



VICERREITORÍA DE INVESTIGACIÓN
E INNOVACIÓN



*Área de Valorización,
Transferencia e Emprendemento*

2018 Annual Report

Building the future
from research

usc.es/avte



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2018 at a glance



USC Transfer and Entrepreneurship Activity 2018

In 2018, with 65 invention disclosures, the figure of 60 is exceeded for the first time, and the average of the previous 6 years (45) is widely surpassed.

As every year, we begin the review of AVTE activity by accounting the number of identified research results with market potential or social impact. This is the first step in the process of knowledge transfer. In 2018, with 65 invention disclosures, the figure of 60 is exceeded for the first time, and the average of the previous 6 years (45) is widely surpassed.

The number of priority patent applications reached 29, which is the highest figure in the last 7 years, well above the average of the previous 6 years (17). Intellectual property rights management was completed with 41 international patent applications to extend protection outside the Spanish territory, and the registration of 12 new computer programs.

The negotiation and license process of knowledge generated in the USC also achieved a good result. In 2018 47 transfer agreements were signed, including 29 confidentiality agreements, 9 material transfer agreements, 2 first option agreements and 7 license agreements.

The total number of transfer agreements increased by a 15% over the previous year.

In order to stimulate the knowledge transfer process, the Technology Transfer and Entrepreneurship Office (AVTE) continued to manage the **"Transfer Accelerator"** program. In this program, promoted by the USC and supported by Banco de Santander, 10 possible transfer projects were identified. Five of them that met the eligibility criteria were presented to the Evaluation Committee and 3 of them received funding to stimulate the transfer process.

AVTE continuous effort in the valorization of R & D results allowed the USC had an outstanding participation in 2018 in Galician Innovation Agency (GAIN) proof of concept program.

Four among the nine IGNICIA projects selected in the second phase throughout Galicia, were projects coming from USC research groups.

Technology-Based Companies (EBT), or Knowledge-Based Companies, are one of the most useful means for bringing research results to market. AVTE continues to work on key aspects of this type of companies such as the creation of multidisciplinary teams and obtaining necessary financial resources for technology maturation process and market entry. In 2018, 5 new business projects were identified and 2 new EBTs were created.

Another side of entrepreneurship is to provide support to students and the entire university community to develop their business plans. USC has its own entrepreneurship programs as ARGOS, which in 2018 resulted in 6 new Business Plans with more than 40 participants. The Explorer program (coordinated by CISE with the sponsorship of Santander Bank) was also managed by AVTE. In 2018 the 30 people participated in the Santiago Campus, led to 19 projects; and the newly launched program headquarters at the Lugo Campus, EXPLORER USC Lugo Space, had 23 participants that were grouped into 13 projects. Another of the collaborations that allow the entrepreneurs of the university community to be energized is the Akademia program supported by Bankinter Foundation's.

One of the highlights of the activity of the AVTE, and transfer and entrepreneurship ecosystem of USC, was the approval of the project "BIOINCUBATECH, High Technology Incubator".

The project was submitted to the call "High-tech incubators based on the promotion of innovation and the transfer of technology to micro-SMEs", of the "Fundación Instituto Cameral para la Creación y Desarrollo de la Empresa" (INCYDE Foundation) and was financed with 1,487,927.02 euros of ERDF funds. BioIncubaTech is a project that seeks "the promotion of innovation and transfer of biotechnology in the fields of health and food technologies". It is led by the USC and has UNINOVA and the Cámara de Comercio de Santiago de Compostela as its partners.

In 2019, the USC became the main partner of the POCTEP project "Cluster Transfronterizo de Biotecnología, CT-Bio". The development of the different lines of action of

the project allowed the incorporation of "interim managers" in 3 EBTs companies of the USC, the development of 5 new business plans and commercial and financial advice to 8 already established companies.

The AVTE also took part in the POCTEP project "Creación de un Ecosistema Transfronterizo de Innovación en Salud" with the acronym CodigoMais. In 2018, it was possible to mobilize 9 transfer projects (2 of them from the USC), developing a valuation itinerary to bring R&D results to the market. CodigoMais allowed USC staff to learn about the "Medicon Valley" health innovation ecosystem of the Copenhagen cross-border region in Denmark and "Region Skane" in Sweden.

As a whole, the year 2018 shows signs of a change in trend in the early stages of the process of transferring research results. The increase in the number of invention disclosures and priority patents seems to indicate that investment in R&D is beginning to recover. This is in fact an absolutely indispensable factor for obtaining new results that could be transferred to society.

2018 data reflects that the AVTE is consolidating its experience in the critical stage of valorization that allows indicators in transfer and entrepreneurship will improve in near future.

Participation in projects such as Bioincubatech, CTBio or CodigoMais demonstrates the strength of the USC in the area of biotechnology and allows strengthening their own transfer capabilities and also reaching them to other agents in the ecosystem.

