



# Fapesc and its 25-year journey: memories, stories and perspectives of the Centers for Technology Innovation in the State of Santa Catarina

*Cristiani Fontanela*

*Tuana Paula Lavall*

*Andréa de Almeida Leite Marocco*



## Realization:

A project of the Santa Catarina Foundation for Research and Innovation (Fapesc)

## Authors:

Cristiani Fontanela, Tuana Paula Lavall e Andréa de Almeida Leite Marocco

## Layout and Editing:

Caroline Kirschner

## Proofreading:



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F679f

Fontanela, Cristiani

Fapesc and its 25-year journey: memories, stories and perspectives of the Centers for Technology Innovation in the State of Santa Catarina [electronic resource] / Cristiani Fontanela, Tuana Paula Lavall, Andréa de Almeida Leite Marocco. -- Chapecó, SC: Argos, 2023.

225 p.: il. -- (Temáticas; n. 6).

e-Book

Format: PDF

Original title: A Fapesc e sua jornada de 25 anos: memórias, histórias e perspectivas dos Núcleos de Inovação Tecnológica do Estado de Santa Catarina

Includes bibliographical references

ISBN: 978-85-7897-344-5

1. Santa Catarina Foundation for Research and Innovation. 2. Technological Innovation Centers. 3. Technology - History. I. Lavall, Tuana Paula. II. Marocco, Andréa de Almeida Leite. III. Title. IV. Series.

DDC: Ed. 23 -- 609.8164

Ficha catalográfica elaborada pela Bibliotecária Nádia Kunzler CRB 14/1785

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# PREFACE

It all started twenty-five years ago. When Fapesc emerged, the 2000s were nothing but an unclear future that inspired fear with all of the turn of the millennium symbology. The state's technology ecosystem was still incipient, development notices for this purpose from specific agencies were non-existent, and innovation was a common word only in academic circles. It was a long, winding road to get to where we are now.

Twenty-five years are not 25 days. But neither are they a mere ticking off of months on the calendar. There is a great deal of history amassed in two decades and a half. There are so many memories stored in the minds of those who walked on the same path, or of those who joined, stayed a while and then left – as in any normal walk of life.

That is how the idea for the collection you have in front of you came about – “Mapping the Development Process of the Science, Technology and Innovation Ecosystem of the state of Santa Catarina”. In 2022, when we created the public notice that brought about this book, we looked back and felt the need to dive into the past and register every important item: to map the origin and historical development of the most important entities, organizations and programs, whether extinct or in effect, of the Science, Technology and Innovation (STI) ecosystem in Santa Catarina.

In 25 books we show how the history of the ecosystem merges with the appearance and strengthening of its embryo, the Santa Catarina Foundation for Research and Innovation, or Fapesc. And also how it associated with scientific, technological and innovation centers, such as the Sapiens Parque and the ParqTec Alfa; innovation hubs; business incubators; centers for innovation; and STI laboratories, all of which opened paths to what today is known as the Santa Catarina Technology Network. And how all of this grew until it became the Santa Catarina Technology Association (Acate) and, later, appeared as the Pact for Innovation.

We recovered every aspect regarding contributions that the ecosystem received from other departments, such as the Acafe System, Sebrae, the Certi Foundation, Facisc, Fiesc and business organizations. And how the ecosystem also went in the opposite direction, making a direct impact on the daily lives of universities, institutes and public agencies, as well as on the industry of Santa Catarina.

This book also shows how the ecosystem made national and international connections, how we evolved with the passing years, and how this led to the Pact for Innovation, to Intellectual Property assets and to the consolidation of the state of Santa Catarina as a reference in STI.

This collection, a treasure for our state, gives us a complete panorama of where we came from and how we got to where we are. Challenges, weaknesses and the needs of several different ecosystem agents, departments and organizations are identified to help us move forward.

Hope you enjoy reading it!

***Fábio Wagner Pinto***

Fapesc President

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# INTRODUCTION

In 2022, the Santa Catarina Foundation for Research and Innovation (Fapesc) celebrated its 25th anniversary. To commemorate this moment it released Public Notice no. 24/2021 in June 2021, Programa #Fapesc@25anos\_Conectando+Catarinenses (Program # Fapesc@25 years \_ Connecting+Catarinenses), with the aim of mapping out the development process of the Science, Technology and Innovation (S, T&I) ecosystem in the state of Santa Catarina.

The formation of the S, T&I ecosystem in Santa Catarina is not new: it has evolved with the state's own development, in the actions, initially fragmented, of many public and private agents. With the creation of Fapesc, and more recently with the formulation of a legal framework for the topic – specifically, Law no. 14.328/2008, known as the Santa Catarina Innovation Law, and its ruling, Resolution no. 2.372/2009 –, a more strategic and coordinated understanding was reached.

Therefore, revisiting and registering the history and stories of the S, T&I ecosystem of Santa Catarina is a task that demands reexamining the steps taken by actors, processes and actions that contributed to its construction. Within this perspective, the historical and bibliographical inventory proposed by the #Fapesc@25anos\_Conectando+Catarinenses Program has brought together 25 crucial topics to help understand how Santa Catarina became the second most innovative state in the nation (FIEC 2021, 20).

Among the topics gathered here, we should give special attention to the Centers for Technology Innovation (NITs)<sup>1</sup>. The purpose of this book is to present aspects regarding the development process of the state's NITs, identifying their origins and most important memories, contributions made, challenges and perspectives, as well as the role Fapesc has had in their emergence and consolidation. The research that led to this project was carried out at the Community College of the Chapecó Region (Unochapecó) under the coordination of Professor Cristiani Fontanela and with the collaboration of Pollen Science and Technology Park between the months of November 2021 and August 2022.

In legal terms, a Center for Innovation and Technology (NIT) is an “[...] organization that has been established by one or more Institute of Science, Technology and Innovation (ISTI), whether as a proper legal entity or not, in which the purpose is the management of institutional policies for innovation [...]” and whose basic competencies are defined by Law no. 10.973/2004, the Innovation Law (Brasil 2004, [s.p.]<sup>2</sup>). This law set up mechanisms for the promotion of innovation and scientific and technological research in Brazil, among which we have the NITs,

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1 In the name of making reading easier, this text will use the acronym NIT (Núcleo de Inovação Tecnológica) for Center for Technology Innovation.

2 This text will use the abbreviation “[s.p.]” (from Latin: sine pagina) to indicate that the consulted source is not paginated.

whose implementation became compulsory for all public Institutes of Science, Technology and Innovation (ISTIs) (Brasil 2004, [s.p.]).

Though legally established in 2004, some Brazilian institutions in the 1980s already had departments that could be considered NITs, with names such as Office of Technology Transference (ETT), Office of Technology Licensing (ELT) and Center for Intellectual Property. The different stages of formation and progress seen in these organizations in Brazil can be explained by the fact that some of the ISTIs had already opened this type of office, while others only introduced these departments after the law was enacted (Fontanela 2019, 733-742).

In 2016, the duties of the NITs, defined in art. 16, § 1 of the Innovation Law, were expanded considerably with Law no. 13.243, a new milestone in Brazil for S, T & I. As can be seen in Table 1, the NITs perform a number of activities related to the diffusion and management of scientific and technological knowledge produced in the ISTIs.

**Table 1.** Competencies of the NITs

- a) To ensure the maintenance of the institutional policy that encourages the protection of creations, licensing, innovation and other forms of technology transfer.
- b) To evaluate and classify the results stemming from research activities and projects to fulfill the provisions found in the Innovation Law.
- c) To evaluate requests from independent inventors for the adoption of an invention according to art. 22 of the Innovation Law.
- d) To assess the convenience and promote the protection of inventions developed in the institution.
- e) To assess the convenience of disclosing creations developed in the institution that are subject to intellectual protection.
- f) To accompany the processing of requests and the maintenance of the institution's intellectual property titles.
- g) To develop studies in technology prospecting and those pertaining to competitive intelligence in the field of intellectual property in order to guide the ISTI's actions in innovation.
- h) To develop studies and strategies for innovation transfer created by the ISTI.
- i) To promote and accompany the ISTI's relationship with companies, especially with regard to technology transfer contracts, licensing, the use of inventions and service rendering, as well as in cooperation agreements for the implementation of joint activities in scientific and technological research and the development of technology, products, services or processes.
- j) To negotiate and manage technology transfer agreements emerging from the ISTI.

Source: developed by the authors (2022) copied from art. 16, § 1 of Law no. 10. 973/2004, updated by Law no. 13.243/2016 (Brasil 2016, [s.p.])

In Brazil, according to the latest Form on Policies of Intellectual Property of the Institutes of Science, Technology and Innovation of Brazil (FORMICT) (base year 2018), there are 220 established NITs

in public, community and private ISTIs, while 50 are currently being implemented. It is curious that the functions carried out by these Centers go beyond those required by law. In many cases, they are also responsible for events and training, maintaining the Confidentiality Policy of the ISTIs, advising and registering researchers, producing standardized documents such as contracts and partnership agreements, maintaining the register of service offer and demand, and managing business incubators (Brasil 2019, 17-26).

According to data found in the 2020 Report on Research and Innovation of the National Forum of Innovation and Technology Transfer Management (FORTEC), of 139 responding NITs, approximately 2400 requests of intellectual property protection were put into effect, and 310 licensing agreements were formalized, which meant 16 million *reais* in costs (FORTEC 2021, 6). The NITs, as mediators in the triple helix formed by government, businesses and universities, are evidently key pieces for the promotion of economic development in the context of an economy of knowledge.

In Santa Catarina, the creation of the NITs was encouraged by the state government through Ordinary Law no. 14.328/2008 – the Santa Catarina Innovation Law – granting Fapesc the competency of giving support to the ISTIs to implement the NITs (Santa Catarina 2008, [s.p.]). In addition, both art. 5, XIX in the Fapesc Statute and Complementary Law no. 741/2019, which describes the basic organizational structure of the state, reinforce the role of the Foundation in giving support to

establishing the NITs (Santa Catarina 2012, [s.p.]; Santa Catarina 2019, [s.p.]).

Even before these legal milestones were created, with an eye on the movement that had begun nationally with the Innovation Law, Fapesc launched the Program for the Management of Intellectual Property (PROGEPI), with the aim of developing research, as well as technology transfer and innovation in productive environments. Within the scope of the Program, in 2006, Fapesc organized Public Notices no. 002/2006 and no. 010/2006, the first to establish and consolidate the NITs of Santa Catarina (Fapesc 2006, [s.p.]).

The notices allocated R\$ 300,000.00 to the creation and expansion of up to six NITs distributed in the six regions of Santa Catarina. Of the 11 proposals that were received, five were chosen, after analysis by *ad hoc* consultants from other states. Each was granted up to R\$ 50,000.00 to carry out projects. The NITs chosen were The Federal University of Santa Catarina (UFSC) in Florianópolis; The State University of Santa Catarina (Udesc) – São Bento do Sul campus; The University of the Blumenau Region (FURB) in Blumenau; The University of Western Santa Catarina (Unoesc) in Joaçaba; and the University of the Extreme South of Santa Catarina (Unesc) in Criciúma (Fapesc 2006, [s.p.]; Decker 2022, [s.p.]).

In 2008, with resources from the Funding Authority for Studies and Projects (Finep), the federal government launched Public Notice MCT/FINEP/AT-PRÓ-INOVA 01/2008 with the purpose of giving support to NIT training proposals for management of ISTI innovation policies

and encouraging initiatives for the diffusion of innovation, within the scope of the National Program for Awareness and Mobilization of Innovation (PRÓ-INOVA) (Brasil 2008, 01). The notice encompassed two thematic courses: a) the consolidation of NITs, and state and regional agreements, and b) the establishment and organization of state and regional agreements of NITs (Brasil 2008, 01).

With the publication of the Public Notice, Professor Luiz Otávio Pimentel, who was then the NIT coordinator at UFSC, addressed the Euvaldo Lodi Institute of Santa Catarina (IEL/SC) and Fapesc to develop a joint project aiming at a state agreement on NITs (Coral 2012, 12). Santa Catarina's proposal, called Project for the Establishment and Development of an Agreement for Centers of Technology Innovation in Santa Catarina (PRONIT), was among those chosen and its implementation began in May 2009 under the coordination of IEL/SC.

PRONIT counted on an investment of R\$ 1,870,787.00; R\$ 1,401,000.00 of which came from Finep; R\$ 370,000.00, from Fapesc; and a complementary amount of R\$ 120,000.00 from six state ISTs (Decker 2022, [s.p.]). Eighteen ISTs and 11 businesses joined the project, which allowed for 200 hours of instruction training of the participating technical team. Training covered issues such as NIT organization, technology appraisal, technology transfer, project management, process management, laws for the incentive of innovation and fiscal

stimulus at the state and federal level, mechanisms for funding S, T & I and intellectual property (Coral 2012, 12-15).

Ending in 2013, in terms of the mobilization of human resources, PRONIT was the largest support program for the creation, consolidation and articulation of NITs ever carried out in Santa Catarina, bringing together universities, the government and businesses. Although other states have had similar projects, the results obtained in Santa Catarina attracted the attention of universities, public and private agencies and foundations that gave support to external research, which has made PRONIT an absolute reference in the area (Decker 2022, [s.p.]).

After a six-year gap, the strategic work carried out between Fapesc and the NITs was reinstated with Public Notice no. 14/2019 – the Support Program for the Consolidation of Centers for Technologic Innovation in Institutes of Scientific and Technological Research in the state of Santa Catarina. The aim of this Notice was the implementation, maintenance and consolidation of NITs and of the Santa Catarina NIT Network by statewide ISTs, besides the training of teams and the development of activities directed to expanding the ecosystem of innovation and applied research in Santa Catarina (Fapesc 2019, 01).

In total, 13 projects were considered and put into effect with resources of up to R\$ 100,000.00 each; the amount was invested in items such as hiring interns, acquiring equipment and material, payment of

intellectual property taxes, hiring specialized services, among others. The following ISTs took part in the public notice: UFSC, Embrapa Swine and Poultry, Community University of Chapecó Region (Unochapecó), Udesc, Epagri, Unesc, Federal University of the Southern Frontier (UFFS), University of the Joinville Region (Univille), Catarinense Federal Institute (IFC), University of Vale do Itajaí (Univali), Unoesc, University of Southern Santa Catarina (Unisul) and FURB (Fapesc 2019, [s.p.]).

Besides improvements that would be carried out by each Center, Public Notice no. 14/2019 stimulated interinstitutional relations and the collective organization of the NITs by proposing the creation of the Santa Catarina NIT Network. The idea of creating a network of NITs had repeatedly been brought up in state events on innovation and intellectual property – such as the 3<sup>rd</sup> Santa Catarina NIT Seminar held at Orion Park in 2017 – but it was only with the Fapesc Program that it took on a more detailed format (Rede NITSC 2019, [s.p.]).

Meetings of the Santa Catarina NIT Network, or the NITSC Network, have taken place periodically since 2019 and aim at discussing topics that concern the NITs as well as organizing the Network's formal and operational aspects. Among the latest actions are the creation of a visual identity and the definition of the group's legal framework for the next steps in its formalization. Management of the NITSC Network is carried out by the member institutions (Rede NITSC, 2019, [s.p.]).

The 2019-2020 term – characterized as the implementation administration – counted with the participation of Udesc (coordination), Univille (vice-coordination) Unisul (1<sup>st</sup> office) and UFFS (2<sup>nd</sup> office) (Rede NITSC 2019, [s.p.]). The second formation took on the role of an Administrative Committee and was elected for the 2021-2022 term. Its participants were UFSC (Coordination), Unochapecó and Unesc (Rede NITSC 2020, [s.p.]).

The continuity of actions that can bolster the state NITs, as well as the consolidation of the NITSC Network, is being considered within the scope of the second edition of the Support Program for the Implementation and Consolidation of Centers for Technology Innovation, Fapesc Public Notice no. 27/2022, released in June 2022. With R\$ 2,000,000.00 in funds, the Notice should give assistance to up to 20 proposals of public and private non-profit ISTs (Fapesc 2022, [s.p.]).

Whether through specific public notices or funding for research and innovation actions which, ultimately, contribute to the work done at the Centers, Fapesc is fulfilling its institutional duty and promoting a vision of future contributions to the development of NITs in Santa Catarina, that can be seen in the statement given by Fábio Zabet Holthausen, President during the 2019-2022 term in the table below.

**Table 2.** The role of Fapesc in supporting NITs: an institutional view

“The concern at Fapesc is to increasingly strengthen the NITs as structures in the S, T & I ecosystem. Similarly to the Innovation Centers and Business Incubators, NITs have a very important role in this development, especially when there is an opportunity for more complex innovation in which the intellectual property asset might be transferred. This is a challenge for NIT coordinators. Do they have to work on the culture? Certainly, both at the university and in society. But working only with acculturation is not enough. You have to be aware of the researcher’s feelings, protecting inventions when needed, and with the transfer of technology, so that only then revenue can be generated from the intellectual property assets.

The role the NITs play in this sense creates possibilities for new deals for research endowment per se at the university. There are emblematic cases both in Brazil and abroad of the strategic role carried out by universities in the transfer of technologies that have great social impact. As an institution, we want this to also take place at universities in our state and we understand that to make this a reality, systematic and endorsed actions are needed.

