading role in numerous European research projects that set the way in cutting-edge technologies such as 5G and 6G, VR, Internet of Things, Artificial Intelligence, Cybersecurity, Blockchain, Space Communications and Digital Social Technologies. The centre has achieved great success within the Horizon Europe and Digital Europe funding programmes and has become a benchmark at a European level in mission-oriented R&D activities in advanced digital technologies.

HORIZON EUROPE FUNDING AND PROJECTS

Horizon Europe

In 2023, the i2CAT Foundation was awarded **8 new projects** within the **Horizon Europe programme**, the EU's key funding programme for research and innovation, with a total funding of more than 3M€. The Catalan research centre coordinates one of these projects and acts as the Technical leader of another. These eight new projects will extend the 17 projects obtained by i2CAT in the first call for proposals of Horizon Europe. The Catalan centre has 25 Horizon Europe projects underway with funding of more than 10 million euros.

One of the new projects obtained by i2CAT in 2023 corresponds to the **Marie Skłodowska-Curie (MSCA)** action integrated within the **Pillar I of Horizon Europe - Excellent Science -**, oriented at supporting institutions through excellent doctoral and postdoctoral programmes and collaborative projects. Another three projects correspond to **Pillar II - Global Challenges & European Industrial Competitiveness -** which aims to foster breakthrough innovation and market deployment of innovative solutions. The last four projects were obtained within the second call of the **6G Smart Networks and Services (SNS) Joint Undertaking (JU)**, directed at designing and facilitating technologies for the next generation of mobile networks and its advanced services

The total ongoing 25 Horizon Europe projects underscore the centre's commitment to the design, development, and testing of future digital technologies, including 5G, 5G Advanced, 6G, the Internet of Things, Cybersecurity, Satellite Communications, and Artificial Intelligence, all of them at the service of enabling disruptive use cases, such as those based on extended reality and immersive experiences, Connected and Automated Mobility, the future or Industry, eHealth, and many more.

PROJECTS ↘

ORIGAMI

ORIGAMI aims at spearheading the next-generation of mobile network architecture, overcoming eight factual barriers to ensure a successful 6G future. With three critical architectural innovations - Global Service-based Architecture (GSBA), Zero-Trust Exposure Layer (ZTL), and Compute Continuum Layer (CCL) - this project strives to create global single standards, promote green transition, boost affordability and accessibility, and inspire ground-breaking applications and fresh business models.

SURISE-6G

The SUNRISE-6G approach is inspired by the "network of networks" concept of 6G Networks, aiming to integrate all private and public infrastructures under a massively scalable internet-like architecture. i2CAT is the technical manager of this project, which aspires to create a federation of 6G test infrastructures in a pan-European facility that will support converged Testing as a Service (TaaS) workflows and tools, a unified catalogue of 6G enablers publicly accessible by experimenters, and cross-domain vertical application onboarding.

ETHER

ETHER aims to provide a holistic approach for integrated terrestrial-non-terrestrial networks targeting 100% network coverage, 99.99999% service continuity and 99.99999% reliability, with 3 times higher energy efficiency and 95% Total Cost of Ownership reduction compared to current terrestrial deployments. To achieve these goals, ETHER develops solutions for a Unified Radio Access Network (RAN) and energy-efficient, AI-enabled resource management across the terrestrial, aerial and space domains while creating the business plans driving future investments in the area.

iTrust6G

iTrust6G will propose novel concepts and solutions for a unified and intelligent security architecture for distributed network and cloud domains, capable of addressing advanced 6G use cases and applications. i2CAT is the technical and scientific manager of this project, which main goal is to design a network architecture implementing zero-trust principles to increase the trustworthiness of 6G networks at several levels, such as the AI/ML algorithm exploited for threat handling, asset compliance, explainable security policies and asset observability.

PRESENCE

PRESENCE is oriented at providing intuitive and hyper-realistic Extended Reality (XR) experiences by bringing real humans into interactive virtual worlds. i2CAT coordinates this research project, which brings together 17 European partners. Focusing on a human-centred approach, the project will deliver a toolset of technologies such as holoportation, haptics, and virtual humans to enhance the feeling of presence for the end-users in virtual scenarios. All the solutions will intrinsically involve understanding the ethics of the solutions and end-users' safety and privacy.

INTEGER

INTEGER's main objective is to achieve more robust, sustainable, inclusive, and integrative EU innovation ecosystems by promoting the active participation of social innovation actors and their connection with all other actors involved in such ecosystems, including the industry and the public sector, the SMEs and start-ups, the accelerators and business incubators, the investors, and the philanthropy societies. As the project's coordinator, the i2CAT Foundation contributes to INTEGER with its broad interdisciplinary expertise in solid integration of digital research and social innovation, co-creation and facilitation mechanisms with the start-up community and digital hubs, open living labs, and inter-entrepreneurship.

Digital Europe

In 2023, i2CAT was awarded two projects within the Digital Europe Programme, with a total funding of more than 400.000€. The European Commission promotes this funding programme to bridge the gap between digital technology research and market deployment.

deployEMDS

deployEMDS will support the creation and deployment of an operational data space, allowing participants to make data available and accessible in a machine-readable format and to share data in a controlled, simple and secure way. The project will contribute to further developing the common European mobility data space announced in the Data Strategy and the Sustainable and Smart Mobility Strategy, built and operated in full compliance with existing EU legislation in the mobility and transport sectors.

AI4CI

AI4CI aims to support European educational institutions in creating a new joint master's degree program focused on applying Artificial Intelligence to Connected Industries. The primary objective is to train at least 500 new experts in AI technologies for Connected Industries to reinforce the EU industry and scientific ecosystem and to graduate at least 250 among them. The joint AI4CI European master is designed to be deployed in 4 countries at 7 universities, with the integration of 5 SMEs and 3 research centres supporting training activities and student professionalisation.

SNS Projects

In 2023, the i2CAT Foundation was awarded **four new projects within the second call of the 6G Smart Networks and Services (SNS) Joint Undertaking (JU)**. The SNS is the European Research and Innovation initiative within the Horizon Europe R&I programme, which is directed at designing and facilitating technologies for the next generation of mobile networks and its advanced services. **These new four projects will expand and complement the six projects awarded in the first call of the SNS back in 2022, which started to be executed in January 2023**. With 10 active projects in the SNS, i2CAT keeps consolidating its role in developing 5G and 6G technologies in the European research arena, thanks to active participation in the four large research Streams that define the programme.

STREAM A

BeGREEN works to substantially reduce the energy consumption of new mobile communication networks to make them more sustainable. The main challenge is to achieve this despite the incessant escalation in data traffic and the emergence of increasingly advanced services with ambitious performance demands for mobile communication networks. In turn, the **NANCY** project will focus on improving network security and privacy by implementing connectivity systems based on artificial intelligence and blockchain.

STREAM B

The **ETHER** project aims to guarantee 100% network coverage by integrating terrestrial and non-terrestrial networks and using satellites to extend coverage. **INSTINCT** will deliver the waveforms, protocols, and hardware design of an innovative beyond communications system architecture, combining the benefits of Wireless Sensing, Reconfigurable Intelligent Surfaces (RIS) and Artificial Intelligence (AI). **iTrust6G** will propose novel concepts and solutions to achieve a unified and intelligent security architecture for distributed network and cloud domains, capable of addressing advanced 6G use cases and applications by integrating required architectural enablers for flexible yet cost-efficient deployment in 6G networks. Finally, **ORIGAMI** will spearhead the next-generation mobile network architecture, overcoming eight factual barriers to ensure a successful 6G future.

STREAM C

The **6G-BRICKS** project will work on integrating emerging technologies into the 6G architecture by creating functional blocks, thus providing greater flexibility for networks and the ability to be configured dynamically according to needs. By working with RIS, it will be possible to integrate communication antennas into elements of everyday life, such as walls or street furniture. In turn, the **6G-XR** project will enable new services in extended reality, validating innovative 6G applications for holography, digital twins or the broadcasting of large events. Another strategic project is **SUNRISE-6G**, where i2CAT will act as co-technical manager. It will mainly aim to federate the experimental platforms for 6G in Europe. The project's approach is inspired by the "network of networks" concept of 6G Networks, seeking to integrate all private and public infrastructures under a massively scalable internet-like architecture.

STREAM D

The **TARGET-X** project seeks to accelerate the digital transformation of key industries at a European level, such as energy, construction, automotive and manufacturing, through large-scale trials and test benches to validate the current potential of 5G and the future 6G in real environments

1st

Catalan institution, 2nd at Spanish level, that has attracted the most funds within the 6G Smart Networks and Services (SNS) Joint Undertaking (JU) programme.