With a considerable track record in transfer and entrepreneurship, the USC has been adjusting to regulatory and environmental changes, adopting new work methodologies and management policies. This means that in some cases, the new approaches have not yet had enough development and begin to give more relevant results in the coming years. However, the USC is already consolidated as one of the Spanish universities with the best results in transfer and entrepreneurship.

Research Results with Commercial Potential

The first step in the knowledge transfer process is the identification of valuable research results for developing new products or services useful for the society.

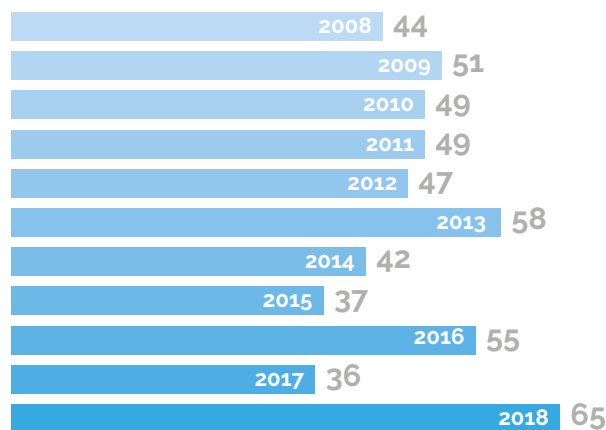
Then the commercial potential is analysed.

In the third place the necessity, possibility and opportunity of presenting a patent or another legal figure that allows the protection of the knowledge are analysed.

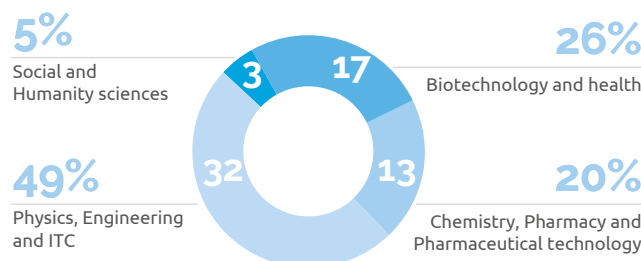
1 IDENTIFICATION OF COMMERCIALISABLE RESULTS

65

Invention disclosures in 2018



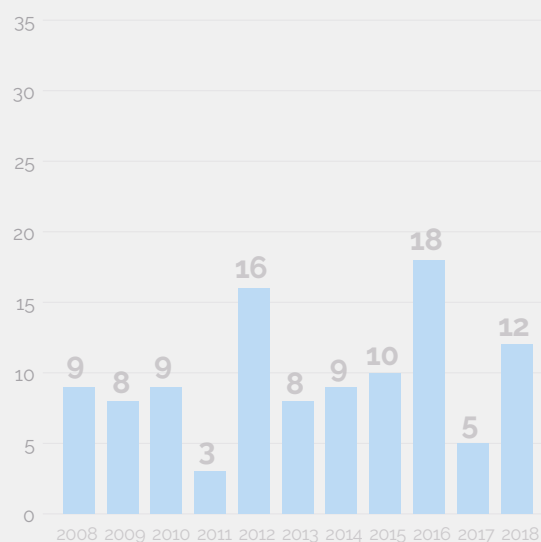
Invention disclosures in 2018 per area:



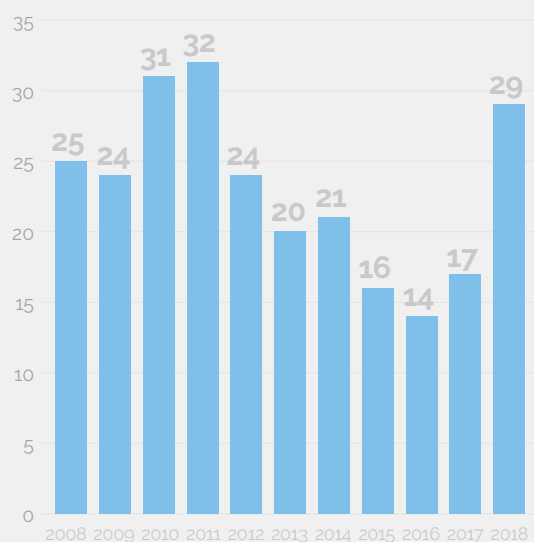
2 RESULTS PROTECTION: PATENTS AND REGISTRATION OF COMPUTER PROGRAMS

Intellectual property titles facilitate the private investment in the long and expensive development process of introducing in the market the knowledge generated in the USC. They also contribute to knowledge spread as they are published in free databases.