When Fapesc gazes upon the ecosystem, it sees all its components and, in every public notice proposed, there is the idea of how it can benefit each of these agents transversally.

The work behind Public Notice no. 24/2022, for example, in listing the NITs as one of the 25 topics, shows the value Fapesc sees in these agencies. Universities must have the same careful care for their own NITs. Besides working internally, the NIT must be recognized outside its walls as the door that will welcome the production sector to the university. The NITs are part of the machinery of the S, T & I ecosystem in Santa Catarina and Fapesc believes in the role these organizations have for the state’s economic development”.

Fábio Zobot Holthausen  
Fapesc President (2019-2022)

The present book, developed in the context of Fapesc Public Notice no. 24/2021, is an opportunity to showcase the NITs of Santa Catarina, to shine a light on aspects of their historic constitution and to identify the difficulties faced in daily activities. It is our hope – especially considering the panorama outlined – that we can contribute to the advancement of public policies that promote NITs and science, technology and innovation in general in the state of Santa Catarina.

The research behind this book is the result of the incorporation of different techniques and a number of stages that began in November 2021 with a bibliographic inventory on NITs and specifically on the NITs in Santa Catarina. After taking stock of the state of the art, the challenge was to map out the ISTs in Santa Catarina where NITs had been implemented or were in the process of implementation to circumscribe the universe of our research field.

The map presented here, identifying 19 NITs, is the result of crossing information obtained from different sources: FORMICT and FORTEC reports; minutes and documents of the NITSC Network, academic publications, information provided by Fapesc and, mainly, from direct contact via e-mail and/or phone calls with the university administration or IST management, from records found in databases such as on the Ministry of Education portal (e-MEC). Between the months of January and June 2022, 24 ISTs were addressed. Of these 24, 19 were eligible – in other words, they had NITs that had been implemented or were about

Source: by the authors (2022) with the transcript of an interview with Fábio Zobot Holthausen (2022, [s.p.]).

to be implemented – and formalized their interest in participating in the research. They then sent the necessary documents for the project procedures required by the Ethics Committee for Research with Human Beings.

Hence, these are the institutions that participated in the research:

1. University of Southern Santa Catarina (Unisul).
2. University of Western Santa Catarina (Unoesc).
3. University of the Joinville Region (Univille).
4. Federal University of the Southern Frontier (UFSS).
5. University of the Blumenau Region (FURB).
6. Brazilian Corporation of Agricultural and Livestock Research (Embrapa), Swine and Poultry unit.
7. University of the State of Santa Catarina (Udesc)
8. Corporation for Research in Agriculture and Rural Outreach of Santa Catarina (Epagri)
9. Alto Vale do Rio do Peixe University (Uniarp)
10. Community University of Chapecó Region (Unochapecó)
11. University of the Extreme South of Santa Catarina (Unesc)
12. Catarinense Federal Institute (IFC)
13. Federal Institute of Santa Catarina (IFSC)
14. Avantis University Center (UniAvan)

15. Barriga Verde University Center (Unibave)
16. Brusque University Center (UNIFEBE)
17. SENAI Institutes of Innovation and Technology
18. Federal University of Santa Catarina (UFSC)
19. University of Vale do Itajai (Univali)

The trajectories of the NITs in these ISTs are presented individually in the 19 chapters that make up this book. The elaboration of each chapter involved consulting institutional documents – resolutions, decrees, regulations, minutes, reports, etc. –; content circulating on institutional electronic sites; articles, theses, and dissertations; lectures and conferences available on the internet; and interviewing NIT representatives. Oral statements given in meetings with the help of a pre-established script with questions were then transcribed and analyzed and became a guide in organizing the events that took place in each institution.

The chapters emerge therefore from the association of a number of sources, enhancing the memories of the people that once experienced or still experience daily life at the NITs and have carried out administrative endeavors and policies. It is important to mention that the methodological perspective of oral stories is marked by subjectivity (Montysuma 2006, 119). Therefore, this book does not aspire in any way

to be *the* story – exclusive and official – of the NITs researched, but to present some of their nuances, invariably marked by the interpretation of those who were interviewed – and by the researchers themselves – concerning the events narrated.

The narrative is the result also of a dialogic process that took into consideration that the texts were sent to the interviewees and their teams for a preliminary reading and consideration. In this channel created for communication, some NITs shared material and sent images to be included in their chapters. We are most sincerely grateful to all those interviewed and to their teams for their readiness in sharing at all stages of this research.

Additionally, we could not have elaborated this introduction without the collaboration of Fapesc. We owe our gratitude to President Fábio Zabet Holthausen for the interview given in person at his office at the Foundation, located in the Pollen Scientific and Technology Park; and to Randolpho Decker and Fernanda Beduschi Antoniolli Neves for sharing documents and information regarding the public notices for the inducement of the NITs.

We would also like to acknowledge Unochapecó and the Pollen Scientific and Technology Park for offering the necessary structure to carry out this research.

Finally, we would like to say that though the chapters were revised by the ISTs, as authors, we take on total responsibility for the texts that were produced.

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**01.**

**AGENCY FOR INNOVATION AND  
ENTREPRENEURSHIP (AGETEC)  
OF THE UNIVERSITY OF SOUTHERN  
SANTA CATARINA (UNISUL)**

The University of Southern Santa Catarina (Unisul) is a higher education institution which is part of the Ânima Learning Ecosystem and has reached out from the town of Tubarão, in the state of Santa Catarina, to other regions in its more than 50 years of history. Its activities focus on the production, development and dissemination of knowledge through research, teaching and outreach programs at all levels and in every area of knowledge, whether in person or digitally.

The establishment of Unisul began with the actions of the Tubarão community who envisioned a higher education institution in their town. In 1964, under the leadership of a group of entrepreneurs, journalists and politicians who had paid a technical visit to the newly inaugurated Blumenau Economic Sciences College, the Economic Sciences College of Southern Santa Catarina was inaugurated, under the management of the Municipal Institute of Higher Education (Imes). As a municipal autarchy, initially operating without charging tuition, the institution held classes at the Dehon School (Cardoso 2016, 15-18).

In 1967, when the College's expansion project turned out to be incompatible with the autarchic nature of its management, Imes was replaced by the Educational Foundation of Southern Santa Catarina (Fessc) (Unisul 2021, [s.p.]). As a private-law autonomous and state-owned institution, besides teaching, Fessc was committed

from the very beginning with research and outreach programs, which gave direction to its demand for a university in the years that followed (Cardoso 2016, 21-25).

In the 1970s, the range of courses at the Foundation, until then limited to Economic Sciences, was expanded. With the creation of the College of Sciences and Education, degrees in Education, Letters and Philosophy were offered. In the second half of the decade, the Technology College, as well as the Health Sciences and Social Well-Being College, were established. Concomitantly, the Fessc acquisition of the Dehon School in 1971 definitely merged the trajectories of these two institutions (Cardoso 2016, 30-31).

The transformation of Fessc into the University Foundation of Southern Santa Catarina (Unisul) took place in 1989, the same year it was recognized as a university by Decision no. 28/89 of the Federal Council of Education, approved by Decree no. 028 (Unisul 2021, [s.p.]). At the time, the university had around 3 thousand students and was starting its process of expansion, which took on a more defined form in 1992 with the inauguration of the Araranguá campus (Cardoso 2016, 57).

The 1990s was characterized by progress that led to Unisul's consolidation as a reference in teaching, research and outreach. The portfolio of programs, from the undergraduate to the graduate level, quadrupled, and the greater Florianópolis campus was established in

1996, followed by the Pedra Branca University City in Palhoça. By the end of the decade, new units were inaugurated in Laguna, Imbituba, Içara and Braço do Norte (Unisul 2021, [s.p.]).

Besides improvements in campuses and unit facilities, and investments in qualifying human resources, the 2000s were marked by a technological surge which aligned the university with the virtual reality brought about with globalization. In 2002, as a pioneer in this category, Unisul received its license to offer *lato sensu* graduate courses in distance learning. The following year it was licensed to do the same for the undergraduate program (Unisul 2021, [s.p.]).

By 2021, the university had 6 campuses: Araranguá, Braço do Norte, Içara and Tubarão in the southern region; Florianópolis, Pedra Branca and Digital UniSul – created in 2005 for the operation of distance learning. After April 2021, 4 new units were incorporated in Balneário Camboriú, Florianópolis (Continent and Island) and Itajaí. These spaces offer over 90 undergraduate courses, five master's, four doctorates and dozens of specializations and nanodegrees (Unisul 2021, [s.p.]).

During its history, Unisul has always been at the forefront of innovation – whether this be didactic-pedagogical, regarding facilities, or in the relationship with the community, just to mention some examples. It's no coincidence that innovation has been one of the most remarkable components of the Unisul identity, of the institution's values, and a

significant part of the Institutional Development Plan for at least two cycles (Unisul 2021, [s.p.]).

Among the facilities that give Unisul support in its quest to “[...] become recognized as an Innovative University, capable of creating a relevant and sustainable impact [...]”, the Center for Technology Innovation (NIT) – called the Agency for Innovation and Entrepreneurship (AGETEC) – stands out. In the following section, the most important moments of the agency, with its perspectives and challenges, will be outlined.

## **AGETEC: getting to know the Unisul NIT**

The Unisul NIT began back in the 2000s. With the approval of the Innovation Law and the publication of the first Fapesc public notice towards establishing NITs in ISTs in Santa Catarina, a group of teachers at the Tubarão campus got together to outline a proposal. Although they did not benefit from the notice, the group carried the idea forward and in 2006 presented the *Project for the Creation of an Interaction Program between Universities and Businesses for the formation of Research, Development and Innovation (PD&I)* to the Unisul Chancellor (Schmitz *et al.* 2014, 37; Holthausen 2015, 5).

Aligned with the teachers' petition, and drafting Decree no. 432/06-85, the Chancellor organized a committee to evaluate the viability of creating a program. With the aim of learning from similar initiatives, the

committee made technical visits to the Scientific and Technology Park of the Pontifical University of Rio Grande do Sul (Tecnopuc-PUCRS), the Technology Center of the University of the Paraíba Valley (Univap) and the Agency for Innovation of the State University of Campinas (Inova-Unicamp), in Brazil; as well as the School of Higher Technology of the University of Montreal in Canada (Holthausen, 2015, 5).

After these visits, the committee suggested the implementation of two strategic projects: a) the creation of the Unisul Institute of Science, Technology and Innovation (ITEC), and b) the elaboration of a policy for intellectual property at the university. The project for the establishment of the ITEC was approved and included among the actions to be implemented by the new university term from 2009 onwards. According to the plan, the ITEC would take on the task of creating an institutional policy for intellectual property (Schmitz *et al.*, 2014, 37). In this sense, the ITEC “[...] would attend to the needs for innovation and would monitor discussions concerning the Centers for Technology Innovation at a national level.” (Cardoso 2016, 59).

Nevertheless, the group guiding the establishment of the ITEC – Professors Mauri Heerdt, Solange Leda Gallo, Fábio Zobot Holthausen, Rafael Ávila Faraco and Ademar Schmitz –, when studying the intended model for the entity in greater detail, realized the project should be transformed into an agency. Differently from the Institute, which essentially does applied research, the agency is aimed at articulating

the relationship between the university, the production sector and the government. Hence, with the acquiescence of the Chancellor, the Unisul Agency for Management and Development of Science, Technology and Innovation (AGETEC) was established, under the Research, Graduate Studies and Innovation Department (Pro-PPGI) (Cardoso 2016, 60; Schmitz *et al.* 2014, 37).

The institutionalization of the AGETEC occurred in 2010 with Resolution no. 79/2010, from the Chancellor’s cabinet, and was then taken to the University Council for approval. The entity’s statutes, added to the Resolution, defined the Agency as the Unisul NIT, assigning it a series of competencies as seen in Table 1.

**Table 1.** AGETEC competencies

- a) To bolster, through the development and management of projects, the areas of knowledge related to research and development (R&D), services and technology outreach activities.
- b) To articulate the university with the production sector and the government in issues related to innovation.
- c) To manage intellectual property and technology transfer.
- d) To define, disseminate and supervise policies and guidelines for technology incubators and parks, disseminating entrepreneurship and innovation.
- e) To organize institutional research networks, research centers and institutes, defining policies and guidelines.

Source: by the authors (2022) with a copy of art 3 of Resolution no. 79/2010/GR (UNISUL, 2010, [s.p.]).

Article 4 of the Resolution makes the provision that AGETEC be composed by its administrative body, legal counsel (CONJUR), R&D Business Counsel and Technology Services, R&D Projects Office and Technology Services (EPD), Office for Intellectual Property and Technology Transfer (EPITT), Coordination of Technology Incubators and Park, and Coordination of Research and Innovation Networks, Centers and Institutes (Unisul 2010, [s.p.]). Among these, in effect, the CONJUR, the EPD and the EPITT were implemented (Holthausen 2015, 7).

With this structural basis, the team began to serve the academic community and, concomitantly, elaborate the normative instruments related to innovation and intellectual property within the scope of the university. In 2010, The Intellectual Property Policy was approved and, in that same year, the 1<sup>st</sup> National Seminar on Innovation was held in Tubarão with six consecutive editions (2010-2015), integrating Unisul and the region to the circle of activities carried out to promote a culture of innovation in the state of Santa Catarina (Schmitz *et al.* 2014, 37).

Between 2009 and 2011, Unisul took part in the Project for the Establishment and Development of an Agreement of Technology Innovation Centers in Santa Catarina (PRONIT), endowed by the Funding Authority for Studies and Projects (Finep) and promoted by the Euvaldo Lodi Institute (IEL), Fapesc and the Federal University of Santa Catarina

(UFSC). The training offered by this project was essential in dealing with the challenges faced in the first years of AGETEC's existence (Attanásio and Schneider 2022, [s.p.]).

After the planning (2005-2008), elaboration and structuring (2009-2010) stages were resolved, the Agency began the third phase of its journey (Schmitz *et al.* 2014, 38) in which there was “[...] an exponential growth in activity, mainly due to an increase in the number of projects and an escalation in fundraising.” (Schmitz *et al.* 2014, 38).

In the third phase, besides two more editions of the National Seminar on Innovation, the Brazilian Congress of Intellectual Property was held in 2012. The programs of these events, along with the consistent work carried out by the Agency, led to the first prizes received: in 2011 and 2012, Unisul won first place in the Stemmer Award for Innovation, bestowed by Fapesc, in the categories Institution of Science, Technology and Innovation; and Innovative Institution, respectively. In 2011, it won second place in the Finep Award for Innovation/Southern Region (Schmitz *et al.* 2014, 38).

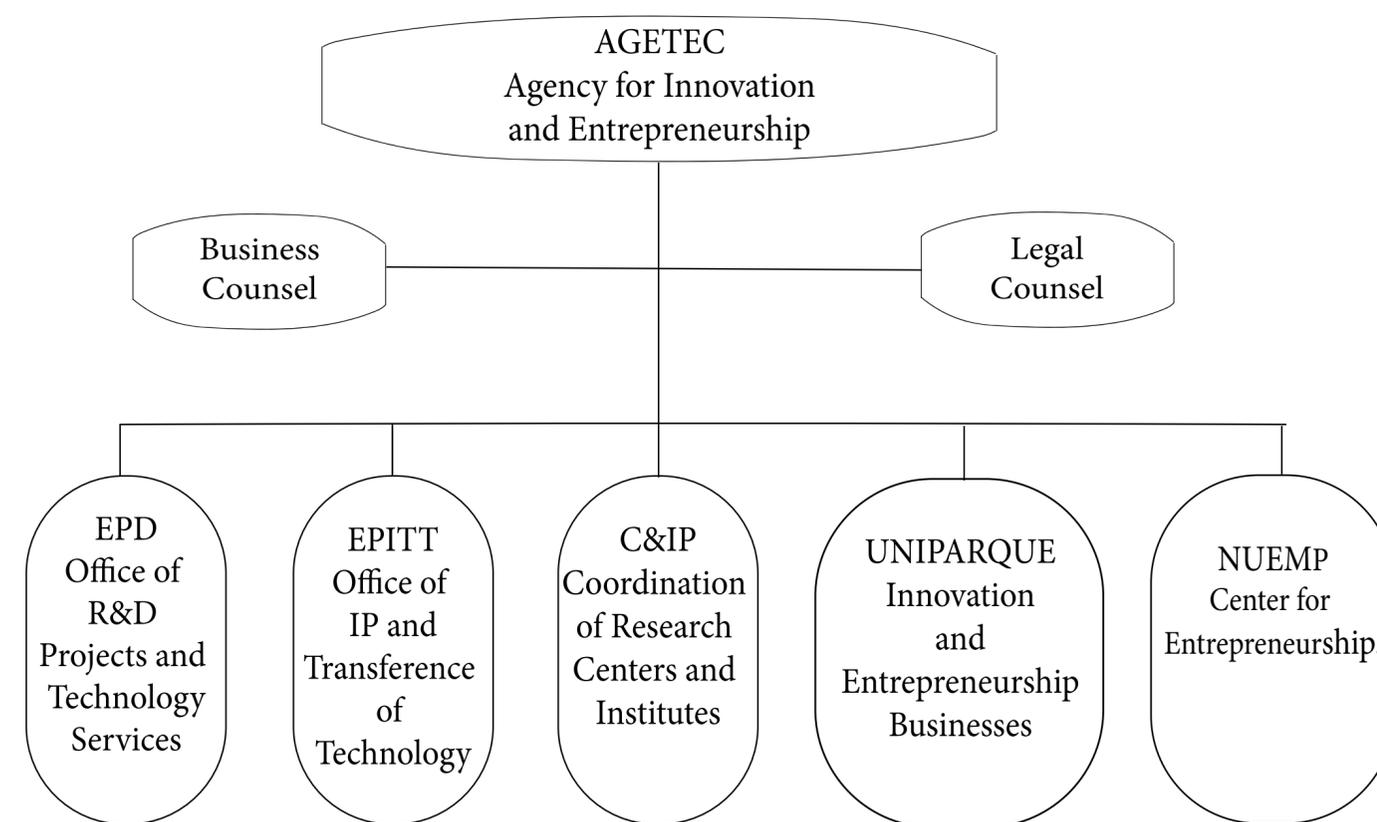
2012 also saw the inauguration of the Unisul Technological Park, Uniparque, at the Tubarão campus. Uniparque was created with the idea of becoming an accelerator of the innovation process and, consequently, of the social-economic development of the region by harboring businesses working in the field. The Park then included the Regional Center of Innovation and Entrepreneurship, known

as the CRIE Incubator, a Unisul space for new businesses acting in pre-incubation and incubation. Within this context, besides taking a central role in the process of creating and building Uniparque, the AGETEC also mediated the relationship between resident businesses and the university (Cardoso 2016, 64).