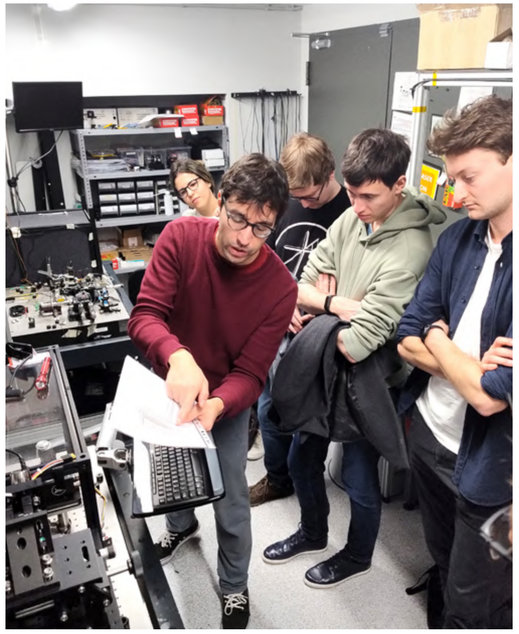
Co-funded by the European Union
6G SNS

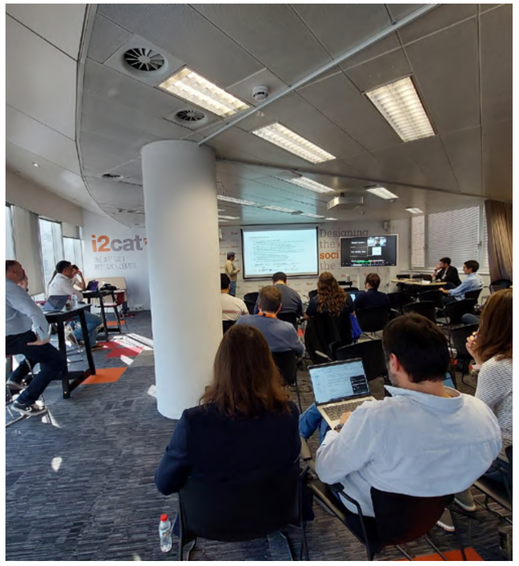
UNICO

During 2023, i2CAT continued executing the **19 research projects** for a total amount of more than **16 M€ awarded within the UNICO I+D 6G**, a research programme funded by the Ministry for Digital Transformation and Public Service of the Government of Spain and the European Union—NextGeneration EU within the framework of the 'Recovery, Transformation and Resilience Plan'. The main objective of UNICO I+D 6G is to facilitate access to ultra-fast broadband in Spain and accelerate the deployment of 5G.

In 2023, **i2CAT won one more project (almost 2M€ funding) within the UNICO I+D 6G sub-programme of infrastructures and scientific-technical equipment** aimed at universities and research centres promoted by the Ministry for Digital Transformation.

TENDERS





UNICO I+D 6G Programme

Almost thirty companies and public sector entities have won the public tenders opened by the i2CAT Foundation for the joint development of six coordinated projects within the **UNICO I+D 6G programme**, promoted by the Ministry for Digital Transformation and Public Function within the Recovery, Transformation and Resilience Plan of the Government of Spain, which is financed with NextGenerationEU funds. Since January 2022, and for 3 years, the Catalan research and innovation centre has been leading **19 research projects** grouped into 6 large coordinated projects aimed at designing 6G technology in Spain. The formalisation of tenders worth 11.2 million euros represents a turning point in developing the UNICO I+D 6G projects led by the i2CAT Foundation.

Among the entities benefiting from the tenders for the joint development of these research projects are **large companies** from the ICT and industrial sector (Orange, Ericsson, Aimsun, Abertis, Applus IDIADA, Autopistas, Atos, Telefónica, Acisa, Bosch, NEC, Minsait, Keysight Technologies and Ficosa), **SMEs** (Neutroon, Trimek, Open Cosmos, MWSE, Wooptix, Optare Solutions, Open Nebula, Osmium and Brainstorm) and **universities and research centres** (Universitat Politècnica de Catalunya, Universitat Oberta de Catvalunya, Universidad Politécnica de Madrid, Vicomtech, Gradiant and the Innovalia Association).

Within the framework of these projects, i2CAT's research staff is working on developing technologies for the next generation of 6G mobile networks and advanced services. The **6GENABLERS** project studies the use of artificial intelligence and DLT (Distributed Ledger Technologies) in the context of the core of mobile communication networks and places cybersecurity as a transversal element of the project. The **6GSatNet** project focuses on integrating satellite and non-terrestrial communication networks into the 5G/6G terrestrial network architecture. The **6GTWINROAD** project is developing the digital twin concept to drive autonomous and connected mobility. The **Open6G** project explores highly disruptive advanced technologies, such as Reconfigurable Intelligent Surfaces (RIS) or Integrated Sensing and Communications (ISAC) technologies, applied to Open RANs, globally considered key elements of 6G technology. The **6GSMART** project explores the interaction of public and private networks applied in smart industrial environments with extreme reliability and latency requirements. The **6G-OpenVerso** project is deploying testbeds and infrastructures capable of supporting the traffic of extended reality applications and real-time immersive communications. Finally, the **Plan for the Promotion of Telecommunications Studies (PPET)** is a transversal activity to all the projects of the UNICO I+D 6G programme. Its main objective is to promote vocation in Telecommunications early to boost talent, focusing on women's vocations in Telecommunications.

Talent in research

i2CAT strives for excellence to increase the centre's scientific competitiveness. In 2023, it continued to invest in research and innovation talent to maintain its scientific and technological leadership.

European Research Council

In 2023, i2CAT hosted three European Research Council PhD students who joined the AI-Driven Systems, IoT, and Mobile Wireless Internet research areas. The ERC's mission is to encourage the highest quality research in Europe through competitive funding and to support investigator-driven frontier research across all fields based on scientific excellence.

Two other PhD students from the Centres de Formation d'Apprentis de l'Industrie de Lyon (CFAI Lyon) also collaborated on research projects in the Media Internet research area.

Marie Skłodowska-Curie Doctoral Networks

Two researchers of the Marie Skłodowska-Curie Innovative Training Networks started their secondment PhD stage in Robert Bosch GMBH and NEC Laboratories Europe GMBH, respectively, under the 5GSmartFact project.

Doctoral Networks aims to implement doctoral programmes through partnerships with organisations from different sectors across Europe and beyond to train highly skilled doctoral candidates, stimulate their creativity, enhance their innovation capacities, and boost their long-term employability.

Ramon Llull-AIRA Postdoctoral Programme

The Ramon Llull-AIRA Postdoctoral Programme is an International postdoctoral Marie Skłodowska Curie Actions-COFUND (MSCA-COFUND) programme offering 33 three-year fellowships to train researchers in the outstanding R&D Institutions in artificial intelligence (AI) in Catalonia to become competent scientific leaders in different scientific disciplines within AI by promoting challenging interdisciplinary R&D projects. The programme is led by the Computer Vision Centre (CVC), holder of the current Artificial Intelligence Research Alliance, AIRA, the axis for knowledge generation within the current Catalan Strategy for AI (Catalonia.ai). i2CAT participates in the project as one of the Implementing Partners and will be in charge of hosting and training one of the ER fellows.

Joan Oró grants by AGAUR

During 2023, i2CAT applied for two FI Joan Oró grants funded by the Agency for Management of University and Research Grants of the Catalan Government and was awarded one of them. A researcher joined the Space Communications research area to participate in research projects.

The objective of Joan Oró grants by AGAUR is to fund doctoral candidates in Catalonian institutions. These grants promote doctoral candidates' training and research activity and increase their qualifications and professionalization during the initial phases of their research careers.

Research publications

Excellence, cooperation, openness, inspiration, and commitment are i2CAT's hallmarks. In 2023, the research areas of i2CAT worked to produce relevant scientific results to contribute to the general advancement of digital technologies and to boost standard bodies such as ETSI. i2CAT is committed to making its scientific outcomes available to everyone and also giving further visibility to the results achieved by its researchers.

THE MAIN PUBLICATIONS OF 2023 ARE THE FOLLOWING ONES ↘

1 Q1 A. Fernández-Fernández, E. Coronado, A. Erspamer, G. Samaras, V. Theodorou and S. Siddiqui, "Unlocking the Path toward Intelligent Telecom Marketplaces for Beyond 5G and 6G Networks," in IEEE Communications Magazine, vol. 61, no. 3, pp. 28-34, March 2023, doi: 10.1109/MCOM.002.2200266.

2 Q1 A. Romero, C. Delgado, L. Zanzi, X. Li and X. Costa-Pérez, "OROS: Online Operation and Orchestration of Collaborative Robots using 5G," in IEEE Transactions on Network and Service Management, doi: 10.1109/TNSM.2023.3281976.

3 Q1 Municio, E., Garcia-Aviles, G., Garcia-Saavedra, A., & Costa-Perez, X. (2023). O-RAN: Analysis of Latency-critical Interfaces and Overview of Time Sensitive Networking Solutions. IEEE Communications Standards Magazine.

4 Core A+ Sergi Fernandez, Mario Montagud, David Rincón, Juame Moragues, and Gianluca Cernigliaro. 2023. Addressing Scalability for Real-time Multiuser Holoportation: Introducing and Assessing a Multipoint Control Unit (MCU) for Volumetric Video. In Proceedings of the 31st ACM International Conference on Multimedia (MM '23). Association for Computing Machinery, New York, NY, USA, 9243–9251.

5 Q1 G. Boquet, B. Martinez, F. Adelantado, J. Pages, J. A. Ruiz-de-Azua and X. Vilajosana, "Low-Power Satellite Access Time Estimation for Internet of Things Services over Non-Terrestrial Networks," in IEEE Internet of Things Journal, doi: 10.1109/JIOT.2023.3298017.