Registration of computer programs



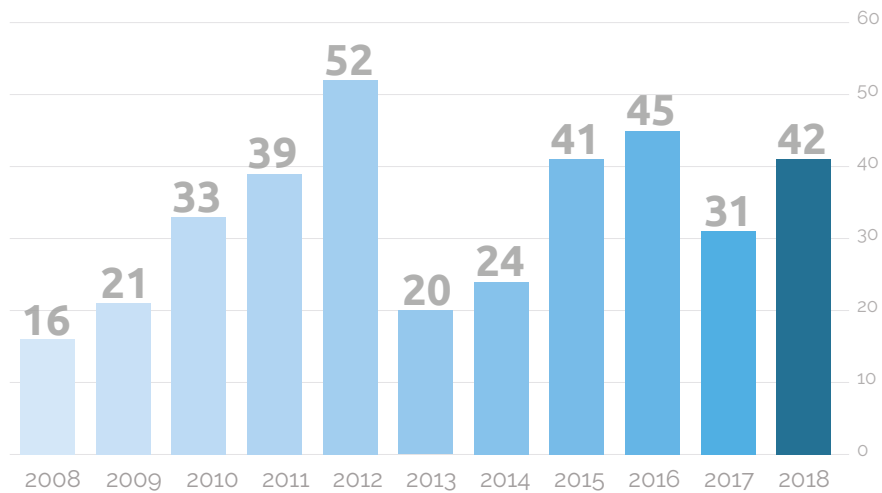
Priority patent applications



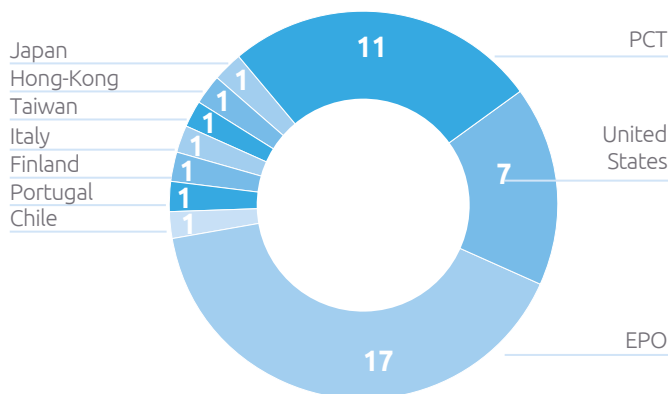
3 INTERNATIONALISATION OF THE PROTECTION

The required investments to bring to the market the knowledge generated at USC can only be compensated by accessing to global markets. To this aim it is required to have the adequate international protection.

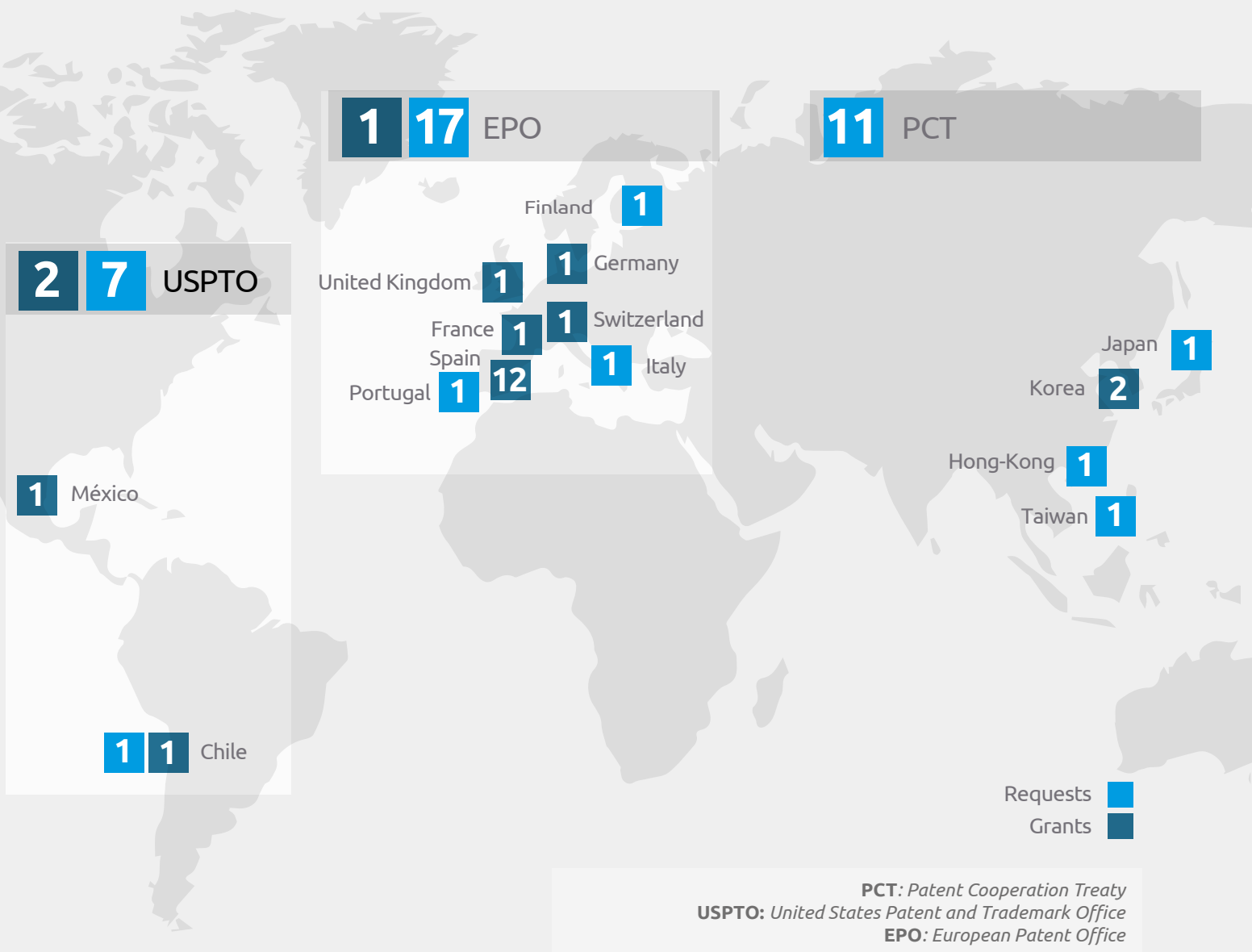
42 International patent applications in 2018