The fourth phase for AGETEC began in 2013, with a new administrative term at the university. The AGETEC began to be seen as the Unisul Agency for Innovation and Entrepreneurship, part of the Teaching, Research and Outreach Department (Pró-EPEX), and the Institutional Development Department (Pro-DI). In this new phase, the entity achieved “[...] greater responsibility as an institutional and regional development agency, incorporating initiatives related to business incubation [...]”, which before were spread out among the campuses (Schmitz *et al.* 2014, 38).

The re-structuring also included the creation of a forum within the AGETEC whose aim was to cooperate with the creation of new business opportunities alongside the production sector and the government: the Center for Entrepreneurship (NUEMP) (Holthausen 2015, 8). Therefore, in 2013, the format of the organizational structure of the AGETEC was what can be seen in Figure 1.

**Figure 1.** AGETEC organizational structure (2013)



Source: adapted from Attanásio (2021, [s.p.]).

As it grew and consolidated internally, the AGETEC's influence expanded, contributing to a healthier innovation and entrepreneurship culture in the state's southern region. One of its biggest contributions in this sense was the alliance made to campaign for the town of Tubarão to be chosen as one of the innovation hubs in Santa Catarina in 2013. Initially, there was no foreknowledge that the city would be included

in the group, but thanks to the crusade carried out by the AGETEC and Unisul leadership, the town hall and associative entities of the private sector, the hub was not only created but is being given a Center for Innovation which is estimated to begin operations in 2022 (Schmitz *et al.* 2014, 43; Attanásio and Schneider 2022, [s.p.]).

Progress in the innovation agenda observed regionally led to new and authentic institutional action, a dynamic feedback between internal and external practices. There was a need to decompress and connect activities related to innovation and entrepreneurship at the university: decompress by multiplying agents and structures involved in the process; and connect by disseminating the issue at all levels at Unisul – teaching, research and outreach. These changes were incorporated in the 2015-2019 Institutional Development Plan (PDI) (Holthausen 2015, 10).

In the greater Florianópolis, at the Pedra Branca campus, the AGETEC is aided by the Unisul Laboratory of Innovation and Entrepreneurship (iLab), a mixed space with coworking areas, pre-incubation, a startup and university spin-off hub, and an arena for events, courses and issues dealing with innovation and entrepreneurship. In the first year alone, the iLab attended approximately 1.5 thousand people in more than 50 events. Among the outcomes is the iLab winning the Endeavor Award for Entrepreneur Education and the Brazilian Service to Support Micro and Small Businesses (Sebrae) (Trombini 2017, [s.p.]).

With the beginning of a new university term (2017-2022), the AGETEC was associated to the Teaching, Research, Outreach, Graduate Programs and Innovation Department (PRO-EPPEXI). With this new phase “[...] besides committing to creating a favorable environment for the development of ST&I and for innovative businesses [...]”, the Agency took on “[...] the responsibility of promoting the transversality between Innovation and Entrepreneurship at the university” with even more intensity (Felipe 2018, 112).

The actions carried out during this period include the mapping of competencies that culminated in the project Unisul Solutions, a portfolio of the institution's products and services. The main objective of the portfolio was to proactively promote stronger ties in the university-business-government-society juncture (quadruple helix) through the development of solutions for real problems and opportunities (Attanásio 2021, [s.p.]).

Until the middle of 2020, the foundation for AGETEC operations was composed of Management and six centers, most of which were remnants of the initial structure proposed by Resolution no. 79/2010, with the responsibilities seen in Table 2.

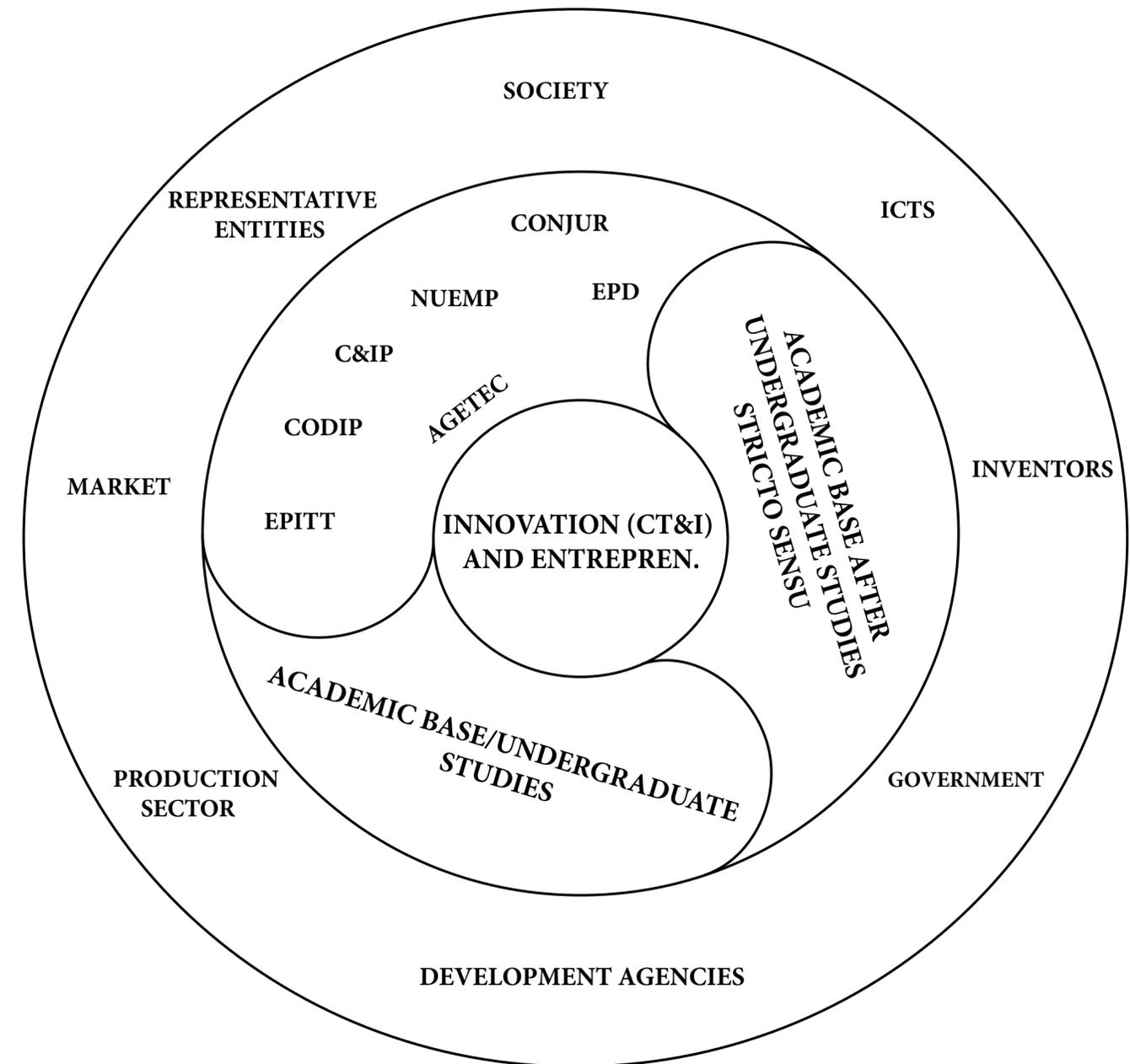
**Table 2.** AGETEC competencies (2018)

- a) Office of R&D Projects and Technology Services (EPD): prospection, support for the elaboration, management and accountability of projects connected to Unisul.
- b) Office of Intellectual Property and Technology Transfer (EPITT): managing intellectual property, forwarding protection requests to the appropriate entities, and enabling technology transfers. Consulting and assistance in the field of intellectual property.
- c) Coordination of Incubators and Technological Parks (CODIP): defining institutional policies for innovation and entrepreneurship environments (incubators, scientific and technological parks, innovation laboratories, etc.) and integrating these structures. Articulating axis for the Uniparque, Technology Incubator of Popular Cooperatives (ITCP/UNISUL) and CRIE Incubator.
- d) Center for Entrepreneurship (NUEMP): encouraging entrepreneurship in the institution and surrounding area with the elaboration of policies and strategies for the generation of value, business and sustainable development.
- e) Coordination of Research Centers and Institutes (C&IP): proposing policies directed towards the creation and operation of new research units.
- f) Legal Counseling (CONJUR): legal assistance for relationships between the AGETEC, the production sector and the government.

Source: by the authors (2022) based on Felipe (2018, 113).

The interaction of these subsectors with other university agents – as well as those externally – started the Unisul System of Innovation and Entrepreneurship which in time evolved as the system grew and developed, as seen in Figure 2.

**Figure 2.** Unisul System of Innovation and Entrepreneurship



Source: by the authors (2022) from Attanasio (2021, [s.p.]).

Unisul's move to the Ânima Learning Ecosystem in 2020 brought about new organizational perspectives for the institution. The AGETEC was also affected by this process and is currently repositioning itself.

Continuing the tendency that started before integration – decompressing and multiplying activities – many AGETEC responsibilities are now spread out in the Ânima Ecosystem, which prioritizes working as a network. Some of the Agency offices were eliminated and integrated to corporate structures, while others, such as the EPD, expanded their field of action and responsibilities and now attend Unisul and all higher education institutes in the nation's southern region. Hence, with this framework, it is impossible to represent the Unisul NIT within a rigid and compartmentalized organizational chart since it operates openly and cooperatively throughout all of the Ânima Ecosystem (Attânasio and Schneider 2022, [s.p.]).

This new phase has given the AGETEC the opportunity to learn with actions already in operation in the Ânima Group – considered one of the largest private educational organizations in higher learning in the country, with approximately 390 thousand students in its 25 institutions – as well as to implement and/or participate in institutional programs (Attânasio and Schneider 2022, [s.p.]).

Among the programs we can mention are a) the Ânima Nest, the pre-acceleration startup program; b) the Ânima Lab, an area for curricular integration and connection to the market that now has

a campus in Tubarão; c) the Ânima Lab Hub, a network of thematic laboratories with the aim of catalyzing and developing opportunities for technologically-based innovation and entrepreneurship in the fields of knowledge of the Ânima Ecosystem. On the other hand, the Agency has placed its knowledge and experience in innovation and intellectual property management at the service of the Ecosystem, hence contributing to the advancement of practices at other institutions (Attânasio and Schneider 2022, [s.p.]).

Regardless of these changes, in a joint effort with the Ânima Ecosystem, the AGETEC continues to play an active role in the creation of partnerships with the production sector, the government and other scientific and technological institutions. It can claim to successful cases in developing S, T&I projects with government agents at the municipal, state and federal level; as well as with businesses of all sizes, having received funding from national development agencies – such as the Funding Authority for Studies and Projects (Finep) – and international agencies – such as the European Union, and the Spanish Agency for International Development Cooperation, to name a few (Attanásio 2021, [s.p.]).

In addition, it also processes a large flow of contracts for service provision. In this sense, requests from the production sector are propelled by the laboratory facility at the university which offers a Chemical Industry Laboratory, a Certification Laboratory (Labcert), and Civil Engineering Laboratories, among others. Another initiative

that strikes the interest of external agents is Unisul Solutions – mentioned above – with a portfolio of services organized in axes, such as Innovation and Industrial Technology Services; Educational Technologies and Services; and Management, Regional Development and Business (Attanásio 2021, [s.p.]).

According to a 2021 survey, throughout its long history, the AGETEC has facilitated over 400 projects and approximately 80 cooperation agreements and partnerships, with a total of 900 external partners, both in research, development and innovation projects, as well as in contracts to provide services (Attanásio 2021, [s.p.]).

Because it believes that connections lead to opportunities for progress, the University, whether it is represented by the Agency or other representatives, is present in debate events, such as committees and local, regional and national forums. In the state's southern region, it is a part of the Tubarão 180° Council; the Tubarão 180° Sustainable Development Plan; Tubarão Technology and Innovation; the Committee for the Establishment of the Innovation Center; the Tubarão ODS Committee, and more. In Florianópolis it is part of the Municipal Council for Innovation; the Agreement to Promote Creative Innovation and Economy; and the Creative Economy Network of Florianópolis. The CRIE Incubator and Uniparque, on the other hand, are a part of the National Association of Entities Promoting Innovative Enterprises (Anprotec) (Attanásio 2021, [s.p.]).

In the last four years, the AGETEC has cooperated intensely with activities to establish the Santa Catarina NIT Network, called the NITSC Network. The alliance is one of the developments of Fapesc Public Notice no. 14/2019 – the Support Program for the Consolidation of IST NITs in the state of Santa Catarina – in which the Unisul project *The Consolidation of the Unisul Center for Technology Innovation and Support for the Economy of Knowledge in the state of Santa Catarina* was chosen (Attanásio and Schneider 2022, [s.p.]).

When this new phase at the university is taken into account, the AGETEC horizon unveils the possibility of a more consolidated position and greater potential for actions with a more meaningful contribution and greater relevance, hence helping the Ânima Ecosystem meet its aim of transforming the country through education. Whether through integration with the 25 institutions that form the group and other structures, or maximizing initiatives by joining forces with vertical members of the Ânima Ecosystem in fields such as Gastronomy (Le Cordon Bleu), Law (Ebradi), Management (HSM e HSMu), Medicine (Inspirali), and especially with innovation and entrepreneurship offered by SingularityU Brazil and the Learning Village, an innovation and technology hub focused on people's education and development, AGETEC is at the helm of important actions (Ânima Educação 2022, [s.p.]).

In this direction, the challenge presented is to align expectations, integrate and create synergy with the opportunities that Ânima

Ecosystem provides, as well as with the external environment itself in terms of NIT performance, remembering what a decade-old legacy has shown, transforming constantly to remain relevant and have a positive impact on the surroundings and on society.

## Main legislation in effect

Resolution no. 79/2010/GR – Establishes and regulates AGETEC.

## Contact

Address: Av. José Acácio Moreira, 787, Bairro Dehon, Tubarão, SC, 88704-900.

E-mail: [contato@animaeducacao.com.br](mailto:contato@animaeducacao.com.br)

Site: <https://www.unisul.br/>

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**02.**

**AGENCY FOR INNOVATION AND  
INSTITUTIONAL RELATIONS (AGIR)  
OF THE UNIVERSITY OF WESTERN  
SANTA CATARINA (UNOESC)**

The University of Western Santa Catarina (Unoesc) was one of the first institutions of higher education to be established in the state's western mesoregion. It is maintained by the University Foundation of Western Santa Catarina (FUNOESC), a non-profit entity which also sponsors the Santa Terezinha University Hospital (HUST); Expressivo School, located in the town of Xanxerê; Superação School in Videira; Superativo School in Joaçaba; and the Applied Social Sciences College (FACISA) and Expressivo School, both in Xaxim.

The trajectory of Unoesc merges with that of its sponsoring institute. Funoesc was established in 1968 by the town of Joaçaba's public authority through Law no. 545/68, with the name University Foundation of Western Santa Catarina (FUOC). In 1991, the FUOC joined with the Educational Foundation for Development of the West (Fundeste) in Chapecó, and the Educational and Business Foundation Alto Vale do Rio do Peixe (Femarp) in Videira. Together they then established Unoesc. Under this agreement, Economy, Rural Administration, Geography and History were offered in Chapecó; Law, in Videira; and Letters in Joaçaba (Funoesc 2018, 53).

With the beginning of the new institution's licensing process, a number of improvements were implemented to comply with the demands of the Ministry of Education: new programs were offered; classrooms, laboratories and libraries were built; teachers underwent training and were offered the chance to obtain master's and doctoral degrees; the

graduate program *lato sensu* was formalized; institutional policies, directives and objectives were redefined. These measures led to an exponential growth at Unoesc in the 1990s, and it was recognized as a university in 1996 (Funoesc 2018, 59).