6 Q2 Garcia-Villegas, E.; Lopez-Garcia, A.; Lopez-Aguilera, E. Genetic Algorithm-Based Grouping Strategy for IEEE 802.11ah Networks. Sensors 2023, 23, 862.

7 Q1 J. Mcnamara et al., "NLP Powered Intent Based Network Management for Private 5G Networks," in IEEE Access, vol. 11, pp. 36642-36657, 2023.

8 Q1 R. Sedar, C. Kalalas, F. Vázquez-Gallego, L. Alonso and J. Alonso-Zarate, "A Comprehensive Survey of V2X Cybersecurity Mechanisms and Future Research Paths," in IEEE Open Journal of the Communications Society, vol. 4, pp. 325-391, 2023, doi: 10.1109/OJCOMS.2023.3239115.

9 Q2 Compastié, M.; López Martínez, A.; Fernández, C.; Gil Pérez, M.; Tsarsitalidis, S.; Xylouris, G.; Mlakar, I.; Kourtis, M.A.; Šafran, V. PALANTIR: An NFV-Based Security-as-a-Service Approach for Automating Threat Mitigation. Sensors 2023, 23, 1658.

10 Q2 Adame, T.; Igual, J.; Catalan, M. Fast Deployment of a UWB-Based IPS for Emergency Response Operations. Sensors 2023, 23, 4193.

RESEARCH PORTAL OF CATALONIA (CORA.PRC)

PUBLICATIONS

In 2023, i2CAT's research areas made 86 scientific contributions across diverse formats, including Journals, Conferences, Workshops, and Book Chapters, demonstrating the depth of its research output.

24 Journals | 15 Q1 Journals

43 Conferences | 2 A and A+

14 Workshops

4 Book chapters

04

Technology Transfer

i2CAT focuses on developing market-oriented technologies and solutions. The centre collaborates with private companies to form joint R&D teams, addressing market-driven technical challenges. Additionally, i2CAT leverages its research to create intellectual property rights, including patents. The centre also takes the lead in designing and deploying technical and functional proofs-of-concept, working hand in hand with ICT companies, public administration, and end users to validate and promote these technologies' adoption and support and advance entrepreneurship and spin-off creation.

Technological Ecosystem

The Catalonia Valorization Networks help organisations to valorise their assets, contribute to patent application funding, execute Proofs of Concept, and disseminate their milestones. i2CAT is a member of 5 Valorization Networks conceived to bring project results to the market.

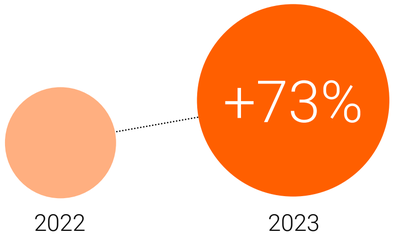
RDI-IA network

The RDI-IA network was created in 2022 and includes 28 research groups of 16 Catalan institutions focusing on Artificial Intelligence. It aims to underpin the ecosystem and offers tech transfer and valorisation mechanisms.

AccessCat

AccessCat is a network gathering 175 researchers with experience in ICT for accessibility. It is expected to become a referent in this field, particularly in culture, education, and the media.

ROYALTIES



In 2023, i2CAT continued consolidating its income through royalties, which have increased by 73% with respect to 2022

Research outcomes

ASSETS AND VALORISATION ↘

SIEVA

SIEVA is a tool for SIEM visibility analysis that uses natural language processing techniques.

It classifies and identifies the logs within a SIEM and maps the output to the MITRE ATT&CK Framework matrix, allowing organisations to understand their monitoring needs and capabilities better. It also develops a mid- and long-term data integration strategy, achieving higher operational maturity.

Unlike other visibility tools, SIEVA analyses based on the information in the logs instead of the rules deployed on the SIEMs.

A SIEVA public release is available under an AGPL license in our GitHub repository.

HOLOMIT

HOLOMIT is a novel solution that provides a complete holoportation service. Remotely connected users are represented as volumetric video, processed and transmitted in real time. The architecture has been designed to allow easy adaptation to different use cases and bandwidth availability.

This component helps XR developers integrate holoconferences with an easy-to-use SDK, optimising resources for a cost-efficient application that aims to boost a **wider adoption of metaverse experiences.**

5GNSS

5GNSS is a localisation system that makes a dynamic fusion of 5G-NR and GNSS signals to improve the accuracy of current GNSS systems, resulting in a more reliable localisation system for situations where GPS is unavailable. It improves current positioning systems with an average error reduction of ~ 60-40%.

This technology is addressed to System On Module and navigation device manufacturers willing to enable new applications.

After valorisation, **i2CAT applied in October 2023 for a European patent**, "A computer implemented method, a system and computer program for estimating a target's position" (EP23382046.2).

SynC-X

A software component that can be deployed in the cloud and associate distributed media players and media sources **for a synchronised consumption experience.**

It provides the following features: session management (creation of shared sessions linked to contents/media experiences), methods and algorithms to achieve inter-device synchronisation, and APIs to connect to (third-party) media players. It has been successfully demonstrated in a real environment, supporting over 10,000 concurrent users in the CCMA's Euforia TV show.

PreventUEBA

PreventUEBA is an enterprise security framework that analyses risk exposure to threats, providing each user's risk exposure to a specific threat. The framework is designed to identify and learn from historical user and entity behaviour patterns. According to the risk level, remediation actions are suggested to the operator to reduce the attack surface.

It focuses on prevention rather than detection, allowing cybersecurity operators to adopt long-term strategies for threat prevention.

This technology was designed in collaboration with the Agència de Ciberseguretat de Catalunya.

MARKET-TRANSFERRED ASSETS ↘

NEUTROON

i2CAT's spin-off Neutroon has considerably expanded its activity in 2023.

The startup continues to raise pilot tests and traction, including in the US, where it has closed an agreement with the company Nextivity to take advantage of the opportunity provided by the CBRS public band. The start-up also closed an agreement with Fujitsu to cover its flagship building for innovation in Barcelona with 32 small cells by 2023.

It also launched **its first product, the Nomad 5G, a Private 5G + Edge pre-integrated solution**, assembled and tested in Barcelona and shippable worldwide in its flight case. i2CAT has received 30.000€ in royalties for this technology.

This asset is also useful for research purposes after commercialisation. It provides the background contributions to some research projects, including the spin-off of Neutroon as a partner.

DOWI

DOWI is a method that, integrated into WiFi access points, is expected to enable outstanding performance and solve problems for streaming in densely populated wireless networks such as sports matches, music festivals, or even transportation. It offers a good cost-benefit ratio for network owners, avoiding network oversizing or degrading the quality of experience.

In 2023, i2CAT increased the TRL of the invention to demonstrate its feasibility and benefits. This demand was generated through interviews with potential event and entertainment licensees.

This project is being financed with the grant "Indústria del Coneixement" (B modality: Product) from the Direcció General de Recerca.

ULTRA WIDE BAND (UWB) LOCALISATION SYSTEM

UWB Positioning is a solution based on UWB radio technology and Reverse Time Difference on Arrival architecture. Its key benefit is offering a high-accuracy localisation of less than 30 cm, better than some Bluetooth and WiFi-based solutions.

This i2CAT development enables a scalable solution for dense scenarios where many users must be tracked within an area. It can be the base of a contact tracing application and other accurate positioning-demanding applications.

In 2023, Ultra Wide Band was licensed to Keonn Technologies to use the results of the ARTHUR Project commercially.

WEBRTCAT

Webrtcat is a peer-to-peer (P2P) videoconferencing approach that provides high scalability. Unlike other popular video conferencing systems, i2CAT proposed an on-premises approach. This adapts our solution to ensure privacy policies for specific industries like Health, Insurance, or Banking.

This technology is part of NTT Data's ehCOS Remote product, deployed worldwide to allow remote health services.

In 2023, it still generated new revenues through the tech transfer agreement.

05

Public Sector Digital Transformation

i2CAT actively participates in the Government of Catalonia's strategies and policies to support its digital technological transformation, tackle social challenges around Catalonia and ensure the growth of the local digital innovation ecosystem, all with technological sovereignty in mind.

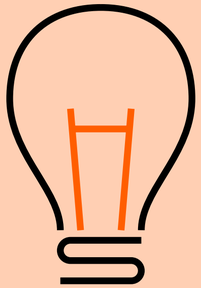
Digital and Technological Transformation of the Public Administration

The program aims to **improve the efficiency, accessibility, and quality of public services** through digital innovation to transform the administration. i2CAT works across the whole value chain, from researching new models and technologies to their development and testing to promoting alliances for their scale-up.

THE PROGRAM INTEGRATES 4 STRATEGIC LINES ↘

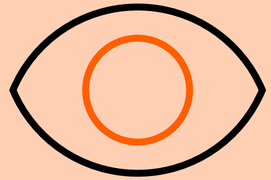
Mission-oriented project development

Through lighthouse projects to transfer technology and generate tangible use cases for specific services. During 2023, the Public Sector Innovation team has implemented **Data Space projects** in the fields of healthcare and culture, **Artificial Intelligence use cases** for digital media and image recognition, and **New Space projects**, including the launch of a space mission and the development of use cases related to livestock monitoring, water monitoring and mobility transit in low-connectivity areas.