International patent applications per origin



International extension of patents in 2018

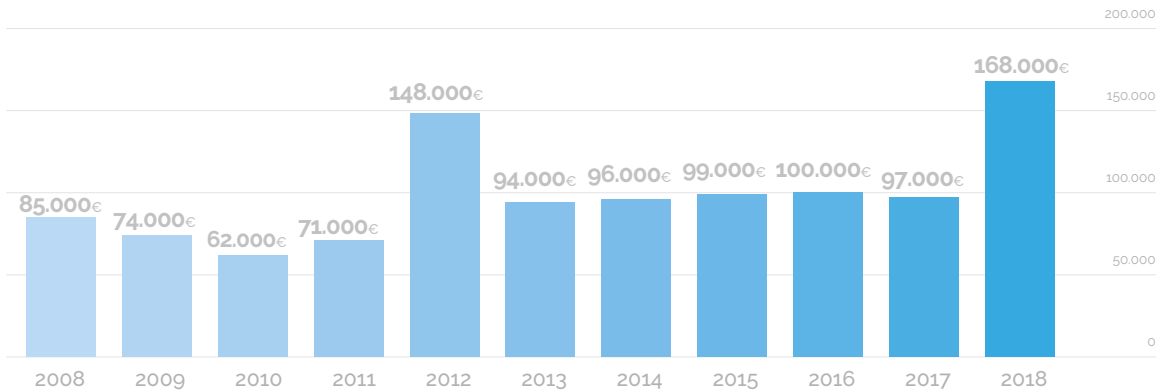


1 License and transfer agreements

USC SCIENCE WITH ECONOMIC AND SOCIAL IMPACT

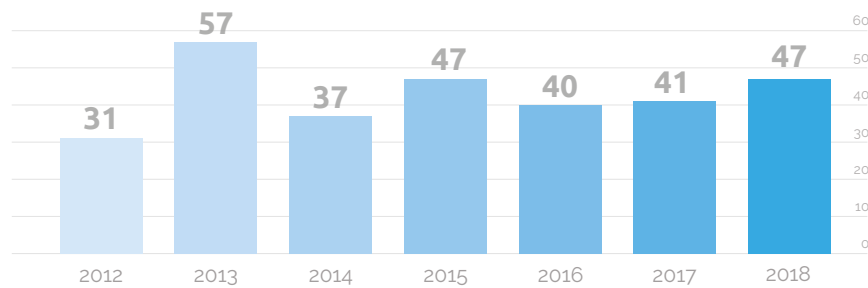
Not only the research lead by companies has an economic impact. The research developed with public funds can also be transformed into products and services in the market.

INCOMES FROM LICENSE AGREEMENTS



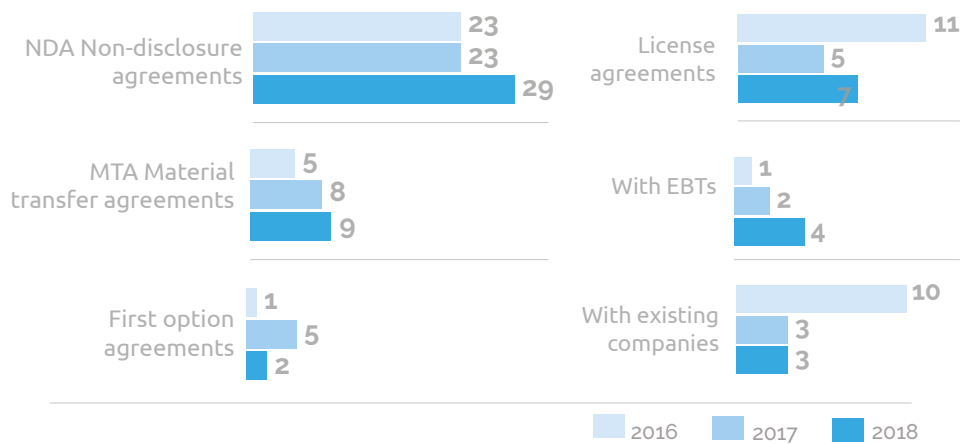
47 Agreements signed with companies in 2018

Total agreements with companies



THE NEGOTIATION PROCESS

AGREEMENTS TO OBTAIN PARTNERS FOR THE DEVELOPMENT OF NEW PRODUCTS AND SERVICES:



2 Valorisation and proof of concept programs

BRIDGING THE GAP BETWEEN RESEARCH AND THE MARKET

The valorization programs try to reduce the gap between research and the market. They allow to mature the results, to locate PARTNERS for the technological development process, and to involve them in the transfer process (through license agreements).