At the end of the 1990s, The Educational Foundation of the Townships of Alto Irani (FEMAI) and the Educational Foundation of the Extreme West of Santa Catarina (Funesc) became part of Unoesc as university campuses in Xanxerê and São Miguel do Oeste, respectively. In 2002, the Chapecó campus separated from the institution to establish the Community University of Chapecó Region (Unochapecó) (Funoesc 2018, 41).

During the 2000s, Unoesc consolidated its position as one of the most important universities of the state of Santa Catarina, operating consistently on three axes – teaching, research and outreach. Among the developments registered during this period are the beginning of graduate program activities *stricto sensu*; the implementation of services that directly benefitted the community, such as the Veterinary Hospital and the Centers for Legal Practice; and the start of the distance learning modality (Unoesc 2022, [s.p.]).

Located in the western mesoregion of Santa Catarina, the university currently has five campuses – Joaçaba, Videira, Xanxerê, São Miguel do Oeste and Chapecó –, and five units – Capinzal, Campos Novos, Pinhalzinho, Maravilha and São José do Cedro (Unoesc 2022, [s.p.]).

In the 170 thousand square meters that form the Unoesc facilities, 80 undergraduate programs are offered, both online and in person; as well as 100 specialization programs; more than 200 outreach programs, six master's and two doctorate programs. There are approximately 900 faculty members and more than 730 direct collaborators to attend to almost 18,400 students from basic education to doctorates (Funoesc 2018, 60). All these human and material resources are positioned to observe the institutional aim of "[...] contributing to the processes of development through the production and dissemination of knowledge and culture." (Unoesc 2022, [s.p.]).

In the 65 research groups at Unoesc, more than 600 researchers work to provide scientific and technological interventions by producing new knowledge in at least eight different fields and helping to fill in regional demands (Funoesc 2021, 50). In the last few years, and especially with the establishment of the Innovation Center of Vale do Rio do Peixe (Polo INOVALE), Unoesc has played an important role in promoting innovation and in bringing together regional agents, whether public or private, for this purpose. The Agency for Innovation and Institutional Relations (AGIR) is in charge of these activities at Unoesc. The section below will examine some of its historical moments and perspectives.

## **AGIR: getting to know the Unoesc NIT**

The establishment and consolidation of the Center for Technology Innovation (NIT) at Unoesc began during the first decade of this century. At the time, innovation became part of the national political agenda as a strategy to promote development and, attuned to this change, the university began to build its own innovation habitat.

In 2003, Unoesc introduced a project in the area of pre-incubation with the aim of developing initiatives stemming from end-of-course papers that had the potential to create technology businesses. The Unoesc Technology Pre-Incubator (Tecnovale), which operates in the Joaçaba campus, aided the projects of students, alumni, teachers and staff that were still at a preliminary phase, helping to develop business plans, analyze the feasibility of new enterprises and, if needed, to process the establishment of partnerships and formalize new deals (Lazzarotti 2022, [s.p.]).

This initial push to create an innovative environment coincided with the advent of Law no. 10.973/2004, the Innovation Law, and with the consequences brought on by referred law in the state. The Innovation Law of the State of Santa Catarina, Law no. 14.328/2008, in whose development process Unoesc representatives were directly involved, included the establishment of NITs in the state ISTs as a support measure for technology innovation (Lazzarotti 2022, [s.p.]). Thus, to

comply with a legal decision, but, above all, due to the organic necessity of strengthening the management of innovation and intellectual property at the institution, Unoesc founded the Center for Technology Innovation and Intellectual Property of Western Santa Catarina (NIT-Oeste) in 2007. With the establishment of the NIT, the Technology Pre-Incubator began to operate in association with the entity.

The establishment of the NIT-Oeste received the support of Fapesc with the first public notice for structural development of state NITs, Fapesc/PROGEPI/NIT Public Notice no. 002/2006. At the time, because of the multicampus character of the university, Fapesc suggested that the NIT should be set up with a regional scope, hence the name NIT-Oeste (NIT-West). The official launching of the NIT-Oeste took place in April 2008 with the presence of Fapesc President Antônio Diomário de Queiroz and the representative of what was then the Joaçaba Department for Regional Development (SDR) (Lazzarotti 2022, [s.p.]).

Resolution no. 152/CONSUN/2007 formalized the establishment of the Unoesc NIT. It emerged as “[...] a supplementary organ to the Central Administration of the University, with the purpose of offering support to research and innovation, creating technical-scientific partnerships and cooperation.” (Unoesc 2007, [s.p.]). The aims within the responsibilities outlined involved managing intellectual property, innovation and technology transfer, as well as the interaction with the private sector

and with other institutions. Table 1 presents the complete list of aims according to art. 2 of the Resolution.

**Table 1.** NIT-Oeste aims (2007)

- a) To manage the intellectual property resulting from research carried out in the institution and other research institutions in the region.
- b) To operate in developing technology innovation and intellectual property within the scope covered by the institution and the region.
- c) To bring university and companies closer with the aim of identifying the business needs in the region and develop joint research projects.
- d) To create an integrated network with other research institutions in the region in consonance with the Fapesc Program for Management of Intellectual Property and the Santa Catarina Network of Intellectual Property.
- e) To give support to technology transfer.
- f) To stimulate and promote the legal protection and economic use of intellectual creations and innovations.
- g) To set norms to protect the use of results pertaining to research developed at the Institution or in which it participated.
- h) To contribute to the development of an institutional culture concerning intellectual property.
- i) To work in conjunction with other institutions of higher education and research in the region and with entities such as Sebrae, FIESC/Senai, Embrapa, Epagri, the ACIS, and other similar institutions.
- j) To establish partnership contracts with businesses in the region that are interested in investing in the research and development of new technologies.
- k) To elaborate requests for patents and contracts of technology transfer.

Source: by the authors (2022) with a copy of art. 2 of Resolution no. 152 (Unoesc 2007, [s.p.]).

Under the scope of the university chancellor, the NIT-Oeste was formulated with a concise organizational structure, made up of the Coordinator – a position filled in for the first time by Professor Fábio Lazzarotti, from the Administration School – and a team of teachers according to the demands of the sector. The initial endeavors at the NIT were focused on the elaboration of an institutional policy for intellectual property, an essential standardization procedure to carry out activities in this area (Lazzarotti 2022, [s.p.]).

The Unoesc Policy for Intellectual Property was formulated with the assistance of Luiz Otávio Pimentel, a teacher at the Federal University of Santa Catarina (UFSC). The standardization entrusted the NIT with the operation and observance of policy provisions, including giving support to research and outreach projects; technology transfer, whether internally or externally; the inducement and promotion of legal protection; and the economic use of intellectual creations (Unoesc 2007, [s.p.]). Despite the text's merits, the main concern with protecting the immaterial assets during the first years of NIT's operation was a setback to progress in innovation processes.

Time and experience revealed the need to stimulate creativity and call for innovation on the part of the academic community since “[...] there wouldn't be an asset to protect or results to be shared if there wasn't an idea behind it.” (Lazzarotti 2022, [s.p.]). The regulation of the university's Research and Innovation Policy (R&I) in 2011 helped to

meet this demand. The legislation, established by Resolution no. 203/CONSUN/2011, set up the Support Program for Innovation Processes with the aim of “[...] encouraging researchers in the development of innovative products (capital goods, consumer durables and non-durables, services and software) and processes (manufacturing and control).” (Unoesc 2011a, [s.p.]). The strategic planning of the NIT is one of the driving instruments of the R&I Policy in art 6 (Unoesc 2011a, [s.p.]).

The mobilization of the NIT-Oeste to disseminate a culture of innovation in the region followed different routes: from the internal reorganization of the entity to optimize work, to facilitating partnerships with the productive sector, the completion of research and development projects, and holding events to bring together the different S, T&I agents of the local ecosystem.

In August 2011, the NIT began to operate in its own facilities with a new team – besides the Coordinator, four University faculty members and a collaborator were a part of the group. The NIT's restructuring occurred when a wing where the university Administration operated was emptied, and with the development of the Project of the Innovation Center Vale do Rio do Peixe (Polo INOVALE), which planned, among other goals, to resume the activities of the Unoesc Technology Pre-incubator, a department managed by the NIT (Unoesc 2011b, [s.p.]).

During the same period, programs, workshops and other educational activities intensified, both directed to the university population and the surrounding community. Among the ongoing projects, we should mention the Storm of Ideas, an event directed to undergraduate and graduate students who are deciding what the subject of their end-of-course paper will be. During the Storm of Ideas, students were in touch with representatives of regional businesses – some of which pre-incubated through NIT – who shared their needs and suggested research projects. In the years to come, the event would have new editions, though under a different name (Unoesc 2013a, [s.p.]).

Two events were decisive for the consolidation of the Unoesc NIT during the second half of the 2000s: the beginning of the Graduate Program in Business, initially as a professional master's and later, with the inclusion of an academic doctorate; and the implementation of the INOVALE Center mentioned above.

The graduate programs brought new life to scientific production at the university and reinforced the figure of the professor-researcher. Differently from content-based teachers who usually concentrate fully on teaching activities due to their limited workload, teachers in the graduate programs became more available to supervise research, development and innovation projects, besides taking on important roles within research groups, and coordinating and encouraging students

at all academic levels to carry out activities. In addition, the graduate program opened up new opportunities for raising funds through public and private notices in the field of S, T&I (Lazzarotti 2022, [s.p.]).

Regarding the second event, the trajectories of the NIT and the INOVALE Center clearly merge at many points. The INOVALE Center began in 2009 when the heads of the Regional Development Council (CDR) of what was then the Regional Development Department (SDR) in Joaçaba – among which were NIT members and faculty members at the Unoesc Professional Master's Program and Engineering fields of study – decided to create a regional development plan, or the Development Plan for the Innovation Center of the Vale do Rio do Peixe, coordinated by Unoesc and approved through a Fapesc public notice (Unoesc 2020b, [s.p.]).

Unoesc took an active role in the process of establishing the Center and the NIT, in particular, and spared no efforts on behalf of the project. In 2013, for example, when the Center was starting out, the NIT coordinator, Professor Ricardo Antonello, visited the town halls in the Joaçaba region to promote the beginning of activities at the Center and raise awareness among town leaders as to its importance (Unoesc 2013b, [s.p.]).

As a follow-up to the INOVALE Center activities, the NIT was involved in the training program for local innovation agents. Representatives from every town in the region under the scope of the Center were

trained in innovation and learned about issues such as applicable laws and forms of accessing means for development. With the training program, a network of multipliers was created, a fundamental step for conducting a number of events – such as startup weekends and hackathons – in the following years (Lazzarotti 2022, [s.p.]).

The INOVALE Center thus emerged as a “gathering of organizations” with correlated interests in disseminating innovation and new technologies. Initially covering 14 towns, it now gathers agents in 22 and offers the community an Innovation Center in Joaçaba, which started in 2020 (Polo INOVALE, 2022, [s.p.]).

With the help of the NIT team, pre-incubator businesses at Unoesc are located in the Innovation Center or at the Luzerna Technology Incubator (ITL) and have shown excellent results. This is true for Odeme Dental Research and Salus Dermatoglifia, the former operating in the field of medical and dental research equipment, and the latter with digital printing for biological individuality markers (Unoesc 2020b, [s.p.]). The Agency for Innovation Management and Institutional Relations (AGIR) at the Unoesc, which today is responsible for the university NIT operations, is also one of the habitats for innovation of the INOVALE Center.

The AGIR was established in 2017 as an entity associated to the Academic Administration with the purpose of “[...] promoting the institutional policy of innovation at Unoesc through teaching, research and outreach and the implementation of partnerships with businesses, institutions and

governments [...]”, as well as raising funds to carry out projects and programs at the university itself or with partner institutions focused on institutional and regional development (Unoesc 2017, [s.p.]).

The responsibilities of the AGIR, defined by Resolution no. 4/CONS. ADM. /FUNOESC/2017, which also implemented the agency, can be seen in Table 2.

**Table 2.** AGIR competencies (2017)

- a) To raise external funds and other resources to enable research, innovation and outreach projects within the AGIR and other Unoesc organs.
- b) To develop and implement the institutional policy of innovation at Unoesc, including the establishment and management of the Unoesc Service Center, by means of analyzing feasibility.
- c) To promote technology transfer and offer technology services to businesses and other public and private organizations.
- d) To implement innovation habitats, such as the incubators or pre-incubators of innovative enterprises at the campuses, as well as encourage the establishment of innovation centers and parks.
- e) To elaborate activities that provide guidance on intellectual property, technology transfer, and research in collaboration with the production sector, among others, with the aim of building an institutional culture of innovation and entrepreneurship in the academic environment.
- f) To connect with Unoesc stakeholders with the aim of strengthening institutional relations and/or establishing partnerships that lead to the completion of the projects required by the institution.
- g) To promote national and international cooperation for the implementation of innovation and technological development created by Unoesc.

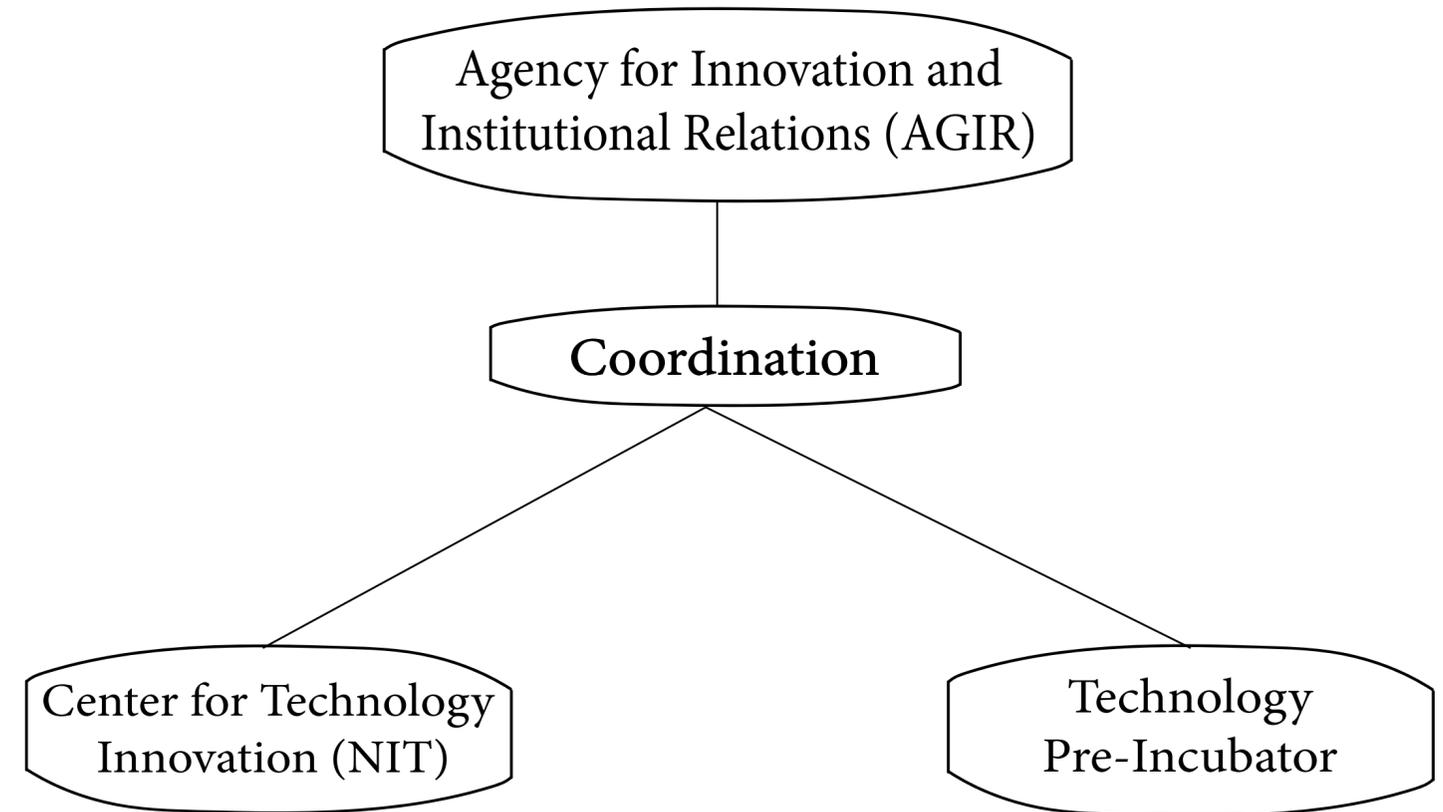
- h) To plan and manage the AGIR organizational structure by defining goals and indices that will qualify Unoesc, as well as guarantee the Agency's own economic-financial sustainability.
- i) To follow the development of institutional projects and contracts that deal with innovation and technical/technological services or that may result in intellectual creation.

Source: by the authors (2022) with partial copy of art. 2 of Resolution no. 04/CONS.ADM/FUNOESC/2017 (Unoesc 2007, [s.p.]).