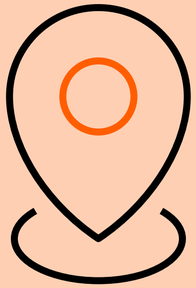
Design and deployment of innovation spaces

These spaces will serve as testbeds and innovation demonstrators that support technology adoption in multiple public services. In 2023, the team worked on **defining an XR/XG Lab located in the Government of Catalonia's Digital District.**



Advocacy, awareness, and knowledge management

Promoted through ecosystem enhancement and synergies across different actors. **The Digital Catalonia Alliance (DCA) is the main initiative** in the field, reaching over 570 members in 2023, representing almost 45% of the emerging digital sector in Catalonia.



Local government and territory engagement

Ensure the program reaches its full territorial potential, enhancing technological services across all governmental levels. In 2023, **i2CAT led challenges with local administrations aimed at addressing territorial targets through technological innovation**, launching a series of pilot tests and impactful projects. Examples include using New Space technology to detect illegal landfills in Lleida, creating tourist activity maps in Vila-seca, or implementing advanced digital platforms in Mollerussa to reduce non-desired loneliness.

Government of Catalonia Digital Strategies

DIH4CAT

The DIH4CAT project was launched in May 2022, becoming one of Europe's first European Digital Innovation Hubs (EDIH) and a reference EDIH in Spain. The project has consolidated its role as a **critical infrastructure to facilitate the adoption of advanced digital technologies by SMEs and start-ups**. This programme allows businesses to test before investing in advanced technologies, photonics, robotics, 3D printing, and smart connectivity. **The i2CAT Foundation, in cooperation with Mobile World Capital Barcelona and UPC, is in charge of the Smart Connectivity node**.

i2CAT carries out different activities, from viability studies, testing and validation, prototyping, and training on technologies such as AI, cybersecurity, 5G, IoT, new media formats, and, more recently, space communications. The i2CAT Foundation also coordinates the project's ecosystem development activities, where alliances and synergies occur with associations like the DCA or projects like Arees Digitals.

Some of the activities that took place in 2023 are:

- The introduction of the PADIH programme, managed by the EOI. Addressed at SMEs and start-ups, it offers funding of up to 30k€ for technological services (tests, training, viability studies, access to funding) by the EDIHs. The total funding available is 16.6 M€, opening doors for innovative businesses to thrive.
- Cupons tecnològics (technological vouchers): yearly programme managed by ACCIO supporting digitalisation services by DIH4CAT partners and associates (pilots, tests, and viability studies). Grants up to 700 k€.
- +60 networking activities to approach the ecosystem and find potential collaborations with stakeholders, including matchmaking, presentations, webinars and showcases.
- +50 training activities to boost knowledge and capacitate SMEs in advanced digital technologies.

DIGITAL CATALONIA ALLIANCE

The Digital Catalonia Alliance (DCA) is a collaborative initiative by the Government of Catalonia and i2CAT. It serves as a **hub for the emerging technology ecosystem in Catalonia**, fostering growth, innovation, and the development of new digital solutions through exchanging ideas among its members. The DCA is a trusted platform that ensures its members have access to the best market opportunities, enhancing their competitiveness.

In 2023, the DCA exceeded **550 members**, including other relevant milestones:

- 85 new companies and entities
- Sectoral revitalisation: + 300 networking requests managed
- Consolidation in the territory, bringing together 43% of Catalonia's emerging technology sector
- The DCA activity generated 2,5 million € of business value, representing seven times the initial investment.

One of the DCA's notable achievements of 2023 was the successful launch of the **ChallengeDCA**, a digital innovation contest previously known as the SmartCatalonia Challenge. This initiative, part of the alliance's sector dynamisation services, encourages SMEs and startups to create innovative technological solutions for Catalonia's territorial challenges. The ChallengeDCA is a testament to the DCA's commitment to fostering innovation and addressing societal needs.

The first edition of the ChallengeDCA collaborated with the Direcció General d'Infraestructures de Mobilitat (DGIM) to find innovative solutions that would consolidate quality, safe, and digitised infrastructures in service to society.

During **DCA Members Day**, the second anniversary of the DCA, the awards ceremony for the first edition of the ChallengeDCA took place. The company **Schumpit**, a member of the DCA-IA, won the first prize in the competition, valued at 15.000 €, in addition to the opportunity to carry out a pilot with the DGIM. The proposals from Neurafy (DCA-NewSpace) and eAgora (DCA-IA) received the second and third prizes, valued at 3.000 € and 2.000 €, respectively.

MEMBER COMPANIES / ENTITIES

DCA IoT	DCA Drons
159	128
DCA Ciberseguretat	**DCA IA**
103	86
DCA NewSpace	**DCA Blockchain**
47	31

PARTNERS

Government of Catalonia Digital Strategies

New Space Strategy for Catalonia

New Space Strategy

i2CAT is a key actor in the New Space Strategy for Catalonia. The initiative is promoted by the Government of Catalonia and deployed in collaboration with the Institute of Space Studies of Catalonia (IEEC), i2CAT, and the Cartographical and Geological Institute of Catalonia (ICGC). The objective is to **boost a New Space innovation hub in the region** that is globally connected and leads the generation of knowledge and its social and business applications.

The strategy is a **gateway to unique opportunities in Earth Observation, Telecommunications, and Global Navigation Satellite Systems (GNSS) space platforms**. It enables its partners to explore and utilise the resulting data. The New Space Strategy of Catalonia seeks a holistic approach through six main lines of work: ecosystem dynamisation and internationalisation; research and innovation; generation, retention and attraction of talent; adoption of services (use cases and society awareness); space (missions) and ground infrastructure and generation, and the regulatory framework. Notably, **the strategy has already promoted three satellite missions** (Enxaneta, Menut, and Minairó), providing invaluable data and setting the stage for even more promising ventures.

In 2023, **the i2CAT Foundation has contributed to the New Space Strategy of Catalonia through the following milestones**:

In 2023, the New Space Strategy for Catalonia achieved the following milestones:

- 2 PoCs with the public sector executed
- 2 PoCs with the private sector conceptualised
- 11 academic publications
- 12 potential partners contacted
- 14 M€ of additional funding unlocked from public and private funds

Catalonia.ai

Catalonia.ai

The i2CAT Foundation is a prominent partner of the Government of Catalonia's CATALONIA.AI strategy, structured around the following axes: AI ecosystem, R&D, Talent, Infrastructure and Data, AI adoption, Ethics, and Society. i2CAT leads or directly participates in several projects within the strategy, such as the DCA-AI or the CIDAI initiative.

Within this context, i2CAT is a leader in supporting the Catalan public and private sectors in developing **Data Spaces**. These are a new generation of European data and service ecosystems to drive the digital economy, where companies and public administrations use the new technical standards and governance tools needed to manage, share and exploit their data in trusted B2B and G2B environments that the latest EU data regulation envisions. **In 2023, several initiatives took place in the data spaces framework:**

- In collaboration with the Generalitat de Catalunya, i2CAT developed the first regional testbed infrastructure to facilitate data space use cases in strategic verticals such as Mobility, Health and Industry.
- i2CAT continues to be active in European groups and forums, such as the International Data Space Association (IDSA), Gaia-X, and the Big Data Value Association (BDVA), as well as the Spanish community, which plays an active role in the Gaia-X Spanish Hub, especially in Mobility.
- The European Mobility Data Space pilot, deployEMDS, kicked off. i2CAT, in collaboration with ATM, leads Barcelona to be one of nine European regions that participate. Additional mobility projects also saw the beginning of a data space demonstrator for traffic optimisation in Terrassa with local private and public stakeholders.
- i2CAT also worked to show how public administrations can be protagonists in future data spaces, developing a PoC with the Generalitat for a trusted data-sharing environment for publishers, distributors, libraries, and a data analytics provider to create supply-demand insights for literature publishing, sales, and loans.

The **DCA-IA** is a fundamental piece of the CATALONIA.AI strategy. In 2023, reaching 86 members. 97% of DCA-IA members are SMEs and start-ups, presenting products and solutions for the entire industry value chain. This community was one of the most dynamic in 2023, contributing 30% of the business volume generated by DCA connections and activities.

Also under the umbrella of CATALONIA.AI, in collaboration with the Digital Catalonian Alliance (DCA-IA) and the Xarxa RDI-IA, the first edition of the **AI ACCELERATOR** programme took place in 2023. This acceleration program aims to promote AI technologies entrepreneurship and innovation in Catalonia by empowering local talent. 25 participants and 5 DCA-IA mentoring companies participated in this first edition, selecting five finalists.

06

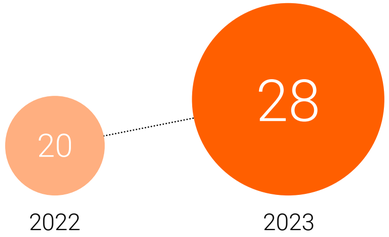
Market-oriented Innovation

i2CAT places digital transformation at the core of its endeavours. Drawing upon its expertise in international participation in ICT research and development initiatives, i2CAT aims to invigorate both social and productive sectors. By fostering collaboration with private organisations, i2CAT drives innovation in the market, ensuring that cutting-edge technological advances empower companies to thrive and create meaningful solutions and products.