Transfer accelerator (USC)

Activation of the transfer process by carrying out complementary research work, which will stimulate a company's commitment

In the 5 editions held so far, 23 projects have been supported with a total amount of € 470,000. 43% of the projects were successfully developed, either by signing a license agreement or by setting up a spin-off



Approval of **3USC projects** in 2018 by a total amount of **1.174.820 €**

INVERBIS: Business process analytics and generation of natural language reports. Amount: 360.000 €

FLUOROTOOLS Fluorescent tools for the evaluation of drugs by substituting radiation with polarised fluorescence in drug screening. Amount: 427.000 €

RuCSC Removal of cancerous stem cells with synthetic ruthenium complex. Amount: 386.000 €

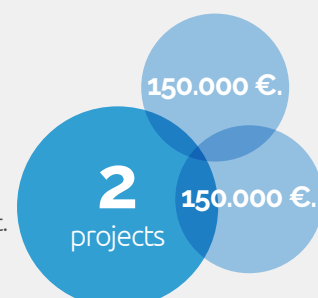


"Proof of Concept" ERC

2 proyectos Proof of Concept ERC:

ANTS (Finished in 2018 and in licensing process): High spatial and temporal resolution microsensor. Amount: 150.000 €

TRAFIKKGENE ((Project granted in 2018): New ways of going through cellular membrane in a selective way for disease treatment. Amount: 150.000 €





R&D Social Impact

NEW PERSPECTIVES OF ASSESSMENT AND INTERVENTION IN CHILDREN AND TEENAGERS

Child behavior problems are one of the most common complaints of parents and teachers. Difficulties in complying with behavioral standards, aggressive or challenging behaviors, outbursts of anger and anger are some of the problematic manifestations that can be found in children and teenagers.

Epidemiological studies show that the incidence of these problems has increased over the past few decades and that they are occurring at an earlier age. Although the figures vary by population, sample, and assessment mode, studies indicate that between 2% and 16% of children may show behavioral problems that are serious enough to be diagnosed as negativist-challenging or disorder-related. conduct (Loeber et al., 2000).

These problems sometimes take on serious dimensions because of their frequency and intensity, and serious difficulties in social adaptation of the child may arise. When juveniles reach the age of criminal responsibility (14 years) these behaviors can lead to the involvement of juveniles in criminal conduct that results in the action of juvenile courts.

The research group of the Research Unit for Risk Behavior and Developmental Disorders (UNDERISK), led by Professor Estrela Romero Triñanes, has as main lines of research the psychological development of minors, the prevention of behavior problems and their disorders, and the design, assessment and intervention in risk situations.

The Risk Assessment Tool for Adolescent Offenders (VRAI) is a tool for risk assessment and management of teenagers between the ages of 12 and 18 years, aimed at assessing the risk level of teenagers and identifying the criminogenic needs of each child so that they can design an individualized intervention.

At present, it is being used by different entities working with minors in Galicia (Fundación Educativa e Social Dignidade in Lugo, Fundación Camiña Social in Coruña, Asociación Centro Trama in Ourense) to provide support services for minors.

The program EMPECEMOS, developed by the group and marketed in DVD and book format through TEA Editions, is aimed at early prevention in families with children (5 to 11 years old) who already have certain behavioral difficulties. The primary purpose of the program is to train parents in effective skills to enhance their children's prosocial behavior and reduce problem behaviors.



SUSTAINABILITY OF THE FISHING SECTOR



On July 11, 2018, the first “pescaenverde” certificate was issued on the Portonovo fish market, which makes it possible to differentiate the catches obtained with an environmental impact below the sector average. This warranty mark from the Universidade de Santiago de Compostela, allows to the conscientious and responsible consumer to identify and buy the fish that has been caught with less impact on the environment.

The “pescaenverde” trademark is the result of more than 20 years of research led by professors Gumersindo Feijóo Costa and María Teresa Moreira in the Environmental Biotechnology Research Group.

The research focused on Life Cycle Assessment (LCA), considering two climate change mitigation indicators in the fisheries sector: Carbon Footprint and Energy Return on Investment (EROI). In this period, more than 150 articles were published in international JCR journals concerning the application and development of the Life Cycle Analysis and Circular Economy to various strategic productive sectors. In a study published in the International Journal of Life Cycle Assessment (2015) on LCA research for the period 1998-

2013, USC was ranked as the leader of Spanish universities, occupying the sixth position in the world in this field.