With the establishment of the AGIR, Professor Jéssica Romeiro Mota, who works in the field of Law, was appointed as Coordinator, a position she still holds today. In the same format as the NIT-Oeste, the Coordinator is aided by a team made up of an administrative assistant and a group of teachers from different programs. These are referred to according to demand (Lazzarotti 2022, [s.p.]).

Besides its role as an NIT, the AGIR also manages the Unoesc Technology Pre-Incubator where entrepreneurs can count on commercial, managerial, financial, technological and legal support to make their ideas a reality (Lazzarotti 2022, [s.p.]). In 2020, 15 projects were pre-incubated in this innovation habitat: 2 in Chapecó, 10 in Joaçaba, and 3 in São Miguel do Oeste. In the scope of activities in which the Pre-Incubator is involved, a solid partnership between the AGIR and the Luzerna Technology Incubator (ITL) was established where an expressive number of pre-incubated projects is being developed by the former and then incubated by the latter (Funoesc 2021, 57).

**Figure 1.** AGIR-Unoesc internal organizational chart (2022)



Source: by the authors (2022) based on Lazzarotti (2022, [s.p.]).

In 2020, the AGIR underwent two changes: first, in its position within the university organizational chart, since it no longer was linked to the Academic Administration; and second, in relation to its responsibilities, which were updated from those defined in 2017.

Under Resolution no. 11/2020, elaborated by the Unoesc Administrative Council, the AGIR became an operational agency associated to the Coordinating Body of Research, Graduate Programs, Outreach and

Innovation, an organ subordinated to the Academic Department. The norm also establishes the preferential action of the AGIR at the Joaçaba campus. Due to the multicampus nature of Unoesc, this arrangement will encourage the other campuses to develop their own NITs, while the Agency will remain a reference and support center as a well-established and robustly structured entity in its partnership with the INOVALE Center. Besides Joaçaba, the campuses in Chapecó, Videira, Xanxerê and São Miguel do Oeste also present the same structure, whether it has already been implemented or is in the process of being implemented (Funoesc 2020, [s.p.]; Lazzarotti 2022, [s.p.]).

The new responsibilities of the AGIR are defined by Decree no. 90/2020, which are broader than those in the previous norm (Resolution no. 04/2017) since they cover activities associated to managing the areas of research, graduate programs, outreach and innovation. They also indicate a move on the part of the university to update the guidelines regarding innovation, and the elaboration of a new Policy is anticipated (Unoesc 2020a, [s.p.]). Table 3 reproduces an adapted version of the competencies described in Art. 2 of Decree no. 90/2020.

**Table 3.** AGIR competencies (2020)

- a) To coordinate and execute policies and guidelines for the development of research, graduate programs, outreach and innovation at the Joaçaba campus.
- b) To plan, execute and evaluate activities related to its responsibilities and to follow and evaluate programs, projects and activities related to research, graduate programs, outreach and innovation at the campus.
- c) To encourage the production, scientific publication and innovation at Unoesc in Joaçaba, Campos Novos and Capinzal; and to coordinate programs of scientific initiation research at the Joaçaba campus.
- d) To raise external funds as well as other forms of resources for research, innovation and outreach projects under the scope of the AGIR and for the demands brought forth by other Unoesc organs.
- e) To participate in the elaboration and support the implementation of the Unoesc institutional innovation policy in charge of the General Coordination of Research, Graduate Programs, Outreach and Innovation.
- f) To give support to the establishment of the program according to the General Law of Data Protection in tandem with the Regulatory Sector and the Unoesc.
- g) To advance forms of encouraging technology transfer and the offer of technology services to businesses and other public and private organizations.
- h) To implement and give support to the consolidation of innovation habitats at the Joaçaba campus, as well as promote the establishment of technology parks and centers in partnership with the private and public sectors.
- i) To develop activities that give instruction concerning intellectual property, technology transfer, and research in collaboration with the production sector, among others, with the aim of creating an institutional culture of innovation and entrepreneurship in the academic environment.

- j) To connect with Unoesc stakeholders with the aim of strengthening institutional relations and/or establishing partnerships that lead to the completion of the projects required by the Joaçaba campus.
- k) To plan and manage the organizational structure at the AGIR by defining goals and indexes that will qualify the Joaçaba campus, as well as guarantee the Agency's own economic-financial sustainability.
- l) To follow the development of institutional projects and contracts at the Joaçaba campus that deal with innovation and technical/technology services or that may result in intellectual creation.

Source: by the authors (2022) with the partial copy of Art. 2. of Decree no. 60/2020 (UNOESC, 2020a, [s.p.]).

Throughout the development and consolidation of the Unoesc NIT – and of the AGIR as a unit – the support of Fapesc was essential. Besides the resources from the first public notice that gave incentives to the NITs in 2007, Unoesc was a part of the Project for the Establishment and Development of an Agreement of Technology Innovation Centers in Santa Catarina (PRONIT), implemented between 2009 and 2013, which led to funding that allowed the development of the Center, but mainly to training and opportunities for improvement that induce expressive advantages in terms of management. More recently, Unoesc participated in Public Notice no. 14/2019 in which the proposal, “Support for the Implementation and Training of Centers for Technology Innovation – Unoesc” was accepted. The AGIR is a part of the actions within this notice to establish the Santa Catarina NIT Network – the NITSC Network (Lazzarotti 2022, [s.p.]).

It is important to say that, even if indirectly, Fapesc has an active role in the process of establishing and maintaining the INOVALE Center which assists the AGIR since it is a part of the same ecosystem of innovation (Lazzarotti 2022, [s.p.]).

After 15 years, the Unoesc NIT is currently witnessing improvements in its work processes and the expansion of interinstitutional relations. With the advantages of the favorable context it finds itself in – the region of the INOVALE Center – the NIT, through the AGIR, is playing a crucial role in promoting connections among the university, the production sector, the government and society. In this sense, the prospect is to increasingly work within a network, establishing partnerships with other agents to qualify any activity carried out.

## Main legislation in effect

Resolution no. 213/CONSUN/2009 – Defines the Policies and Guidelines for managing Intellectual Property within Unoesc.

Resolution no. 203/CONSUN/2011 – Regulates the Policy for Research and Innovation at Unoesc.

Resolution no. 11/CONS.ADM/FUNOESC/2020 – Establishes the Agency for the Management of Innovation and Institutional Relations of Unoesc Joaçaba.

Decree no. 90/UNOESC-R/2020 – Defines the responsibilities of the AGIR Coordinate Body in Joaçaba.

## Contact

Address: Rua Getúlio Vargas, 2125, Bloco 2, sala 213, Campus I, Joaçaba, SC.

E-mail: [nit.jba@unoesc.edu.br](mailto:nit.jba@unoesc.edu.br)

Site: <https://www.unoesc.edu.br/pesquisa/nit>

Instagram: @agir.unoesc | <https://www.instagram.com/agir.unoesc/>

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**03.**

**AGENCY FOR INNOVATION AND  
TECHNOLOGY TRANSFER (AGITTE)  
OF THE UNIVERSITY OF THE  
JOINVILLE REGION (UNIVILLE)**

The University of the Joinville Region (Univille) was one of the first higher education institutions to operate in the northern region of Santa Catarina. It is maintained by the Educational Foundation of the Joinville Region (FURJ), a non-profit private-law institution that also manages the Technology Innovation Park of Joinville and Region (Inovaparq).

The history of Univille is closely connected to that of its managing institution. FURJ was founded on March 15, 1965, with the School of Economic Sciences and, from 1969 onwards, it was incorporated to the Joinville Educational Foundation (FUNDAJE), which was established in 1967. The programs offered in the early years were a part of the School of Economic Sciences mentioned above, the School of Philosophy, Sciences and Letters, and the Higher Institute of Sports Education (Univille 2015, [s.p.]).

In 1971, FUNDAJE became the University Foundation of Northern Santa Catarina (FUNC), and, in the same year, two new schools were created: Business and Accounting. The schools maintained by FUNC were transferred to the Bom Retiro district of Joinville, in 1975, where the university campus began to operate (Univille 2019a, 12).

Also in 1975, the name Educational Foundation of the Joinville Region was created, within the FUNC sphere and under Municipal Law no. 1423/1975. By law, FURJ could now count on an organizational structure

made up of eight Educational Centers with many different fields of expertise (Univille 2015, [s.p.]).

At the end of the 1980s, the motion to sanction FURJ as a university gained momentum. The demand was coordinated in alignment with the project *Becoming a University*, and, after developing the proposal, a Consultation Letter was formally registered at the Federal Council of Education in 1990 to transform FURJ into Univille. After the Letter was accepted, the follow-up process began, and a number of improvements were included to meet the demands of the Federal Council and, subsequently, the State Council of Education (Univille 2015, [s.p.]).

Thus, the 1990s were defined by the expansion in the offer of programs, the building of new classrooms and laboratories, training the faculty, the establishment of the São Bento do Sul campus and the inauguration of Univille headquarters, among other actions (Univille 2019a, 13). The FURJ Colégio de Aplicação<sup>1</sup> – currently Univille School – which started its activities in the 1970s, continued in full operation (Univille 2015, [s.p.]).

The licensing process for Univille took place in 1996 after the university articles of incorporation had been approved a year earlier by the State Council of Education. FURJ still kept its role as a maintenance entity.

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<sup>1</sup> These schools were created with the New Schools movement at the turn of the 19th to 20th centuries in Europe. In the US, John Dewey was a proponent of educational reform with *The New School for Social Research* in 1919.

From March onwards, the institution reinforced its commitment to quality learning, the production of knowledge and actions with and for the community (Univille 2019a, 13).

The 2000s brought along new opportunities for growth at Univille. Among the main accomplishments during this period are the inaugurations of the São Francisco do Sul and Center-Joinville units, in 2004 and 2005, respectively; the establishment of the Univille School at the São Bento do Sul campus (2006) and at the São Francisco do Sul unit (2018); the beginning of the first doctorate program at the university – the Graduate Program in Health and the Environment – in 2014; and the authorization to offer distance learning in 2018 (Univille 2019a, 13-14; Univille 2015, [s.p.]).

Currently, Univille offers more than 70 undergraduate programs – approximately 50 in person and 20 remotely –, six master's and two doctorates; besides a vast list of specialization programs. There are over 7 thousand students enrolled at different levels – from the elementary to the graduate level (Univille 2021, 11). There are four outreach programs and 23 institutional projects (Univille 2022b, [s.p.]); and over 40 research groups certified by the National Council for Scientific and Technological Development (CNPq) (Univille 2022a, [s.p.]).

Since 2009, Univille has a Technology Innovation Park, the Inovaparq, which operates not only within the innovation ecosystem, but also throughout the region. The Inovaparq however is not the only, and

certainly not the oldest, innovation habitat at the university. The institution was a pioneer in implementing the Center for Technology Innovation (NIT) in 2006, only two years after the enactment of the Innovation Law. The following section will describe the path taken by this Center and present its perspectives.

## **Agitte: Getting to know the Univille NIT**

The Univille NIT, a pioneer in the state of Santa Catarina, was created in 2006 under Resolution no. 05/2006 elaborated by the Council for Teaching, Research and Outreach (CEPE) with the name Center for Innovation and Intellectual Property (NIPI). Created to meet the stipulations of the Innovation Law, the department began with “[...] the goal of aiding in encouraging a culture of innovation and entrepreneurship between students and teachers at the University, by guiding and offering technical and legal support to intellectual property and technology transfer to the production sector (Univille 2007, [s.p.]).

As part of the Research and Graduate Program Department (PRPPG), and due to Resolution no. 03/2007, which regulates the aims, responsibilities and the structure of the NIPI, the designated coordinator for the Center was the Head of the university Research Area. The team is formed by faculty and staff at the institution who have the expertise

to work in the different NIPI fields, besides students and interns who are recent doctorate graduates in the fields of law, entrepreneurship, innovation and technology. Initially, the NIPI organization also included an Advisory Center for Innovation and Intellectual Property formed by professionals that were either Univille personnel, or external, acting voluntarily in assisting the NIPI (Univille 2007, [s.p.]).

The NIPI was a forerunner at Univille in the debates on innovation and intellectual property. It comes as no surprise that many of the responsibilities of the department were dedicated to creating a favorable culture and raising awareness about these topics, as seen in Table 1.

With the establishment of the NIPI, Univille took on a new role: “[...] educating people to contribute to society, including in innovation, whether that be social or technological; raising their awareness on the importance of creating and venturing into business [...]”, thus developing an environment that is conducive to transforming knowledge into goods and services as a way to ultimately promote economic development and social well-being (Univille 2019c, 5).

**Table 1.** NIPI competencies (2007)

- a) To encourage and promote the value of the knowledge created at the university.
- b) To offer guiding technical support to innovative and entrepreneurial activities that are the result of initiatives taken on by faculty and students at Univille.
- c) To promote lectures, seminars and workshops on innovation and entrepreneurship.
- d) To offer guiding technical and legal support on intellectual property, copyright laws and patents.
- e) To promote lectures, seminars and short-term courses on intellectual property.
- f) To create and update a database on productive groups and agreements in the Joinville, São Bento do Sul and São Francisco do Sul regions.
- g) To identify demands and needs for innovation of processes and products in the production sector and refer them to the projects office.
- h) To aid in elaborating the application form for protection of intellectual creations at the institute with the agencies in charge of registration, patenting and certification of intellectual property in Brazil and abroad, and to follow the progress of the process.
- i) To follow the relations created with public and private institutions from the preliminary negotiations to the fulfillment of agreements and contracts with the aim of ensuring legal certainty.
- j) To look after the interests of the institution.

Source: by the authors (2022) with a copy of art. 3 of Resolution no. 03/2007 (Univille 2007, [s.p.]).

Besides developing a favorable culture for innovation and intellectual property at the university, the NIPI is also in charge of managing processes in which there is a request for protection of different

categories of intellectual property and drawing up and following agreements and contracts signed between Univille and other ISTs, the production sector and government agencies. In this respect, there has been a large number of agreements for research and development, the provision of consultancy and assistance, and the offer of courses and lectures (Univille 2019c, 5).

From the very beginning of its activities, the NIPI has played an important role in the innovation environment in northern Santa Catarina. It not only developed, but was at the forefront of four editions of the general coordination of the Joinville Region Innovation Forum – a biennial event aiming at integrating government, universities and businesses to encourage partnerships and actions in innovation. The second edition of the event, which took place in 2009, for example, was held at Univille and was the site of the 1<sup>st</sup> Univille-Udesc-UFSC Innovation Week and the 2<sup>nd</sup> Forum of Innovation and Technology Transfer Managers (FORTEC) in the southern region (Univille 2019c, 5; UFSC 2009, [s.p.]).

The NIPI represented Univille with the proposal and formulation of the Project for the Establishment and Development of an Agreement of Technology Innovation Centers in Santa Catarina (PRONIT), a program that was financed by the Funding Authority for Studies and Projects (Finep) and co-funded by Fapesc (Univille 2019c, 5). At the time, the team took part in training programs in the fields of innovation, intellectual

property, technology transfer and value, and, especially, in NIT strategic and managerial planning, hence improving work processes with what was learned.

In 2009, the establishment of Inovaparq brought new life to the innovation environment at Univille and gave activities at the NIPI a boost. Those operating at Inovaparq, such as the incubators of the recently inaugurated Technology Based Business Incubator (IBT), and some regional businesses, had questions they brought to the NIPI, which was an important component of the new innovation habitat. The NIPI was located at the Inovaparq at the beginning of the 2010s and transferred, in 2016, to the Joinville Campus as an annex of the Coordination for Research and Outreach (Riani 2022, [s.p.]).

At the time, the team consisted of Professor Andréa Tamanini, the coordinator; Patrícia Areas as legal assistant; and Josiane Riani as general assistant. In 2016, Andréa and Patrícia went on their post graduate sabbaticals abroad and the team then received a legal professional who could dedicate time exclusively to the NIPI (Riani 2022, [s.p.]).

In 2016, the NIPI went through its first great transformation: it became the Agency for Projects and Technology Transfer. The Agency surfaced within the Univille organizational structure by means of Administration Council Resolution no. 52/16 as a result of the fusion

of two departments: the NIPI and the Office for Project Development (EDP) (Univille 2016, [s.p.]). Until that time, the EDP gave support to institutional project management and to prospecting funds, according to what was defined by Resolutions no. 10/2013 and no. 11/2013, introduced by the Council for Teaching, Research and Outreach (CEPE) (Univille 2013, [s.p.]).

The aim of integrating these departments was to direct the entry of projects to the Agency for subsequent distribution among the university administrative Departments according to their specific expertise. The new department not only absorbed but also expanded the operations usually held by an NIT. The expansion led to an increase in numbers at the team with the addition of the staff appointed to the former EDP to the Agency (Riani 2022, [s.p.]).

Two years later, reaffirming the Univille commitment to boosting innovation, the Agency for Projects and Technology Transfer took on the name Agency for Innovation and Technology Transfer (Agitte), a change that was institutionally incorporated with University Council Resolution no. 34/2018. The department has remained associated to the PRPPG to this day.

The creation of the Agitte was formalized with Resolution no. 05/2019 and its responsibilities – seen in Table 2 – were established by Resolution no. 06/2019, both at the University Council.