Collaboration & co-creation with the private sector

The centre establishes strategic alliances with private companies and innovation ecosystem players to co-create jointly in fields such as Mobility, Space, Industry 5.0, Media, Telecom, Digital Administration, and Health.

NEW AGREEMENTS



With private companies

STRATEGIC ALLIANCES ↘

acisa · Alsína · ALSTOM · ambit LIVING SPACES CLUSTER · autopistas an Abertis company · esa · FACTUAL · Flash Park · gtd SYSTEM & SOFTWARE ENGINEERING · indra · Italtel · keonn · MAXLINEAR · mosaicfactor · NEC · NTT DATA · OPEN COSMOS · Opticks · OSMIUM RESILIENT SOLUTIONS · RDI network · GROUP SALTO intelligent technology · SATELIOT · Showee · simon · TRANSCELESTIAL · Unblur · VRAIn Bringing bioimages to life

Public-private alliances

Tech Barcelona

i2CAT is an institutional partner of Tech Barcelona, providing expertise in **technological transfer to the digital ecosystem** and facilitating connections with local entrepreneurs and investors.

Tech Barcelona is an independent private association operating as a non-profit entity dedicated to strengthening Barcelona's position as a leading hub in the international digital and technological landscape. It is a nexus, facilitating connections between startups and corporations, entrepreneurs and investors, and talent and projects.

In 2023, Tech Barcelona and i2CAT collaborated to **showcase technological capabilities at events such as AfterWork** and highlight **success stories** available within the ecosystem through Tech Barcelona's publications. i2CAT also participated in focus groups concerning relationships with corporations and led a round table at the Tech Spirit event, which focused on innovations in AI.

Tech Barcelona

CIDAI

The Centre of Innovation for Data Tech and Artificial Intelligence (CIDAI) proposes **networked services for businesses and institutions promoting technology transfer and cooperation** among knowledge-generating organisations (universities, research and innovation centres), companies providing technology and services, and user companies and institutions demanding innovative solutions in applied Artificial Intelligence. Its current partners are the Government of Catalonia, Barcelona City Council, the Barcelona Supercomputing Center, the Computer Vision Center, NTT DATA, the i2CAT Foundation, IDEAI-UPC, Microsoft, SDG Group, SAP, Huawei and Eurecat, who is the coordinator. The CIDAI also has a membership, currently made up of the Corporació Catalana de Mitjans Audiovisuals, the Autoritat del Transport Metropolità (ATM), CETAQUA, the Àrea Metropolitana de Barcelona (AMB), Caixa d'Enginyers and Festival Cruïlla.

The CIDAI is modelled on the Digital Innovation Hubs set up by the European Commission and is conceived as a networked service centre working for businesses and institutions. It is a crucial instrument for the Government of Catalonia's AI Catalonia Strategy.

2023 was another year filled with **initiatives and achievements**. Some of them are:

- 8 AI-based PoCs on data quality assurance, energy consumption in industrial cooling systems, automatic image classification, sustainability and flood prediction, among others.
- Development of high-impact projects on cibersecurity, generative AI and Health.
- Water, Education and Language AI adoption whitepapers.
- AI & Big Data Congress, with +1400 registered.
- 11 masterclasses and workshops in AI techniques and algorithms, AI implementation & development, AI-driven companies, Data Tech & AI Trends.

CIDAI Centre of Innovation for Data tech and Artificial Intelligence

R&D projects & strategic alliances

i2CAT and Sateliot: a long-term partnership to make research a reality

i2CAT and the Barcelona-based satellite communication service provider Sateliot began fruitful cooperation in 2020. For i2CAT, a centre specialising in 5G, IoT and space communications, partnering with Sateliot has been an **opportunity to apply research in a real-life scenario**. For Sateliot, a startup innovating in space communications, it is a **chance to overcome specific challenges with tailor-made solutions**. This partnership is a testament to the mutual benefits of such collaborations, and it was featured in the "The Barcelona Startup Ecosystem" study, a report by Mind The Bridge and Tech Barcelona that highlights Barcelona's global significance in the Innovation arena. The report was presented at the Tech Spirit event last December and showcased this long-term partnership.

i2CAT and SIMON transform home automation with AI and IoT

i2CAT and SIMON continue their collaboration, **evolving their home automation devices to integrate emerging technologies and new AI functionalities**. These new approaches allow the introducing of innovative features in home automation and sensorisation, giving SIMON a competitive advantage in this market. The system detects keywords and voice commands to interact with the elements of a smart home. The ultimate goal is to empower the user to create personalised experiences.

i2CAT successfully concludes its participation in the implementation and validation of a testbed for secure communications for the European Space Agency

The all-Catalan consortium led by Osmium and supported by GTD and i2CAT implemented and validated the latest version of the security specifications of the Bundle Protocol, which is part of the protocol stack chosen for the next generation of space exploration missions. **i2CAT's experience in store-and-forward capabilities in space networks was crucial for validating the technology** in two realistic operational scenarios: one based on lunar communications and the other based on earth-observation data downlink. The consortium collected recommendations that contributed to the standardisation workgroups, thus expanding the knowledge of delay-tolerant network protocols.

Alsina and i2CAT work together on two projects related to the Internet of Things

Thanks to i2CAT's participation in the Digital Innovation Hubs programme through DIH4CAT and the innovation vouchers managed by ACCIO, the Catalan innovation agency, Alsina and i2CAT carried out two projects in the field of IoT (Internet of Things).

One of these projects aims to measure the pressure of fluids in the concreting of columns with formwork.

i2CAT and VRAin: a collaboration that reinforces the Catalan research ecosystem

The private company VRAIn, with whom i2CAT collaborates, uses Virtual Reality and Artificial Intelligence for disruptive 3D bioimage visualisation and analysis to reduce diagnostic errors. **Aiming to provide medical improvements with innovative technology, VRAIn is trying to achieve rendering in the cloud**, an aspect in which i2CAT is helping them,

This collaboration allows them to use more power and learn from all the centre's research lines, recognising the value of the Catalan research ecosystem through the DIH4CAT and the innovation vouchers managed by ACCIO.

i2CAT provides its expertise and research capabilities in Maxlinear's mission

Maxlinear is revolutionising connectivity and engineering solutions for a more sustainable world.

It is researching the **development through innovative design techniques of new SoC solutions that integrate advanced communication interfaces for in-premises connectivity**. These solutions include computing capabilities required for the local execution of artificial intelligence algorithms that optimise how the channel is used, considering the paradigm of local computing and edge computing.

A collaboration between i2CAT and Acisa to revolutionise V2X infrastructures

This collaboration aims to **offer cities a mobility infrastructure prepared for critical services that require low latency, a large bandwidth band and local information processing**. This means applications in cooperative systems through a Vehicle to Everything (V2X) backbone, traffic control and road safety applications based on intelligent video processing, security applications, and auditing that require high precision in the positioning and location of vehicles and vulnerable users.