In 2013, USC registered the “pescaenverde” warranty trademark at the Spanish Patent and Trademark Office (OEPM) and the European Intellectual Property Office (EUIPO). In order to be able to use the trademark “pescaenverde” it is necessary to verify the fulfillment of the ecological requirements (Carbon Footprint and the Energy Return on Investment) within the thresholds established according to species and fishing gear.

Software for data collection has been developed and a register of “Authorized Certifiers” has been established that must verify the data and issue a report with the corresponding calculations.

In 2018, a collaboration agreement was signed with the “Consellería do Mar da Xunta de Galicia” for the joint exploitation of “pescaenverde” with the trademark “pescadeRias”, seeking to reinforce the image of quality and sustainability of Galician fish. In addition, in 2018 the eco-label “pescaenverde” obtained the Special Mention for the Galician Technology Transfer Award from the Royal Galician Academy of Sciences.

Portfolio of 20 USC EBTs:



Companies with origin in research; USC's EBTs

The success of research-based companies is largely dependent on innovative **knowledge** that provides sustainable competitive advantages.

It is also crucial to work thoroughly on the **business plan** that includes a detailed analysis of the potential market. Another critical point is to form a **human team** that, in addition to scientific-technical knowledge, has business management skills and business development skills. The other key factor is to obtain the minimum **financing** that guarantees the survival of the company in its start-up phase.

THE TRIANGLE OF SUCCESS: KNOWLEDGE, TEAM AND FUNDING

To increase the success likelihood of USC's EBTs, AVTE develops and supports actions that strengthen these three critical elements.

20 EBTs participadas por la USC

2,2 M€

Investment obtained by USC EBTs

5 New advised projects

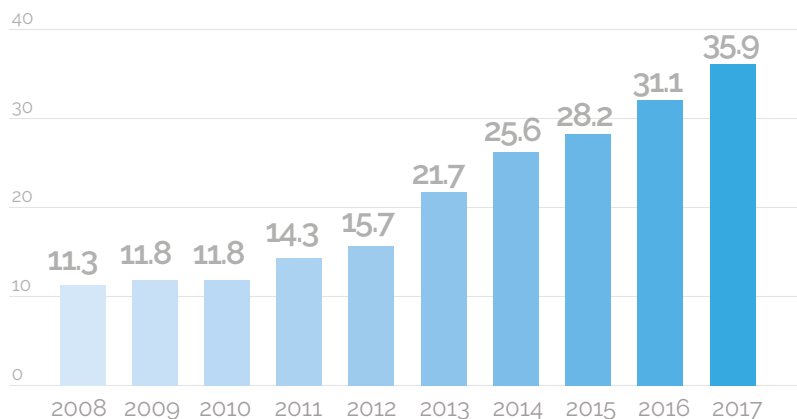
EBTs founded

2

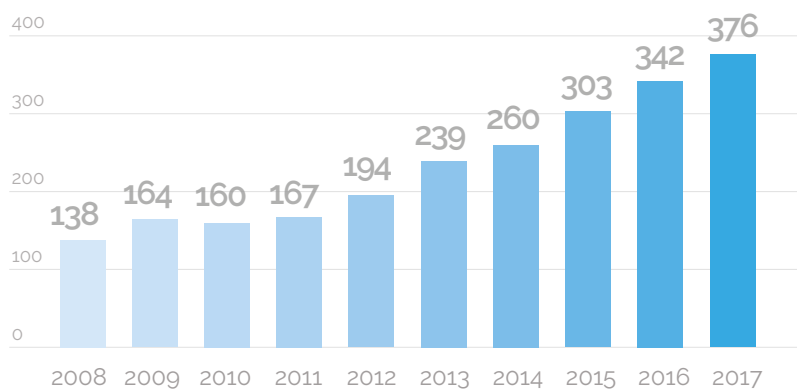
Social Impact:



Turnover (Millions of euros)



Jobs



According to data SABI (Sistema de Análisis de Balances Ibéricos) for a set of 25 companies with origin in USC research, with the last update available at the closing of this document (2017 data)



Repsol and a japanes industrial partner become partners of Nanogap



NANOGAP is a company created by USC's Magnetism and Nanotechnology Group (Nanomag), founded by Professors M.A. López Quintela and J. Rivas.

It was created in 2006 to exploit the full commercial potential of a patent family related to Atomic Quantum Clusters (AQC) as a basis for a multitude of new materials. AQC are groups of 2 to 150 atoms that cause the materials formed from them to obtain catalytic, therapeutic, conductive or luminescent properties.

Working on the process of developing new industrial applications of these nanomaterials, during 2017 NANOGAP completed a serie A round with the entry of a Japanese industrial partner. In this fifth round of financing, NANOGAP exceeded the 2.2 million euros of the previous round with Caixa Capital Risc (CriteriaCaixa). The entry of this industrial partner is a boost for technology development, enhances all of NANOGAP's strategic applications and enhances access to the Asian market.