**Table 2.** Agitte competencies

- a) To elaborate reports to back institutional decision-making regarding protecting intellectual creations developed within Univille.
- b) To promote the protection of intellectual creations at agencies in charge of registration, patents and certificates concerning intellectual property in Brazil and abroad.
- c) To evaluate and classify the results of activities carried out by Research and Development Projects in relation to their potential to innovate.
- d) To mediate decisions as to the convenience of disclosing an invention subject to protection as intellectual property.
- e) To follow and evaluate, as to their maintenance, processes of protection of intellectual property.
- f) To manage the processes regarding licensing, as well as transfer of technology and of knowledge.
- g). To follow all relations with public, community, non-profit and private institutions in regard to intellectual property, in accordance with predetermined legal instruments.
- h) To evaluate the requests of independent inventors/creators in cases where there is the possibility of approval of an invention.
- i) To disseminate a culture of innovation, entrepreneurship, intellectual property, and the transfer of technology and of knowledge.
- j) To investigate sources that invest in projects related to teaching, research, outreach, development and innovation, the transfer of technology and of knowledge, and to inform the Univille and Inovaparq community.
- k) To promote partnerships between the FURJ and external agencies for cooperation in different fields of research, teaching and outreach, the transfer of technology and of knowledge.
- l) To give coordinators support in the management, monitoring, execution and accountability of their projects.

Source: by the authors (2022) with a copy of art. 3, Resolution no. 06/2019 (Univille 2019b, [s.p.]).

The role of the Agitte, as responsible for conducting issues related to innovation and intellectual property at Univille, occurred simultaneously with the approval of the Innovation and Intellectual Property Policy at FURJ. The Foundation, as the maintainer of Univille and the Inovaparque, created a broad instrument based on three macroprocesses: the incentive to entrepreneurship and innovation; the management of intellectual property and transfer of technology and of knowledge; and the dissemination of actions related to innovation and intellectual property (Univille 2019c, 7).

The Agitte is directly responsible – in cooperation with the Inovaparque – for the implementation of the directives determined by the Policy. It is no coincidence that, after approval by the University Council, the Agency team formed a committee to propose the regulation of the instrument. The minutes of the Resolution and details of the Policy, developed in 2019 and 2020, whose procedures stalled during the pandemic, were sanctioned during the second semester of 2022 according to the Institutional Strategic Plan (PEI) (Univille 2019c, 4; Riani 2022, [s.p.]).

Currently, the Agitte operates on four main fronts: a) Innovation, Intellectual Property and Technology Transfer; b) Exploring Resources; c) Projects and Accountability; and d) Legal Assistance (Agitte 2020a, [s.p.]).

In the field of Innovation, Intellectual Property and Technology Transfer, the Agitte is in charge of identifying and exploring projects with the potential for innovation or technology transfer, whether internally or involving other science and technology institutions. In this case, it also takes action in elaborating and officializing partnership agreements. As for protecting intellectual property, the Agitte processes the requests sent by the academic community through what is called Notification of Potential, a procedure involving a preliminary analysis of the feasibility of the request, and hiring a company to carry out a patent search (Agitte 2020a, [s.p.]; Riani 2022, [s.p.]).

Following the process as it goes to the appropriate agency, as well as managing approved requests, is done entirely by the Agency. Besides the administrative procedures – still as part of the domain regarding Innovation, Intellectual Property and Technology Transfer – the Agitte holds workshops and lectures offered to both the internal and external public. A recurring activity is offering training to give general advice to undergraduate and graduate program students, according to teacher requests (Agitte 2020a, [s.p.]; Riani 2022, [s.p.]).

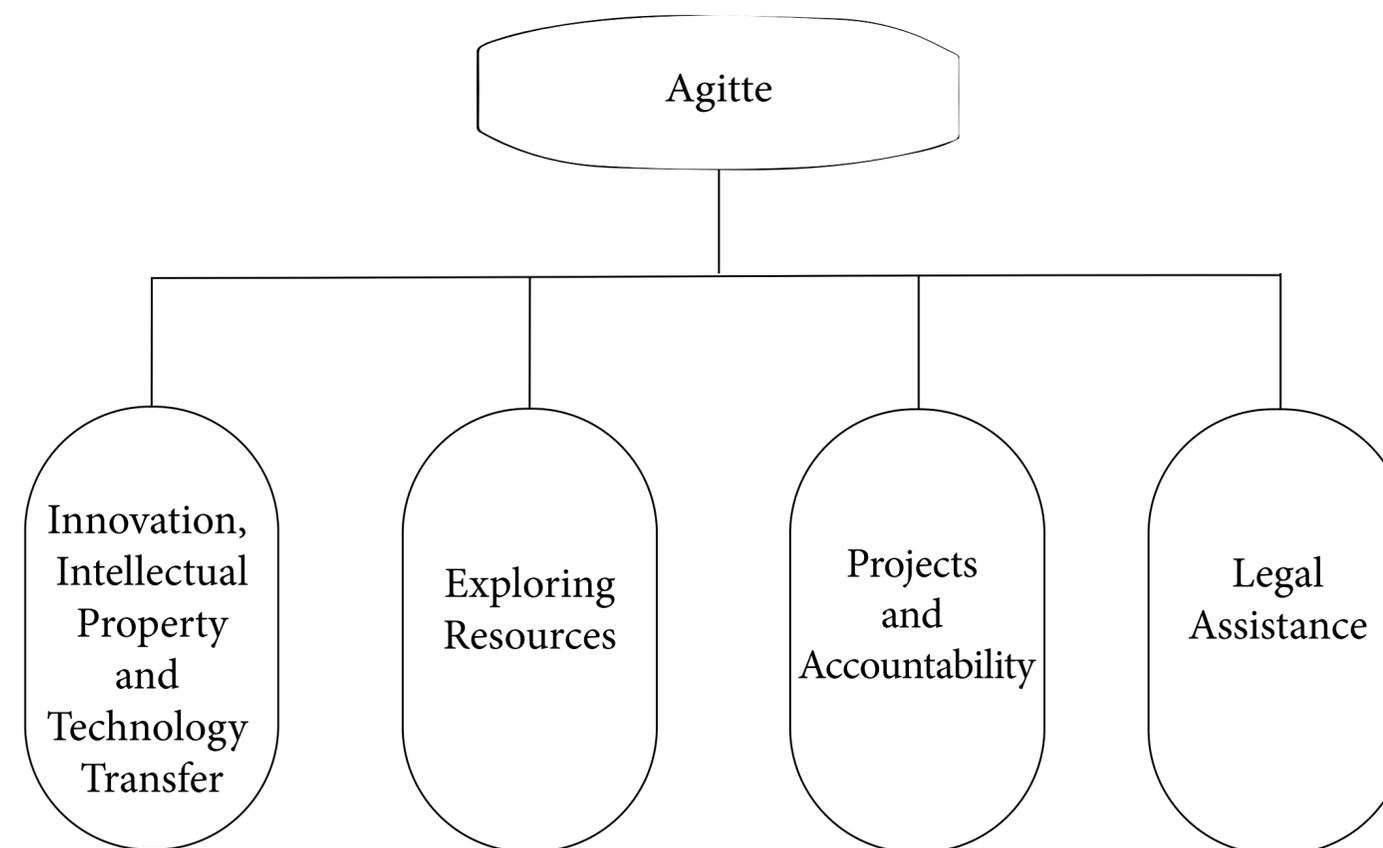
In the field of Exploring Resources, the Agitte analyzes and announces national and international public notices directed to Research, Development and Innovation (R, D & I); supports researchers in developing projects and participating in events or awards; and

mediates communication between researchers and development agencies down to a formalization of contracts and agreements. These activities are directly related to Projects and Accountability, which gives technical support to those proposing projects concerning the use of resources and accountability (Agitte 2020a, [s.p.]).

The last front on which the Agitte operates, Legal Assistance, is implicated in all the others when there are legal and judicial aspects involved. Among the responsibilities incurred are the elaboration and analysis of instruments regarding intellectual property and the transfer of technology and of knowledge; monitoring intellectual property belonging to FURJ/Univille; the elaboration of contracts for services provisions in projects approved with external resources; and giving assistance to those who ask for clarification of doubts (Agitte 2020a, [s.p.]; Riani 2022, [s.p.]).

The Agitte organizational chart, with the fields mentioned above, is represented in Figure 1 below.

**Figure 1.** Agitte internal organizational chart



Source: by the authors (2022) based on Agitte (2020a, [s.p.]).

A team made up of five members is in charge of these activities and work at the Joinville campus: the Coordinator, Professor Josiane Riani, three analysts, and one legal assistant. Because of the multicampus characteristic of Univille, Professor Andréa Tamanini, based in São Bento do Sul, is in charge of communication between the Agitte and this campus; while the São Francisco do Sul and Center-Joinville units

are assisted by the team at the Joinville campus whenever necessary (Riani 2022, [s.p.]).

In the recent history of the Agitte, Fapesc has made a decisive contribution in bolstering actions inside and externally to the university. The Agitte participated in Public Notice no. 24/2019 with a project called Center for Technology Innovation – NIT: innovation and entrepreneurship at Univille. With the funds received, investments were made especially in organizing a technology portfolio for Univille and in hiring a specialized service to help in the process of requesting the protection of intellectual property (Riani 2022, [s.p.]).

Participation in Public Notice no. 24 allowed for the expansion of the team by hiring interns, and in the development – still underway – of the Santa Catarina NIT Network, or NITSC Network. Univille, represented by Professors Andréa Tamanini and Patrícia Areas, members of the Agitte, was part of the Administration for Implementing the NITSC Network between 2019 and 2020 (Riani 2022, [s.p.]).

In addition, the funding given by Fapesc for research, innovation and entrepreneurship projects – including here the installation of new spaces and laboratory improvement – indirectly emphasizes the importance of the role the Agitte plays with growing demands on the part of faculty, students and researchers (Riani 2022, [s.p.]).

However, Fapesc is not the only institutional partner the Agitte has garnered. The Agency communicates with associations that represent

businesses and with other universities in the state, and is part of municipal committees such as the Joinville Municipal Council for Science, Technology and Innovation (COMCITI). At COMCITI, it is one of the supporters of ExpolInnovation, an annual event that animates the innovation environment in Joinville. At the Inovaparq, on the other hand, it is part of a number of work groups, among which the Entrepreneurship Program (Posso), an outreach program at Univille aimed at shaping a culture that encourages sustainable enterprises (Riani 2022, [s.p.]).

These projects are aligned with the Agitte mission and bring the Agency closer to its planned goals (see Table 3).

**Table 3.** Agitte Mission, vision and goals

Mission: to coordinate institutional action in science, technology and innovation focusing on management and transfer of technology and of knowledge and striving for social, economic, cultural and environmental development.

Vision: To be recognized as a reference in innovation, transfer of technology and of knowledge, that has made a contribution to institutional and regional development.

Goals: To conduct the FURJ Policy of Innovation and Intellectual Property; to disseminate a culture of innovation, intellectual property and entrepreneurship both with the internal and external community; to promote partnerships between FURJ and other institutions to develop projects; to offer support to Univille professionals in the development, fundraising, execution and accountability of projects.

Source: by the authors (2022) with a copy from Agitte (2020b, [s.p.]).

The future of Agitte operations means some essential measures in planning for the years ahead must be considered. The first is to regulate the introduction of projects to the Agency through public notices to identify the potential for innovation of research projects and facilitate the distribution of resources allocated to registering intellectual property. Integrated to this, with the organization of this influx, the aim is to produce indicators that can aid in decision-making (Riani 2022, [s.p.]).

In the axis that includes Innovation, Intellectual Property and Technology Transfer, the goal is to focus attention on the third element. The idea is to finalize the first technology and knowledge transfers and to formalize initiatives already processed but that were conducted between researchers and external agents without the necessary institutional procedure (Riani 2022, [s.p.]).

Furthermore, training the staff and maintaining a relationship with other innovation habitats – both in the institution itself and in the regional ecosystem – are activities that will be continued and expanded. The Univille NIT, now known as the Agitte, with 10 years of history, has become a respected agency with challenges ahead to improve work procedures and discover new opportunities for action.

## Main legislation in effect

Resolution no. 05/2019/CONSU – Establishing the Agitte.

Resolution no. 06/2019/CONSU – Defining aims and responsibilities for the Agitte.

Resolution no. 25/2019/CONSU – Defining the Innovation and Intellectual Property Policy at FURJ.

## Contact

Address: Sala B-118, Campus Joinville, Bom Retiro, Joinville, SC.

E-mail: [agitte@univille.br](mailto:agitte@univille.br)

Site: <https://www.univille.edu.br/pt-br/institucional/proreitorias/prppg/setores/agitte/index/884255>

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Univille – Universidade da Região de Joinville. 2019c. *Resolução n. 25/19 do Conselho Universitário, 27 de junho de 2019*. Sanctions the FURJ Innovation and Intellectual e de Property Policy. Joinville.

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**04.**

**AGENCY FOR INTERNATIONALIZATION  
AND TECHNOLOGY INNOVATION  
(AGIITEC) OF THE FEDERAL  
UNIVERSITY OF THE SOUTHERN  
FRONTIER (UFSS)**

The Federal University of the Southern Frontier (UFSS) is one of the newest institutions of public and federal higher education in the country. The official establishment of the university, through Law no. 12.029 in September 2009, is the result of a crusade by civil society and public agencies within the Pro Federal University Movement, organized in 2005, and is a reflection of the effort to promote higher education in the Brazilian hinterland.

In 2006, after the southwest of the state of Paraná, the west of Santa Catarina and the northwest of the state of Rio Grande do Sul were denied in their request to establish their own universities, these states used the opportunity for discussion at the Mercosul Great Frontier Mesoregion Forum (MESOMERCOSUL), to propose the creation of a unified project that would encompass the three regions. A work force was created to coordinate the social movements, organizations and public authorities in the affected regions, and to develop a proposal to establish a university. In 2007, the Ministry of Education indicated the prospect of accepting the Movement's demand and took part in the process by creating the Committee for an Institutional Pedagogical Project (UFFS 2015a, [s.p.]).

The next steps involved defining the areas of the university's influence, the locations for headquarters and campuses, programs that would be implemented, the facilities and estimated expenses. At this point, the Federal University of Santa Catarina (UFSC), as the

head institution, was also directly involved in elaborating a project for the new university (Trevisol 2016, 345).

In view of the institution's goal – to contribute to the development of the Mercosul Great Frontier Mesoregion – the towns of Laranjeiras do Sul and Realeza, in Paraná; Cerro Largo and Erechim, in Rio Grande do Sul; and Chapecó, in Santa Catarina, were chosen as campuses locations. The latter also became university headquarters. Later on, a new UFFS campus was built in the town of Passo Fundo, Rio Grande do Sul. The choice of programs took into consideration local characteristics, mainly the predominance of family farms and small businesses (UFFS 2015a, [s.p.]).

After the official establishment of UFFS in September 2009, practical measures were taken to mark the beginning of operations, such as selection processes to hire teachers and staff, the acquisition of furniture and books, and the organization of the first selective process for student enrollment. March 29, 2010 is considered the starting date for core activities at UFFS and ceremonies were held at the five original campuses (UFFS 2015a, [s.p.]).

UFFS is considered the “first federal public university to arise from a social movement” and, as such, its identity and the definition of its mission, goals, rules and policies are based on a commitment to the popular classes (Trevisol 2016, 348). It is described as a “[...] multicampus, interstate, public, democratic, popular university that

is socially committed to the social-historical, economic, political, environmental and cultural context of the region where it is located.” (UFFS 2019, 18).

Currently, the university offers more than 40 undergraduate programs to the community and has over 8 thousand students. It also has an expressive number of graduate specialization programs (*lato sensu*) that have concluded activities or that are underway; 15 master’s programs – 13 academic and two professional –; an institutional and two inter-institutional doctorate programs; as well as a Medical Residency and Multi-professional Residency in Chapecó and in Passo Fundo.

Now in its second decade, UFSS is in a better position to consolidate systems that are in effect and focus on issues that initially were not a priority, such as innovation. Hence, the Institutional Development Plan for 2019-2023 has adopted among its aims the development of scientific, technological and innovation research (Aim 4), emphasizing the importance of the university Center for Technology Innovation (NIT) and updating its observance to the Institutional Innovation Policy (UFFS 2019, 276). The next section will describe how these issues are adapted to the institution by looking back at the UFFS NIT story.

## **AGIITEC: getting to know the UFFS NIT**

The UFFS NIT has faced the challenges and opportunities of an agency that was built along with the university itself. In UFFS’ first three years, the need to organize activities related to teaching, research and outreach, both institutionally (defining norms, forming the teaching and administrative staff, idealizing programs academically, etc.) and physically (setting up the Administration, building the campuses, etc.) took attention away from creating an NIT according to legal parameters at the institution.

Thus, the first discussions about having an NIT came along with the process of developing and approving an Innovation Policy at the university in 2014 (Santos 2022, [s.p.]). Among the aims of the Policy, put in place on September 30, 2014, one was precisely to create and institutionalize the UFFS Center for Technology and Social Innovation (NITS). The responsibilities of the Center would include managing innovation under the terms of the Innovation Law (no. 10.973/2004), and coordinating activities to identify potential immaterial assets, to protect intellectual property and to transfer technology (UFFS 2014, 3).