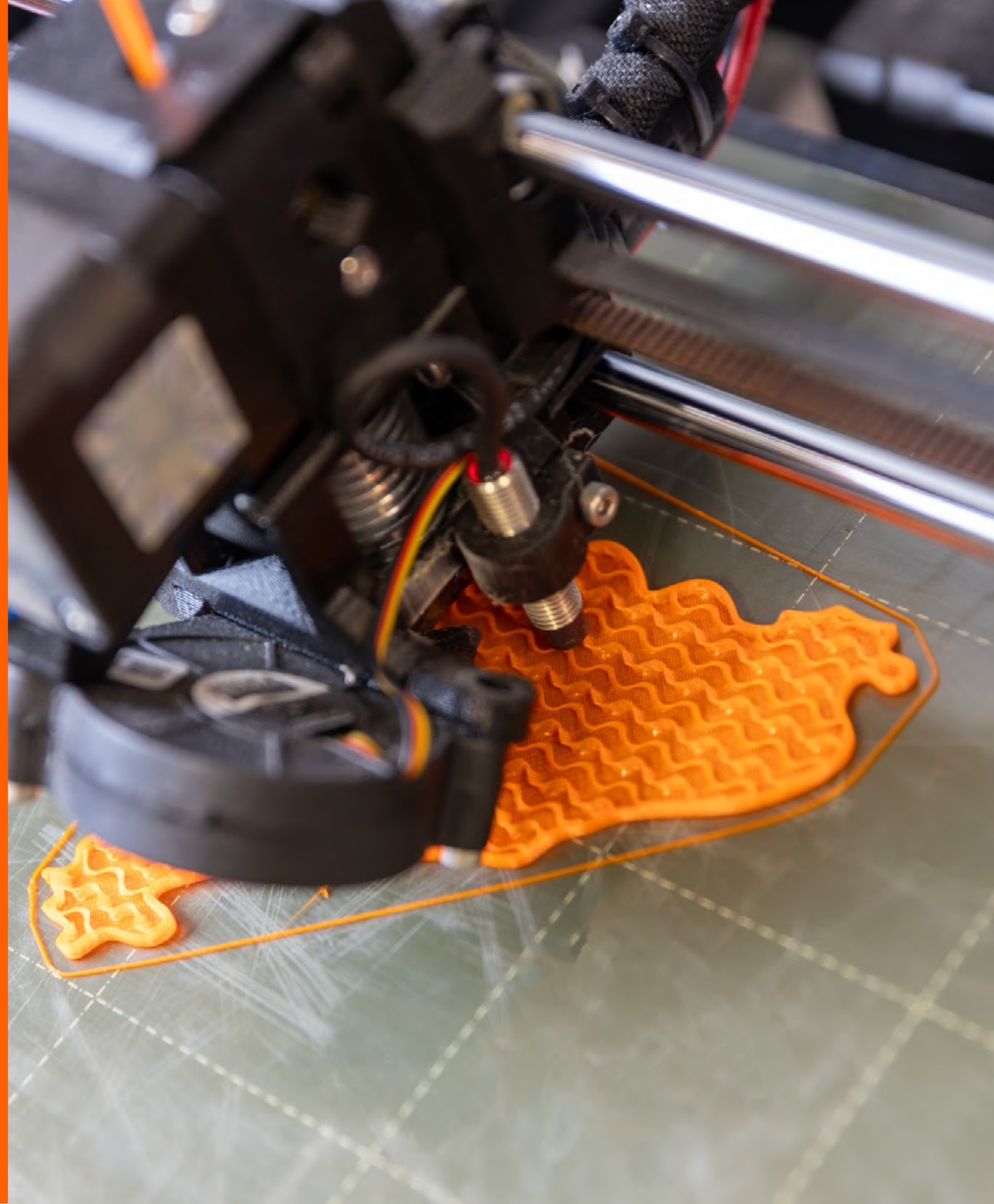
Sustainable 6G RAN

The continued collaboration between NEC and i2CAT in the 6G technologies area through an industrial research project has produced CloudRIC. This novel technology, powered by lightweight data-driven models, meets specific reliability targets while coordinating access between DUs and heterogeneous computing infrastructure. Experiments on a GPU-accelerated O-Cloud show that CloudRIC can achieve 3x and 15x mean gains in energy and cost-efficiency under real RAN workloads while ensuring 99.999% reliability even in dense scenarios.

07

Social and Territorial Impact

True transformation lies in empowering every citizen. We can only ensure that no one is left behind by equipping people with the tools to innovate and harness technology. i2CAT is committed to improving our society and taking innovation to every corner of the territory. From local endeavours to global initiatives, we place innovation at the centre, bridging gaps, fostering inclusion, and creating a brighter future for all.



Col·laboratori Catalunya

One of i2CAT's main objectives is to **improve citizens' quality of life and empower them to use technology**. i2CAT ensures that cutting-edge technology with Col·laboratori Catalunya, an initiative focused on implementing a comprehensive interconnection model of social and digital innovation across Catalonia.

Collaboratories, the anchor component within the Digital Social Innovation ecosystem, are central to this initiative, which is dedicated to nurturing collaborative networks among the principal stakeholders of the Quadruple Helix innovation model (citizens, public administrations, research institutions, academia, and private companies). These alliances use the collective expertise, resources and ideas of their participants to drive innovation and tackle social and digital challenges within the region. The cooperative processes encompass activities ranging from identifying common challenges cocreating effective solutions. This project is coordinated by the i2CAT Foundation in collaboration with the Government of Catalonia.

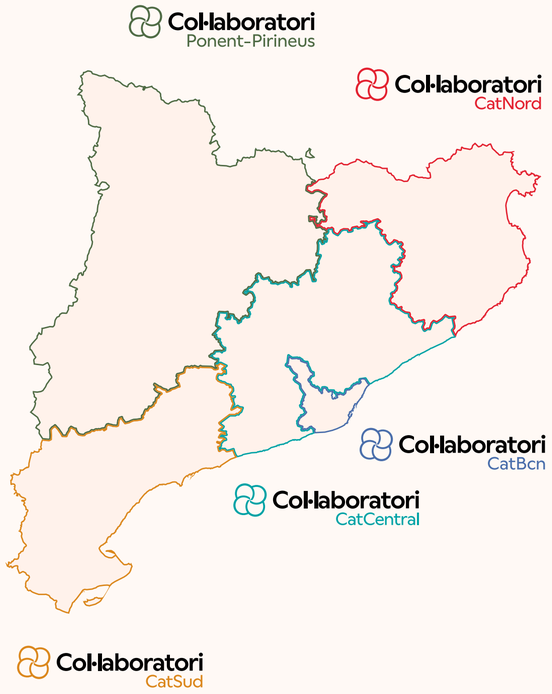
Col·laboratori Catalunya

People engaged

780+

People in the motor group

35



Temps de col·laboratoris: Promoting digital social innovation in the territory

Throughout 2023, Col·laboratori Catalunya has initiated 'Temps de Col·laboratoris', **a series of conferences held across Catalonia**. These events are strategically designed to enhance the visibility of the project and elucidate its impact. The overarching objective is to **facilitate closer engagement of citizens with digital social innovation**, equipping them with efficacious tools to navigate progressively digitized environments. These conferences serve as platforms to showcase exemplary digital social innovation projects, exemplifying what we term the **'Col·laboratori effect'**. This concept encapsulates the empowerment of individuals and the establishment of novel collaborative frameworks through open innovation and digital technologies. Ultimately, our concerted efforts aim to expedite an inclusive digital transition and cultivate a unified vision for the future trajectory of the territory.

TEMPS DE COL·LABORATORIS HAS HOSTED

3
Sessions in the territory

200+
Attendees

21+
Speakers

Cicle DonaTIC: Fostering Visibility of Female Digital Talent

This year, Col·laboratory Catalunya in collaboration with Oficina Accelera Pime per a Entorns Rurals Secartys Sinergia, and as part of the Pla Dona Tic by the Generalitat de Catalunya, has started a series of **meetings to showcase the expertise of women professionals in the ICT sector**. The objective was to inspire more women and encourage more women to pursue careers in this sector, and also promote female role models and to encourage technological careers among the younger generations.

THE DONATIC CYCLE HAS HOSTED

11
Sessions in the territory

530+
Attendees

80+
Women speakers

Educational Video Games "Video Art Game (VAG)"

The Cultural Video Art Game Association in Amposta hosts annual activities focused on digital technologies and video games under the "Video Art Game (VAG)" project. This year, with support from Col·laboratori Catalunya and the Eurecat living lab, the focus was on **resilience and climate change**, particularly addressing the issue of the Ebre river. Young participants formed groups to devise video games tackling this topic. The top three ideas received mentoring for game development, leading up to the final gala in May 2024 to determine the winning team.

HIGHLIGHTS

600+
Local attendees

1
Ideaton

30
Participants

1
Educative videogame

Grup Motor: the driving group of Col·laboratori Catalunya

In 2023, Col·laboratori Catalunya has taken significant steps forward, broadening its scope and influence. The initiative has managed to **increase the number of entities and participants** involved and its territorial scope.

Comprising 35 members representing Catalonia's quadruple helix, Group Motor has focused on developing a digital platform to facilitate collaboration among projects in digital social innovation.

Àrees Digitals

The Àrees Digitals initiative, promoted by the Government of Catalonia in collaboration with Mobile World Capital Barcelona, i2CAT, and territorial institutions, continues to **advance the integration of cutting-edge digital technologies across Catalonia through engaging with local stakeholders** to identify challenges, conducting pilot projects that combine research expertise with that of TDA companies, proof-of-concept trials, workshops, and training programs. This initiative aims to drive economic transformation and enhance key regional economic activities.

During 2023, the Àrees Digitals initiative embarked on a **transformative journey** that culminates at the beginning of 2024. Formerly known as Àrees 5G, the initiative has evolved under the name **Àrees Digitals**, with 5G as the cornerstone of all advanced digital technologies. This transformation represents an exciting step forward, as the various pilots and projects to be developed within the Digital Areas will accelerate the application and deployment of these technologies, such as IoT, drones, AI, and blockchain, among others. These efforts are specifically aimed at ensuring the traction of innovation beyond the metropolitan region, achieving greater territorial balance, and combating depopulation. Nowadays, Àrees Digitals covers the whole Catalan territory, and some highlights of the initiative include:

ÀreesDigitals

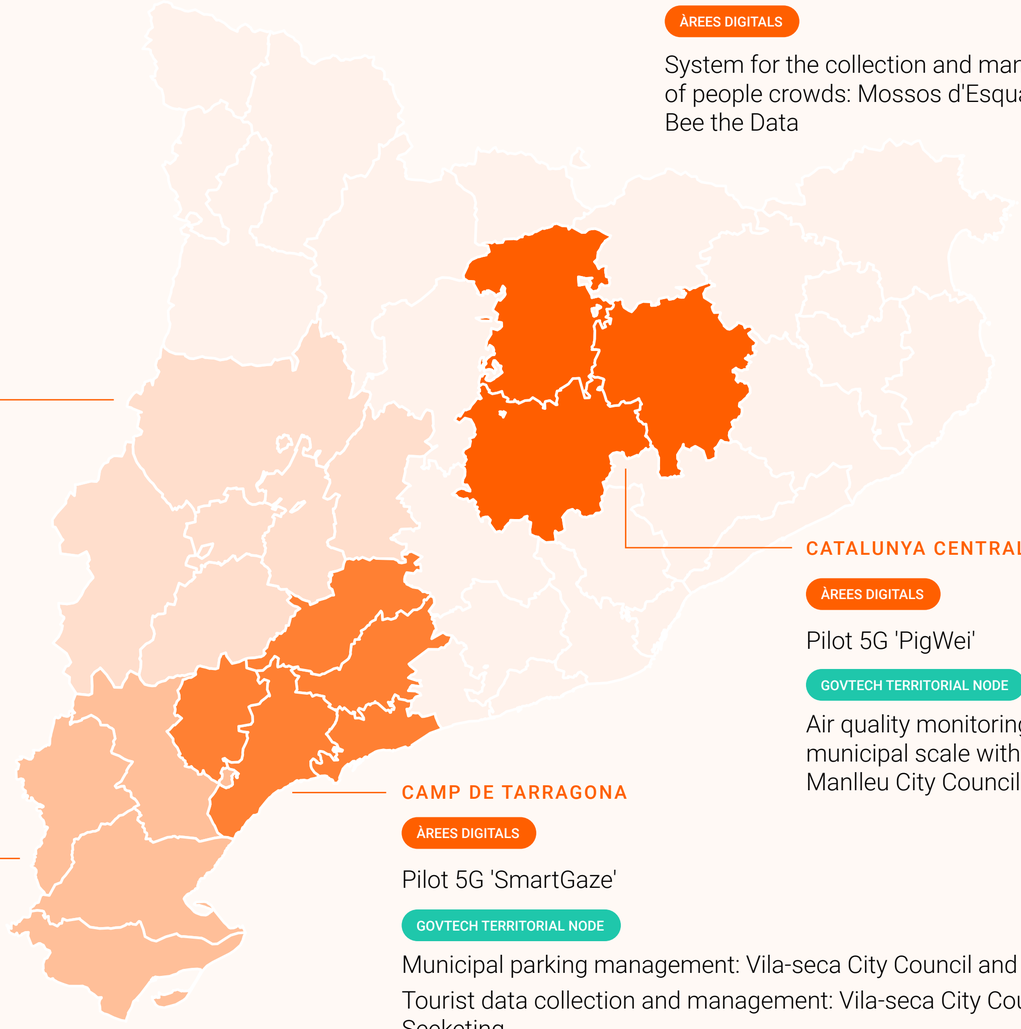
15 Training sessions

2 Workshops

3 Congresses

Pilots and projects

Various pilots have taken place from the initiatives of Àrees Digitals and the GovTech territorial node, which was previously known as local innovation laboratories. These pilots have allowed i2CATs to test and implement innovative solutions, fostering the active participation of all involved agents and ensuring that the projects meet the real needs of the territory. In this way, economic growth, competitiveness, and sustainability are encouraged through digitalisation and innovation.



CATALUNYA

ÀREES DIGITALS

System for the collection and management of people crowds: Mossos d'Esquadra and Bee the Data

CATALUNYA CENTRAL

ÀREES DIGITALS

Pilot 5G 'PigWei'

GOVTECH TERRITORIAL NODE

Air quality monitoring on a municipal scale with LoraWAN: Manlleu City Council and Bettair

PONENT

ÀREES DIGITALS

Pilot Virtual Physiotherapy

Pilot 'Eix Comercial AR'

GOVTECH TERRITORIAL NODE

Platform for the detection of illegal parking with New Space technology: Lleida City Council and SpaceSur

Teleassistance system for people with functional diversity: Mollerusa City Council, the ACUDAM Foundation and CISCO

CAMP DE TARRAGONA

ÀREES DIGITALS

Pilot 5G 'SmartGaze'

GOVTECH TERRITORIAL NODE

Municipal parking management: Vila-seca City Council and ParkHelp

Tourist data collection and management: Vila-seca City Council and Seeketing

TERRES DE L'EBRE

ÀREES DIGITALS

Pilot Chronic Illness Remote Monitoring

Pilot Mobile Ultrasound

Pilot Rural Schools Visual Health

Pilot Drone Fissure Detection

Generalitat de Catalunya

Unió Europea
Fons Europeu de Desenvolupament Regional

Mobile WorldCapital Barcelona

08

Events, fairs and congresses

i2CAT strives to leave a mark locally and internationally, and one of the main scenarios to learn, explore and connect are technological events. From world-class congresses to co-innovation activities with citizens, i2CAT travels the world to inspire and find inspiration.

2023 was a year of diverse and compelling events, from world-class research congresses to territorial activities.

Those events, brought technology and innovation closer to citizens, sharing insights through workshops and community sessions.

The i2CAT team travelled worldwide to explore new trends, discover cutting-edge solutions and research, and present their work at various fairs, conferences, and international congresses.

TOTAL EVENTS
130+

PUBLIC SECTOR EVENTS
57

MEDIA IMPACTS
582

CORPORATE EVENTS
6

HIGH IMPACT RESEARCH CONFERENCES
1A / 1A+

JANUARY 01

Research

ISE 2023

Hand in hand with Corporació Catalana de Mitjans Audiovisuals -CCMA-, i2CAT showcased its work on immersive tecnologies, like 360º 3D video, in a live demonstration under the umbrella of the Catalan project ViViM, funded by ACCIÓ.

FEBRUARY 02

Research

Demo 5G Clarity

Researchers from the i2CAT Foundation's Mobile Wireless Internet (MWI) area successfully deployed and tested a new type of 5G private network architecture.

Corporate

MWC Barcelona 2023

i2CAT attended another edition of MWC to expose how to get the most out of 5G architecture and feature the work of its spin-off Neutroon, one of the first companies in the Catalan 5G industry, which showcased Nomad 5G, a pre-integrated edge and private 5G network solution for a tailored experience.

MARCH 03

Research

i2CAT joins the Governing Board of the 6G-IA

The Director of R&D at the i2CAT Foundation, Jesús Alonso-Zarate, was elected to the Governing Board of the 6G Smart Networks and Services Industry Association (6G-IA).

Public

DCA-Drons Annual Meeting

More than 90 members of the DCA-Drons reunited at the Escola d'Enginyeria de Telecomunicació i Aeroespacial de Castelldefels (EETAC-UPC) to present members' results and debate the sector's challenges.

APRIL 04

Research

Eufòria (TV3) Pilot - ViVIM

i2CAT tested its immersive 360º broadcast system on the 7th gala of TV3's "Eufòria" within the ViViM project. Different cameras capture scenes around the set for an interactive visualisation of the performances from different devices.

JUNE 06

Research

i2CAT participates in the EuCNC & 6G Summit 2023

i2CAT researchers actively participated in the 2023 editions of the European Conference on Networks and Communications (EuCNC) and the 6G Summit, two of the top European conferences on communication networks.

Immersive Reality Pilot Els 4 Gats - ViVIM

i2CAT researchers combined 360º video and Computer-Generated Imagery (CGI) technologies to create an interactive virtual environment of the legendary restaurant Els 4 Gats (Barcelona) to enjoy with VR glasses.

Public

DCA-New Space Annual Meeting

The DCA-NewSpace celebrated its first annual day to review the milestones achieved, present the NewSpace Strategy of Catalonia, and discuss public and private funding opportunities in the sector.

DCA Digital Lunch

JULY 07

Public

Temps de Col·laboratoris a Reus

Reus was home to the first "Temps de Col·laboratoris" session, attended by 60 people who delved into the knowledge gap of technology and the digital policies and initiatives that place citizens at the centre.

SEPTEMBER 09

Public

OpenLivingLab Days

Barcelona was the host city for the European Network of Living Labs (ENoLL) flagship event. The i2CAT Foundation, together with Computer Vision Center (CVC) and Fundación Épica (La Fura dels Baus), co-organised the conference under the premise "Living Labs for an Era of Transitions: How Human-centric Innovation is Changing our Lives" gathered more than 400 attendees.

DCA-IA Annual Meeting

The AI community celebrated its annual day at an event framed in the AI & BigData Congress. The community members were invited to share milestones and promote synergies between them.

OCTOBER 10

Research

5GMED Demo Days

To demonstrate the progress of the 5GMED project, a series of Demo Days were held in the cross-border section between Figueres and Perpignan, a vital part of the Trans-European Transport Network.

Public

Temps de Col·laboratoris a Vic

The conference, celebrated at the Edifici El Sucre, brought together around seventy attendees and promoted the exchange of experiences, training and connection between local agents.

NOVEMBER 11

Corporate

SCEWC 2023

At SCEWC 2023, i2CAT exhibited a live demonstration of two V2X use cases to enhance communication between vehicles and urban infrastructure. A scale model made with toy blocks represented an urban area with several elements of connected infrastructure related to vehicles through highly efficient and secure radio communications.

Public

Cicle DonaTIC Reus

DECEMBER 12

Research

Closure of the Red INTEGRA project (Programa Cervera Centros Tecnológicos)

The project focused on the development of technological solutions that facilitate autonomous and ultra-safe connected driving in urban environments.

Public

DCA Member's Day

The Digital Catalonia Alliance celebrated its consolidation with more than 540 members in its second year of activity.