This support, coupled with that of previous investors, such as Xesgalicia, Uninvest and Unirisco, is essential for NANOGAP to continue developing products and technologies that help its customers become more competitive in their markets.

In 2018, the Repsol Corporate Venturing fund becomes partner of Nanogap with a contribution of 1.8 million Euros. The aim of the oil group is to improve its position in the applications of nanotechnology in the energy sector. For NANOGAP, the entry of a new industrial partner of the characteristics of REPSOL opens the door of strategic markets for the future of the startup.



Changing behaviors through the game: **IMAGAMES**



Spain is the second largest market for gamification, only behind the United States. One of the most exciting applications of gamification is employee training and loyalty.

Imagames is an USC's spin-off whose goal is to apply gamification to stimulate customer and employee behaviour. These games generate different ways of marketing and improve staff performance and engagement within organizations.

The first idea to set up Imagames arises thanks to the funding received from the USC TRANSFER ACCELERATOR program to develop commercial applications based on the workflow management technology of researchers Manuel Lama Penín and Juan Carlos Vidal Aguiar, of the USC's Intelligent Systems research group.. The result of this Accelerator project is the basis of the Imagames Matrix platform that allows flexibility and creativity far above its competitors. It also enables dynamic changes (without stopping games).

From the beginning, IMAGAMES has had a portfolio of clients from companies and organizations so well known as Alcampo, Husqvarna, Telepizza or ABANCA. These are usually large or medium-sized companies, with a large number of employees (over one hundred) and they are convinced that their success will depend on the training and commitment of their staff. At present, they have more than 30 clients, many of them with more than 7,000 workers.

Biotechnology an strategic sector for the USC



Explorer

The Santander **Explorer** program, led by Centro Internacional Santander Emprendimiento (CISE) and promoted by Santander Universidades, has two entrepreneurship centers (Explorer Spaces) at the Universidade de Santiago de Compostela.

These centers also have the support of the Secretaría Xeral de Emprego, Consellería de Economía Emprego e Industria da Xunta de Galicia.

SANTIAGO EXPLORER CENTER 2018

Selected:



LUGO EXPLORER CENTER 2018

Selected:



Argos, CREATING ENTREPRENEURIAL TEAMS

In the six editions of **ARGOS**, more than 200 students from 25 different degrees have participated. 21% having a degree in Business Administration or Economics



Edition 2018



Biotechnology an strategic sector for the USC



Ideas Contest

XV USC BUSINESS INNOVATIVE IDEAS CONTEST

Its purpose is to reward entrepreneurs who come up with innovative ideas that can turn in short and medium term into business projects.

5 prizes of 500 euros were awarded.

147
Ideas

49%
presented by women

51%
presented by men

Knowledge areas:

 **50%** legal and social sciences

 **18%** technical fields

 **8%** human sciences

 **12%** health and experimental sciences



Innovatia 8.3

PROMOTING THE ENTREPRENEURIAL SPIRIT OF UNIVERSITY WOMEN

INNOVATIA 8.3 is a project of the USC in collaboration with the Instituto de la Mujer y para la Igualdad de Oportunidades. It develops entrepreneurial-oriented training actions and incorporates the gender perspective into business counselling.

In 2018 the first edition of the INNOVATIA 8.3 Contest was held, in which the best business initiatives led by university students at the national level were awarded: HGBeyond (Universidade de Santiago de Compostela) and FRAME (Universidad Carlos III).

In 2018, within the framework of INNOVATIA 8.3, online training was given to entrepreneurs (women entrepreneurship and digital marketing) and to the technical staff of TTO (business advice with a gender perspective).



Cluster Transfronterizo Biotecnológico – CTBio



Its aim is to improve business competitiveness and the consolidation of the biotech and life sciences sector in Galicia-North Portugal cross-border region.

The CT-BIO project is part of the INTERREG V-A Spain-Portugal Program (POCTEP) 2014-2020 on Priority Axis 2, "integrative growth through cross-border cooperation".



Programa of actions:

Total budget: 1.815.099 €



The CT-BIO project is part of the INTERREG V-A Spain-Portugal Program (POCTEP) 2014-2020 on Priority Axis 2, "integrative growth through cross-border cooperation".

Partners:



Biotechnology an strategic sector for the USC

Bioincubator Bioincubatech

INCUBATION AND ACCELERATION OF KNOWLEDGE-BASED BIOTECHNOLOGY COMPANIES

BIOINCUBATECH

Bioincubatech is a project funded by Fundación INCYDE with ERDF Funds in the Call High-tech incubators based on the promotion of innovation and the transfer of technology to micro-SMEs ", co-financed by Axencia Galega de Innovación GAIN from Xunta de Galicia.

1 BIOINCUBATECH INFRASTRUCTURES

Bio equipment for 8 incubation modules in the Emprendia Building (USC).