The context in which UFFS was created – from a broad social movement to bring free higher education to the Mercosul Great Frontier Mesoregion, which until then had been disregarded in this

aspect – and the characteristics of the available programs – the Engineering fields and Technology Sciences were not predominantly featured – were reflected in the Policy rules and in the planning of the NIT itself. The Policy highlights the indivisibility between developing innovation and the commitment with social improvement, with special attention given to actions directed to micro, small and medium-sized businesses and enterprises that focus on solidarity and cooperation (UFFS 2014, 3).

Hence, the UFFS NIT emerged with the aim of concentrating both on technology innovation and social innovation:

[...] NIT operations will take place in compliance with the demands for research of a technological and social nature associated to UFFS and/or coming from organizations and a society that are in search for innovative solutions for practical daily problems, whether these be technological or social. (UFFS 2014, 9).

According to the Policy's projection, the Center, as an executive body, should be implemented by a specific decree, with the appointment of an employee with skills in innovation as director. The organizational structure would include a Management Council made up of representatives from the academic bodies and management at UFFS, and by a NITS head, who would be responsible for appointing the Center's strategic rules (UFFS 2014, 9-10).

In compliance with Policy provisions, Decree no. 0693/GR/UFFS/2015, of July 2, 2015, created the UFFS NITS. A brief set of rules was established, without the intention of regulating the agency, and linked the NITS to the Research and Graduate Studies Department (PROPEPG), which appointed Professor Carlos Roberto França as the coordinator. Within the PROPEPG, the NITS was subordinated to the Research Board which in practical terms hindered the Center's development due to the lack of proximity with more key units that held greater power of decision in the university chain of command (UFFS 2015c, [s.p.]; Santos 2022, [s.p.]).

Besides the usual obstacles found in establishing any NIT, the UFFS NITS was required from the very beginning to adjust its activities to the multicampus and multistate nature of the university. The challenge was, on the one hand, to consider strategies to guarantee its representation in the campuses outside Chapecó and, on the other, to position itself adequately in terms of the laws in the three states: Santa Catarina, Paraná and Rio Grande do Sul (Santos 2022, [s.p.]). To comply with the first case, the decentralization of the NITS was carried out by creating the Consulting Committee for Innovation and Entrepreneurship. Hence, faculty and administrative representatives, along with the NIT team, were present at the six university campuses. The Committee emerged as a consulting and coordinating panel for the demands of the academic community on the campuses.

The first NITS action, which counted with the presence of Committee representatives, took place on August 11 and 12, 2015, and was a training course given by a company from São Paulo on the search for patents and technology transfer with the use of the ORBIT/QUESTEL Platform. The instruction was sponsored exclusively by Public Notice no. 93/2013 MCTI/SETEC/CNPq which gave support to the development of NITs/CTIs and to which the UFFS NITS submitted its proposal and won (UFFS 2015c, [s.p.]).

At first, the NITS dedicated its time mainly to attending internal and structural demands: from writing out documents to standardizing work procedures, to informing peers and the university administration in particular as to the importance of the NITS. The demand for services from the academic community was low since research was still embryonic at the university. The first requests for patents started coming forward in 2018, as well as requests for aid in following partnership agreements with businesses and other universities (Santos 2022, [s.p.]).

After being in activity for five years, making headway and facing obstacles along the way, the NITS went through its first major overhaul. In 2020, Decree no. 414/GR/UFFS created the Agency for Internationalization and Technology Innovation (AGIITEC), directly linked to the Academic Administration. The Agency, managed by a Special Secretary – who currently is Professor Adriana Dervanoski

–, has a double role: it is an NIT and a division that gives support to international affairs at the university (see Table 1). Its position in the institutional organizational chart, closer to the higher levels of management, grants the Agency greater power of decision and ensures that operations will be dealt with in a timelier manner, a longstanding demand from the team (Santos 2022, [s.p.]).

**Table 1.** AGIITEC mission, values, principles and responsibilities

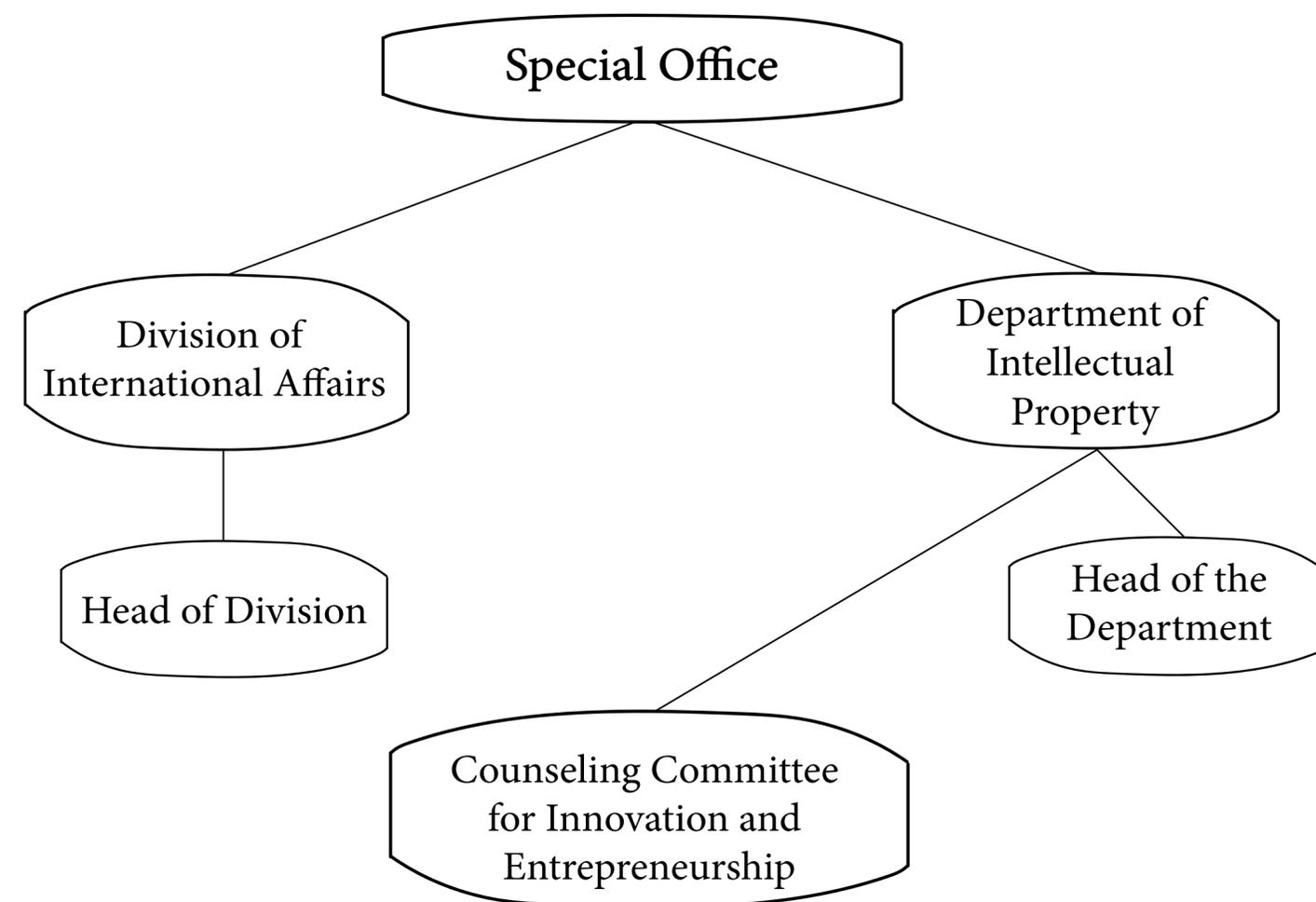
<p>Mission: to strengthen innovation and international relations with the UFFS.</p> <p>Values: projects that are guided by ethics and competence; a focus on the needs of society; transparency of actions; a commitment with the quality of services.</p> <p>Principles: ethics and transparency; sustainable development; communication; confidentiality; relevance.</p> <p>Responsibilities: to encourage technology innovation that will contribute to increase economic and commercial competitiveness in Brazil; to search for partnerships that will uphold the economic sustainability of innovation proposals and the creation of new deals; to establish and strengthen a network of endeavors with other education and research institutions in order to optimize the network's available resources; to defend the confidentiality of the information exchanged with individuals or corporations that address the Agency; to intensify the use of international agreements established by the UFFS with the aim of stimulating the development of innovative projects.</p>
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Source: by the authors (2022) based on UFFS (2022a [s.p.]).

The AGIITEC internal organizational chart includes the Department of Intellectual Property and the Division of International Affairs, as can be seen in Figure 1. Established by Decree no. 448/GR/UFFS/2020, the Department of Intellectual Property, which takes on the duties of an NIT, operates in “[...] intellectual property and technology transfer; providing services, inquiring about and raising funds [...]”, and promotes “[...] interaction between the university community, technology incubators and entrepreneurial initiatives.” (UFFS 2022b, [s.p.]). In general terms, the activities of the agency include everything found in the Innovation Law as an NIT responsibility.

Currently, the department is coordinated by Ilson dos Santos, who has a Master’s in Intellectual Property and Technology transfer for Innovation from the Graduate Program in Intellectual Property and Technology Transfer (PROFNIT), and has been a part of the UFFS NITS staff since its establishment in 2015. The department also includes a university employee and an intern (Fapesc Public Notice no. 14/2019).

**Figure 1.** AGIITEC (UFFS) organizational chart



Source: by the authors (2022) based on UFFS (2022a [s.p.]).

The Counseling Committee for Innovation and Entrepreneurship is still in operation, having been revitalized in 2022 through Decree

no. 2073/GR/UFFS/2022. The set of rules reiterates the role of the Committee in handling requests from the academic community at various institutional levels, and in partnering with external businesses and institutions (UFFS 2022e, [s.p.]).

The structure of the counseling body maintains representation of all of the university campuses and, with the end of pandemic restrictions, the team at the AGIITEC Department of Intellectual Property plans to intensify the relationship with these representatives with in-person training in their fields. The goal is to prepare the Committee members to receive researchers and give them the information they need (Santos 2022, [s.p.]). Table 2 shows the responsibilities of the Counseling Committee for Innovation and Entrepreneurship.

**Table 2.** Counseling Committee for Innovation and Entrepreneurship competencies

- a) To promote the strengthening of duly institutionalized interinstitutional partnerships that are relevant to the UFFS institutional mission.
- b) To encourage activities and initiatives to prepare the university and regional community to bolster an environment of technology innovation and respect intellectual property and entrepreneurship at UFFS.
- c) To aid in simplifying and organizing influxes to establish partnerships that involve innovation and technology transfer projects.
- d) To encourage partnerships aligned with the innovation environment and the development of businesses that promote economic or social development.
- e) To propose updates for the UFFS Innovation Policy.
- f) To deliberate on institutional interests concerning the disclosure of an Invention/Creation and the request for Intellectual Property protection or anything comparable to it.
- g) To stimulate the strengthening and implementation of the UFFS Innovation and Technology Transfer policy.
- h) To develop interinstitutional partnerships and a culture of entrepreneurship at UFFS.
- i) To approve its internal rules and any changes made.

Source: by the authors (2022) with a copy of art. 4, Decree 2073/2022 (UFFS 2022e, [s.p.]).

The challenge of setting up and keeping the NIT going has been offset by the results achieved. The UFFS is the owner/co-owner of ten requests for intellectual property that have been granted or are under analysis. Among the requests is the patent for the process of producing biodiesel using *Carya illinoensis* (pecan) residue with an antioxidant effect, which

was submitted to the National Institute of Industrial Property (INPI) as a priority for being a green patent. Other requests that involve processes for producing biofuels are being submitted to the INPI, among which the process of producing biodiesel in the presence of a natural antioxidant derived from barley residue (UFFS 2022d, [s.p.]).

Many of the technologies in the UFFS portfolio are the result of partnerships in Research, Development and Innovation (R, D & I) with other institutions and the private sector. In the last few years, technical and scientific cooperation agreements have been signed with businesses in the fields of agriculture, food and innovation management, just to mention a few, and include the State University of the Central Western Region (Unicentro), the Federal University of Santa Maria (UFSM) and the Federal University of Santa Catarina (UFSC) (UFFS 2022d, [s.p.]; Santos 2022, [s.p.]).

In 2022, the results of a R, D & I project, a partnership between UFFS researchers, Unicentro and an agricultural company, were published in the science journal *Scientific Reports* (Nature group) after the AGIITEC took measures to protect the new product with the INPI by submitting a patent request. This is a case celebrated by the Agency team since it demonstrates the reach of awareness efforts: before submitting the study for publication, the researchers took the time to address the NIT/CTI to understand aspects of intellectual property protection involved in the case analyzed (UFFS 2022c, [s.p.]; Santos 2022, [s.p.]).

Within the scope of external action and coordination, participating in collective networks and organizations is highly prized by the AGIITEC. The agency sees these arenas as powerful spaces in which to access knowledge and resources and for the exchange of experience that can help improve practices (Santos 2022, [s.p.]).

In the states in which UFFS has a campus, the AGIITEC is a part of the following networks of cooperation: the Santa Catarina Innovation Network (RECEPETi), the Santa Catarina NIT Network (NITSC Network), The Chapecó Municipal Council of Science, Technology and Innovation (CMCTI); the State Council against copyright infringement (CECOP-SC); the Rio Grande do Sul Office for Innovation, Science and Technology (SICT-RS); the Rio Grande do Sul Network of Intellectual Property (RGPI), and the Paraná Centers for Technology Innovation (NITPAR). Nationwide, it is part of the National Forum of Innovation and Technology Transfer Managers (FORTEC) (UFFS 2022b, [s.p.]).

Concomitantly, being part of the community is expressed in the promotion of events. During the pandemic, several activities were held virtually, such as the live series about Education in Intellectual Property and Technological and Social Innovation. Newsletters, printed or online, are also produced to disseminate a culture of innovation, entrepreneurship and intellectual property. There is a special effort to make this content available for consultation and the Agency's online page is constantly being updated (Santos 2022, [s.p.]).

**Figure 2.** AGIITEC visual identity



Source: AGIITEC files (2022).

The impact of the work done at the UFFS NIT, since the establishment of the AGIITEC in 2020, is the result of strategic planning on the part of management, but it is also due to the support of Fapesc Public Notice no. 14/2019 – the Support Program for the Implementation and Consolidation of Centers for Technology Innovation (NITs). The scope of the notice, besides improving interinstitutional relations with the participation in creating the NITSC Network, allowed the Agency to hire interns to help with demands and invest in training and operational improvement (Santos 2022, [s.p.]).

In 2022, the AGIITEC predicts an even greater boost in its activities with the new UFFS Innovation Policy which was then submitted for approval at the University Council. This Policy replaced the 2014 ruling and began to be discussed and developed by the NIT in

2016 after publication of Law no. 13.243/2016. With the policy, it is expected that the new possibilities introduced with the S, T & I legal milestone in Brazil will have a greater chance to be explored (Santos 2022, [s.p.]).

With the first decade of the university behind them, a new phase for consolidation begins. The challenge ahead is to keep the team qualified and updated for the technical capabilities the sector requires, to strengthen the presence of the NIT in all of the university campuses and to continue to tighten the links with the outside community, including other ISTs.

## **Main legislation in effect**

Resolution no. 9/CONSUNI/2014 – Approval of the UFFS Innovation Policy.

Decree no. 414/GR/UFFS/2020 – Establishment of the AGIITEC.

Decree no. 448/GR/UFFS/2020 – Establishment of the Department of Intellectual Property.

Decree no. 2073/GR/UFFS/2022 – Creation of the Consulting Committee for Innovation and Entrepreneurship.

## Contact

Address: Reitoria, sala 1107, Av. Fernando Machado, 108 E Centro, Chapecó, SC | Campus Chapecó, sala 5, Bloco Biblioteca, Bairro Fronteira Sul, Chapecó, SC.

E-mail: [agiitec@uffs.edu.br](mailto:agiitec@uffs.edu.br)

Site: <https://www.uffs.edu.br/institucional/reitoria/agiitec/depi/apresentacao-depi>

Instagram: [@agiitec.uffs](https://www.instagram.com/agiitec.uffs/) | <https://www.instagram.com/agiitec.uffs/>

Facebook: <https://www.facebook.com/pg/uffs.agiitec>

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**05.**

**AGENCY FOR TECHNOLOGY  
INNOVATION (AGIT) OF  
THE UNIVERSITY OF BLUMENAU  
REGION (FURB)**

The trajectory of the University of the Blumenau Region (FURB) is a symbolic and representative example when the aim of higher education institutions in developing the hinterland is considered. Established in 1964, it was the first institution to settle in the countryside of Santa Catarina after movements demanded the expansion of higher education in the state began in the 1950s.

In Blumenau, the demands were organized by the Blumenau Student Union and Town Hall Representatives until they were heard by schools and the press and made popular with the community. When the awareness of the authorities grew, especially at the town executive board, a feasibility plan began to analyze the implementation of higher education in the town, considering three suggested programs: Philosophy, Chemistry and Economy. With the influence of the business class, the last suggestion on the list was chosen, which resulted in the establishment of the School of Economic Sciences (FACEB), through Municipal Law no. 1.233, of March 5, 1964 (Schimitt, Sasse, and Costa 2017, [s.p.]).