Àrees Digitals: 5G Terres de l'Ebre pilot presentation

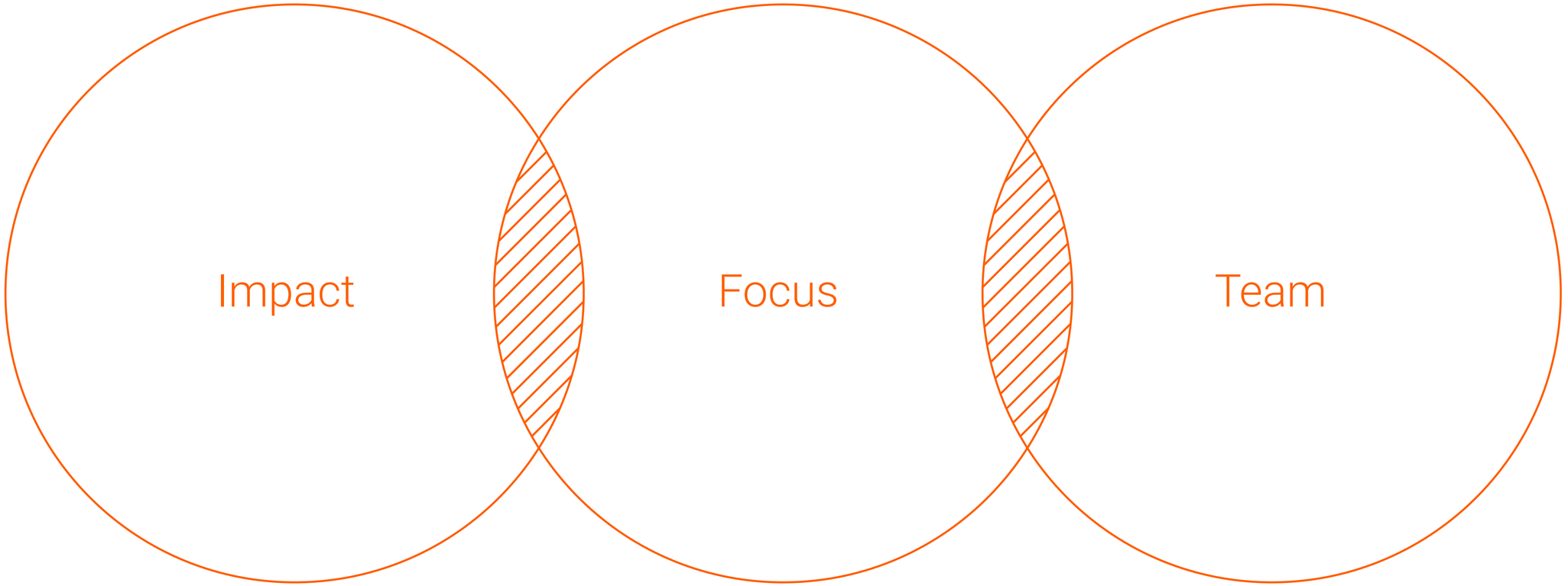
Temps de Col·laboratoris Lleida

09

About us

The i2CAT Foundation is a CERCA-recognised digital research and innovation centre that promotes R&D activities on the Internet and advanced digital technologies and follows an applied digital knowledge approach to solving social, economic, and business challenges. i2CAT is also committed to an innovation-based model that explores collaboration between companies, public administrations, academia, and the public.

Impact, Focus, Team



Promoting a powerful research and innovation ecosystem to ensure technological sovereignty.

In 2023, i2CAT celebrated 20 years of research and innovation in the field of advanced digital technologies. **The centre strives to disrupt, advance the technologies of the present and lay the foundations for those of the future.** On the horizon, i2CAT has the mission to contribute to a digital society that is prosperous, leading, inclusive, fair, democratic and at the service of people.

STRATEGIC GOALS ↘

1. Generation of academic and non-academic research impact
2. Increase R&D cooperation with companies and organisations
3. Co-develop innovative, multi-technological digital solutions to meet market challenges
4. Promote research and digital social innovation to benefit citizens and the territory

VISION, MISSION AND VALUES ↘

VISION

To be a research centre of international prestige in which companies and the Administration recognise a **superior capacity to provide transformative solutions of high social and economic impact** based on advanced digital technologies.

MISSION

To **contribute to the definition and structuring of a universal system of digital innovation** to turn Catalonia into an advanced digital society from a European perspective, promoting:

- **Generation of excellent knowledge** aimed at solving the challenges of companies, citizens and the Public Administration (mission-driven research).
- **Collaboration with the local research and digital innovation ecosystem** to co-create solutions and products that generate a transformative impact.
- **Empowerment of citizens** through digital social innovation with territorial capillarity.
- **Leading pioneering initiatives** that increase Catalonia's projection and international visibility as a digital and innovative country.

VALUES


Excellence


Creativity


Humanism


Collaboration

Board of Trustees, Executive Committee & Scientific Advisory Board

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Teacher of the ICT Department, Universitat Pompeu Fabra

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Mr Jordi Valls
Fourth Deputy Major, Barcelona City Council

Mr David Noguer i Bau
Regional Manager, Juniper Networks

Mr Ernest Pérez-Mas
Founder, President and Chief Executive Officer, Parlem Telecomunicacions, S.A

Mr Josep Pallarès
Rector, Universitat Rovira i Virgili

Mr José Manuel Casas Aljaa
Regional Director for Catalunya, Comunitat Valenciana, Illes Balears, Aragón and Región de Murcia, Telefónica

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As of 17th January 2024

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Director, CERCA Institution

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Vice-President of Executive Committee, Digital Infrastructures and Electronic Communications Deputy Director, Government of Catalonia

Mr Marc Realp
Secretary of Telecommunications and Digital Transformation, Government of Catalonia

Mrs Gina Tost
Secretary of Digital Policies, Government of Catalonia

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As of 17th January 2024

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Inder Monga
Executive Director ESnet, Division Director, Scientific Networking

Professor Antonio F. Skarmeta
University of Murcia

The i2CAT Foundation firmly believes that building a prosperous digital society means offering equal opportunities and treatment to everyone, regardless of gender.

The centre is on a continuous quest to improve and take steps towards reducing the gender gap in the ICT sector.

i2CAT GENDER EQUALITY

GENDER BALANCE

Women	Men
31%	69%

Equality Commission and Anti-Harassment Committee

i2CAT's Equality Commission and Anti-Harassment Committee ensure equal treatment and opportunities for all, regardless of gender identity, origin, age, belief or other considerations.

THEIR WORK INCLUDES ↘

1. Create and update the Gender Equality Plan and monitor its measures and actions.
2. Promote the Foundation's equality policies.
3. Train and inform the team in matters of gender equality.
4. Prepare proposals for activities in the field of gender equality policies.

   SUCH AS TRAINING ON:

   - Equality, gender and diversity awareness
   - Non-sexist and inclusive language
   - Gender and equal opportunities
5. Define and review a workplace anti-harassment protocol.

Activities and campaigns

Renaming of i2CAT's meeting rooms

In 2023, i2CAT's Equality Commission carried out a participatory process within the centre to rename meeting rooms after leading female technologists. Currently, i2CAT's staff work at the Margaret Hamilton, Mary Jackson, Andrea Goldsmith, Núria Oliver or Ada Lovelace rooms.

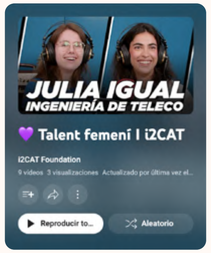
8M International Women's Day

To celebrate and highlight the impact of women in the ICT sector, i2CAT shared a video interview with Julia Igual, Núria Escudé, and Carla Brito, three of the centre's women professionals who specialise in IoT R&D, Front-end software development, and innovation in social and digital technologies. They shared their reflections on the female perspective in STEM, how to overcome the gender gap, and who their female referents are in the field.

International Day of Women and Girls in Science

Meet the women that name i2CAT's meeting rooms.

25N International Day Against Gender-Balance Violence



i2CAT Female talent

YouTube playlist

Visualizations
950+

1. Julia Igual. Ingeniera de telecomunicación - Telemática
2. BNEW 2023 / Ana Moliner / i2CAT Foundation
3. 8M: La perspectiva femenina amb les expertes STEM
4. Laura Sanz, CCAM Strategy Lead at i2CAT
5. Cicle DonaTIC a Lleida | Col·laboratori Catalunya
6. Cicle DonaTIC a Reus | Col·laboratori Catalunya
7. Cicle DonaTIC a Girona | Col·laboratori Catalunya
8. Cicle DonaTIC a Tortosa | Col·laboratori Catalunya
9. Cicle DonaTIC a La Seu d'Urgell | Col·laboratori Catalunya

Local partners

CIVIL SOCIETY ↘

COMPANIES ↘

PUBLIC ADMINISTRATION AND ORGANISATIONS ↘

RESEARCH AND UNIVERSITIES ↘

Official certifications & associations

OFFICIAL CERTIFICATIONS ↘

ASSOCIATIONS, STANDARDIZATION ORGANIZATIONS & PLATFORMS ↘

i2cat

The Internet
Research Centre

Generalitat de Catalunya
Ajuntament de Barcelona
Universitat Politècnica de Catalunya BarcelonaTech
Universitat Ramon Llull
upf. Universitat Pompeu Fabra Barcelona
Universitat Rovira i Virgili
orange

vodafone
Telefónica
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MEDIAPRO
cisco
Juniper Networks
FUJITSU

Gran Capità, 2-4
Nexus I Building, 2nd Floor
08034 Barcelona
Tel. (+34) 935 532 510

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