CENTRALIZED scientific-technical infrastructure installation:

- Cell culture room
- Room of molecular biology
- White room

Preferential access to USC's Scientific Infrastructures

Total budget: 1.859.909 €

2 BIOINCUBATECH PROGRAMS

1 Knowledge transfer And innovation management

- Definition of business projects based on science
- Maturing research results (VALORIZATION)

2 Attraction and Management of directive talent

- Including both mentoring actions, recruitment of "interim managers" or international managers.

3 COORDINATION and international networking

- It will include innovation coordination programs inter-company, technology hybridization, international mobility of entrepreneurs or access to advisors for international landing.

4 Investment fundraising and financial management

- Including support programs to facilitate access to professional investors (SCR), Business Angels, Crowdfunding or Industrial investors.

Partners:



Funders:



Emprendia Building: Innovation ecosystem



UNIRISCO Venture capital company promoted by USC, which invests in business projects with university links in Galicia.



UNINVEST Manager of venture capital entities, specialized in technology transfer in Spain, with offices in Madrid and Santiago de Compostela



CETAQUA The Water Technology Center, with a board of trustees in its headquarters in Galicia by VIAQUA, AGBAR, CSIC and USC, promotes public-private research in the field of water control and water purification.

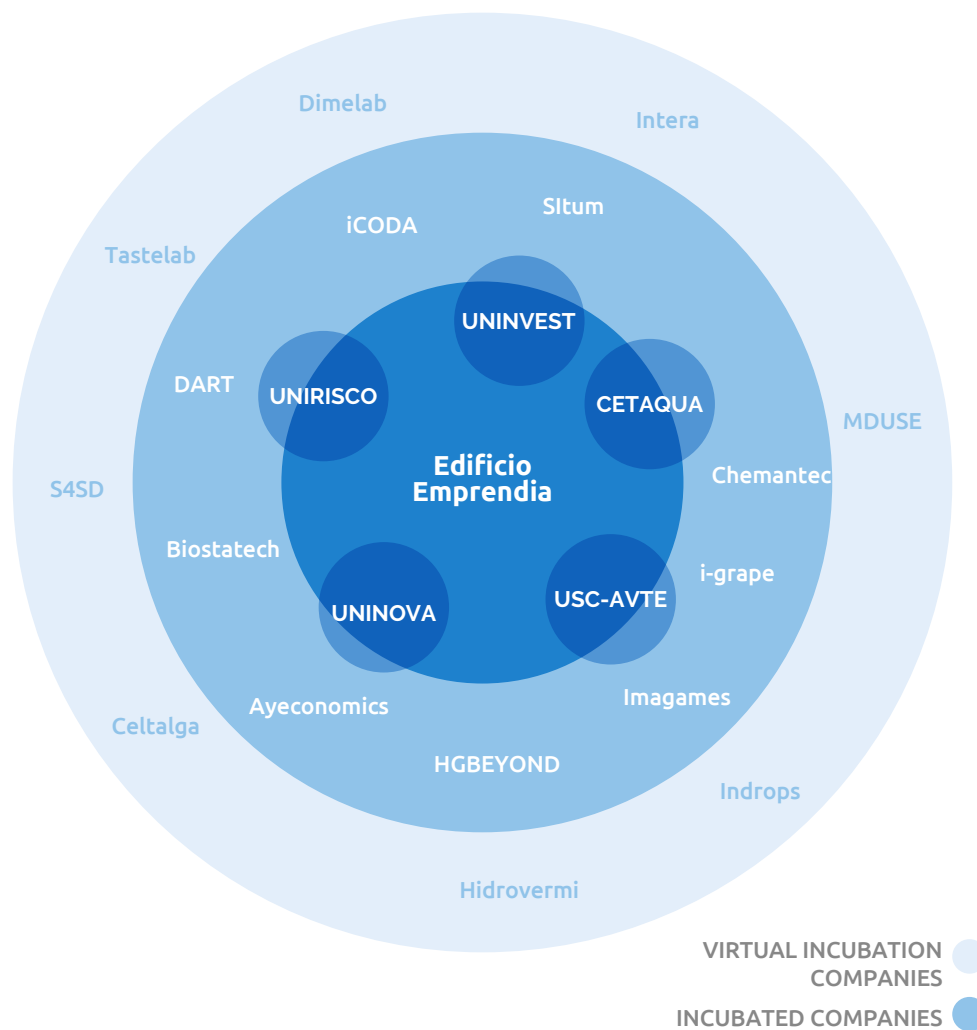


USC-AVTE The Knowledge Transfer Office is the technical-administrative unit of the Vice-chancellor for Research and Innovation of the USC with competences in identification, protection and valorisation of research results. It also deals with the definition of business plans, creation and support of new companies based on new knowledge generated at USC. It is located in the Emprendia Building.



UNINOVA The “Society for the Promotion of Innovative Business Initiatives”, UNINOVA was established in 1999 between the USC and the City Council of Santiago de Compostela. It is located in the Emprendia Building and manages the incubation spaces of the building and coordinates the use of common infrastructures.

Innovation ecosystem





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