In 1967, FACEB started to be managed by the University Foundation of Blumenau (FUB), an agency created in that same year to establish and maintain higher education institutions for study and research. Also in 1967, the School of Philosophy, Sciences and Letters of Blumenau and the School of Legal Sciences of Blumenau were established as part of

FUB. In December 1968, the Foundation changed its name to Regional University Foundation of Blumenau (FURB) (FURB 2021, [s.p.]).

The first years at FURB were challenging, right down to the building its facility. However, the community's involvement was fundamental in overcoming these challenges: building the headquarters where classes could be held – which until then were taught in elementary school buildings – was made possible only because of a raffle collected by the population (FURB 2021, [s.p.]).

During the 1970s, FURB demonstrated its importance in promoting science and technology in the Itajaí Valley. To start with, besides providing professionals with degrees in Civil and Chemical Engineering to the market, it established the Institute for Technology Research (IPT) in 1972. The IPT was transformed into the Blumenau Institute for Technology Research (IPTB) at the end of the 1990s, and achieved a preeminent position in laboratory testing, especially in chemical analyses and experimental projects with food (FURB 2021, [s.p.]).

Although it had already been developing research and outreach activities since the very beginning of its establishment, FURB was only recognized and received its credentials as a university in 1986, through Decree no. 117 of the Ministry of Education. From March of that year onwards, it continued to grow and consolidate itself as one of the major centers of production of knowledge in the nation's southern region. This only intensified with the inauguration of the graduate programs

*stricto sensu*, in which it became a pioneer in the master's in education program (1991).

Currently, and according to Municipal Complementary Law no. 743, legally, FURB is a municipal autarchy under special regulation, presenting didactic-scientific, administrative, financial and property management autonomy (Schimitt, Sasse, and Costa 2017, [s.p.]). Hence, it is a public university indirectly incorporated to the town administration of Blumenau. The mission at FURB is to "[...] promote teaching, research and outreach, as well as innovation, recognizing and integrating cultural diversity, stimulating social, economic and environmental development in a responsible way." (FURB 2022b, [s.p.]).

The institution is organized into 7 university units: Center for Science and Education; Center for Health Sciences; Center for Exact and Natural Sciences; Center for Human Sciences and Communication; Center for Legal Sciences; Center for Applied Social Sciences, and Center for Technology Sciences. There are 41 undergraduate programs, 120 graduate programs *lato sensu*, 10 master's programs and one doctorate program being offered, which amounts to 8 thousand students (FURB 2022c, [s.p.]). FURB also has a vocational secondary school, the Technical School of the Vale do Itajaí (ETEVI), since 1981.

Besides the main campus where the Academic Administration is located, the university has four more campuses, all in the town of Blumenau. With its attention focused on today's challenges, it has

invested in promoting technological development and the region's capacity for innovation, making the knowledge it produces available to businesses, organizations and the community in general by means of cooperative projects in research, licensing, technology transfer, the provision of specialized services, and much more. In this context, the competences and abilities developed by the Agency of Technology Innovation (AGIT) – the Center for Technology Innovation (NIT) at FURB – must be highlighted in the section below.

## **AGIT: getting to know the FURB NIT**

The first steps in establishing an NIT at FURB materialized with the emergence of the Innovation Law (n. 10.973/2004). With the legal projection of an NIT in view, Professor Micheline Gaia Hoffmann – who teaches the undergraduate program in Business and is linked to the Gene Institute – started negotiations to implement the system at the university. This resulted in the fulfillment of an agreement between FURB and the Gene Institute by which the university attributed the development of activities determined by the Innovation Law to this association (Wiggers and Arrabal 2022, [s.p.]).

After the Gene Institute dissociated from FURB, the promotion of innovation and management of intellectual property went on in a decentralized manner. Between 2007 and 2010, activities directed towards stimulating innovation were gathered under the Center

for Research and Outreach (Nupex) and, later on, with Nupex being incorporated to the FURB Institute of Services, Research and Innovation, this agency took on the task. As a way to bring FURB closer to the community, the FURB Institute held lectures, training courses and innovation workshops, besides representing the interests of FURB in this field and in affairs with the private sector, the third sector and public authorities (FURB 2012a, [s.p.]).

Requests for protection of intellectual property and the maintenance of titles, on the other hand, were under the responsibility of outsourced firms that were hired according to each research, innovation and/or development project. Because it involved so many different firms, this model complicated control over what was going on with assets and did not help build consistent relations between the academic community and businesses (Wiggers and Arrabal 2022, [s.p.]).

Reopening the process of establishing the NIT took place in 2012 with the approval of the FURB Innovation, Intellectual Property and Technology Transfer Policy. The legislation made the existence of the NIT official in art. 5 where it states that the executive management of activities directed to innovation, technology transfer and protection of intellectual property at the university would be performed by this agency, in the terms of art. 16 of the Innovation Law and art. 17 of Decree 5.563/2005. According to the Policy, the NIT should support and promote innovation, technology transfer and the protection of intellectual property, exercising the

minimum legal duties required (FURB 2012b, [s.p.]). The coordinator of these activities was Professor Ilisângela Mais, who taught at the Business School, and who counted on the legal aid of Professor Alejandro Knaesel Arrabal from the Law School.

Concomitantly, the Innovation Policy established the Committee for the Evaluation of Intellectual Property and Innovation (CAPII), a consulting body (FURB 2012b, [s.p.]). The CAPII was an evaluative body not only from a legal standpoint, but also strategically, since it promoted innovation and recognized the work done by researchers at FURB. According to the Policy, the CAPII's minimum attributions were to,

[...] evaluate and create a report on the relevance and opportunity of submitting projects and demands related to institutional activities and such for subsequent register as Intellectual Property in the competent agency(ies), as well as regarding technology transfer stemming from institutional projects (FURB 2012b, [s.p.]).

The first Committee meeting took place in April 2014 to decide on the feasibility of obtaining a patent for two technologies developed by the Chemical Engineering Department at the university. The group was presided by Professor Marcos Rivail da Silva and included directors of the Center and of the Department where the technology was created; a researcher with technical expertise in the field, but who was not part of the team; and representatives of the specific field of proficiency of the projects being evaluated (FURB 2014, [s.p.]).

During the last semester of 2015, Professor Vinicyus Rodolfo Wiggers of the Chemical Engineering Department became the NIT coordinator, which inaugurated a period of change at the agency. With his past experience at the State University of Campinas (Unicamp), Professor Wiggers wanted to contribute with what he had learned as an applicant at Inova, the Unicamp innovation agency, which is recognized as one of the most active and efficient agencies in the country (Wiggers and Arrabal 2022, [s.p.]).

Among the measures adopted, hiring Ana Paula Colombo was significant. A bachelor in law at the FURB, she would take on the position of Coordinator of Intellectual Property. Hiring Ms. Colombo – who later began her Professional Master's in Intellectual Property and Technology Transfer for Innovation (PROFNIT) – meant there would be an individual integrally and consistently committed to the NIT, who could deal with demands in a way that teachers and interns, usually with a reduced workload, were not able to fulfill (Wiggers and Arrabal 2022, [s.p.]).

Hiring a full-time aid with proficiency in IP allowed the internal management of the university's intangible assets, an essential step for the Agency, in organizational terms, to reduce administrative costs regarding the National Institute of Intellectual Property (INPI) and be more efficient in dealing with operational issues regarding asset maintenance. Another important factor in internalizing functions was the possibility of promoting better training strategies, increasing activities

directed to disseminating a favorable culture to intellectual property and the qualified drafting of patents (Wiggers and Arrabal 2022, [s.p.]).

With Law no. 13.243/2016 – the new legal milestone for S, T & I – the NIT team felt there was a need to update the FURB Innovation, Intellectual Property and Technology Transfer Policy. The new Policy was approved in 2018, with one of its chapters dedicated to regulating NIT operations. It is currently the most important internal legislation on this issue.

The first novelty brought on by the norm is the position of the NIT within the university organizational chart: art. 19 officializes its link to the Academic Administration, to whom it answers directly. The instrument also grants usage of the name Agency for Technology Innovation (AGIT) – which was definitely adopted – to designate the NIT (FURB 2018, [s.p.]). The responsibilities of the AGIT, from intellectual property to innovation and technology transfer, are described in article 20 of the Policy, seen in the Table below.

The AGIT was structured with three integrated units: the General Coordination; the Coordination of Intellectual Property; and Innovation Management. Professor Vinicyus Wiggers and Me. Ana Paula Colombo are in charge of each of the coordination sectors, respectively; while the position of Innovation Management has not yet been filled. Other members of the Agency are Professor Alejandro Knaesel Arrabal, as Intellectual Property Consultant; Professor Rodrigo dos Santos Cardoso, as Technology Transfer Consultant; and three interns – Erly Ian Santos

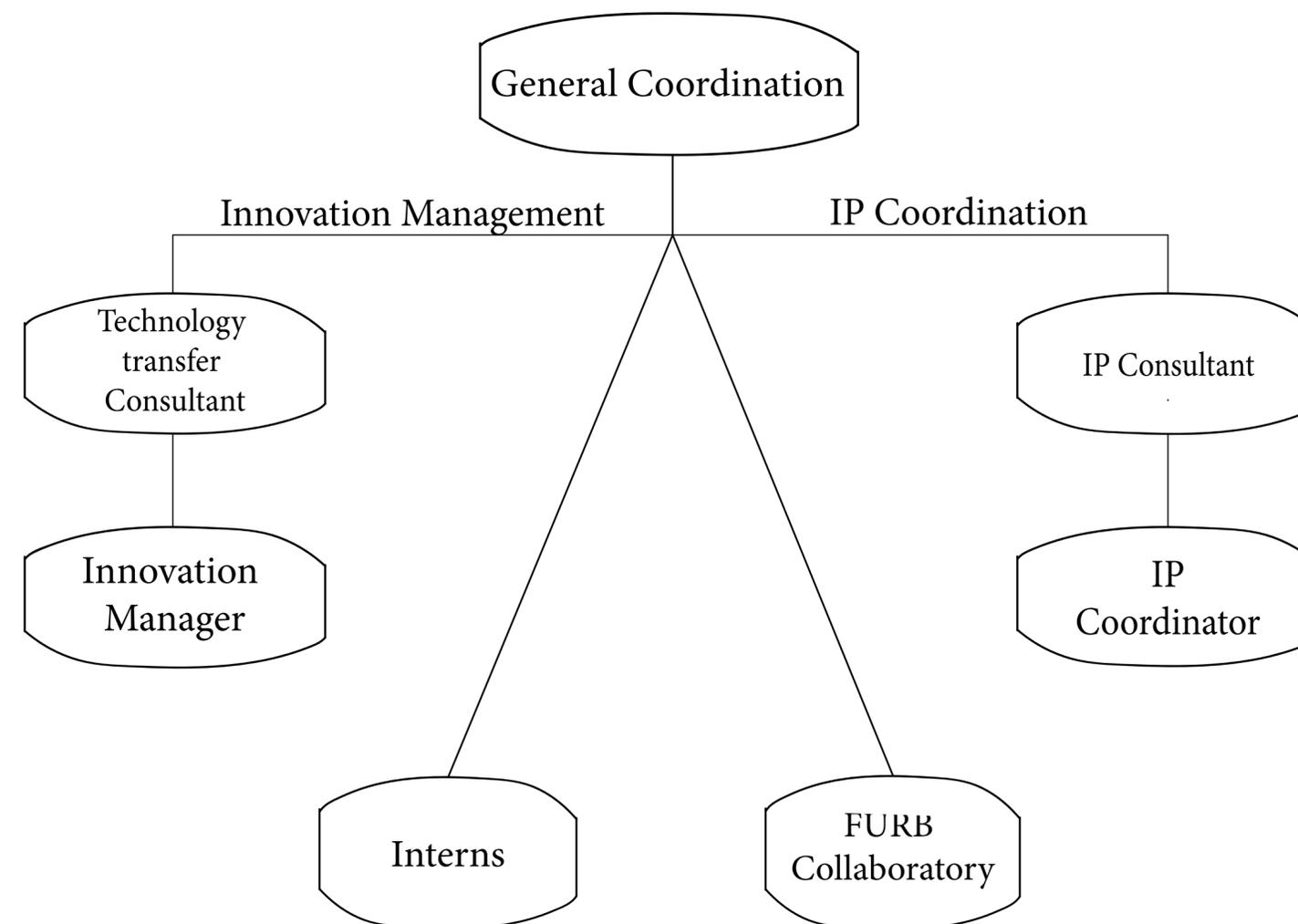
(attending the master's program) and the undergraduate students Otávio Arrabal and Tuani Gomes Porto (FURB 2018, [s.p.]; Wiggers and Arrabal 2022, [s.p.]). Figure 1 presents the AGIT internal organizational chart.

**Table 1.** AGIT competencies

- a) To promote innovation, the protection of inventions developed at the institution and technology transfer in the terms of the Policy.
- b) To evaluate activities and projects developed within the University in order to identify a possible case of protection of intellectual property and/or with economic potential for technology transfer.
- c) To evaluate the requests of independent inventors as to adopting an invention.
- d) To assess the convenience and the promotion of protecting creations developed in the institution.
- e) To assess the convenience of disclosing inventions developed at the institution that are subject to intellectual property.
- f) To follow up on the process of requests and the maintenance of the institution's intellectual property titles.
- g) To develop studies on technology prospection and competitive intelligence in the field of intellectual property in order to guide innovation cases at FURB.
- h) To develop strategic studies for Technology Transfer created at FURB.
- i) To contribute with promoting and following relations between FURB, businesses and other institutions in projects, partnerships, contracts and agreements that are directly or indirectly related to Technology Innovation.
- j) To negotiate and manage agreements of Technology Transfer arising at FURB.
- k) To manage the FURB trademark regarding measures with the NIT.

Source: by the authors (2022) based on art. 20 of the FURB Innovation, Intellectual Property and Technology Transfer Policy (2018, [s.p.]).

**Figure 1.** AGIT internal organizational chart



Source: by the authors (2022) based on Wiggers (2021, [s.p.]).

Within the AGIT organizational structure, the General Coordination defines management procedures and makes sure the university Innovation, Intellectual Property and Technology Transfer Policy is carried out. More specifically, it follows institutional policies that are of interest to AGIT operations; coordinates the fulfillment of

interinstitutional partnerships; proposes directives for the completion of projects between the university and businesses and of technology transfer; manages procedures that lead to decision-making regarding intellectual property and heads inquiries about innovation opportunities (FURB 2018, [s.p.]). Hence, it has a large managerial and representative role at the Agency, whether at higher institutional levels, or externally.

The Coordination of Intellectual Property is responsible for managing and disseminating a culture that is favorable to intellectual property at FURB. Among its responsibilities are publicization and guidance concerning issues of protection of intellectual property; the incentive and guidance regarding access to national and international patent bases; instruction, submission and follow-up of requests for patents or the register of these with the adequate agencies; the evaluation and elaboration of contracts, agreements and deals inherent to intellectual property; the development and tracking of indicators concerning intellectual property; the evaluation and appraisal of technologies with the aim of protecting and exploring them economically (FURB 2018, [s.p.]).

And lastly, the responsibilities of the Innovation Management are associated to issues related to innovation and technology transfer at the university. Activities implied here are the promotion of partnerships with corporations for the development and transfer of technology; the dissemination of a culture of innovation at the institution; the promotion

of services and projects to make better use of internal competencies and external opportunities; acting on procedures for raising funds related to innovation; coordinating processes that evaluate and appraise technologies aiming at their economic use; managing projects and contracts related to technology transfer; and the development and tracking of indicators for technology transfer (FURB 2018, [s.p.]).

The routine at the AGIT, now located in an office at the Blumenau Center for Innovation, involves attending the academic and external community to clarify doubts, and forwarding demands concerning intellectual property and innovation, besides internal proceedings. Through the AGIT, FURB is one of the few institutions in the state that does not outsource the process for requests of intellectual property titles and it also assists businesses in this matter.

It is the Agency's function, for example, to carry out a prior art search; help researchers draft patents; to deposit and maintain titles with the INPI. In terms of innovation and technology transfer, on the other hand, the AGIT writes out and/or analyzes contracts for technology transfer, licensing, agreements, technical cooperation terms, and confidentiality terms, among others. It also manages royalties owed to FURB (FURB 2022a, [s.p.]; Wiggers and Arrabal 2022, [s.p.]).

Since it is committed to the dissemination of a culture of intellectual property and innovation – as stated in its mission (Figure 1) – the AGIT promotes training workshops for researchers, students and the

community in general. Among these we should mention the search for prior art on patent databases as a tool for developing R. D & I projects; strategies to protect innovative projects; and developing innovative business plans (Wiggers 2021, [s.p.]). An event that draws a great number of people is the Blumenau Fair for Innovation and Entrepreneurship organized by the AGIT.

The Fair for Innovation and Entrepreneurship, which has been held since 2019, is a space where innovative solutions, developed by elementary, high school and college students, are advertised – such as products, processes and business models –, with the goal of stimulating an interest in science, technology and innovation in Blumenau and the surrounding region. In the first edition, more than ten teaching institutions participated in the Fair, and there was remarkable participation of the public not associated to the university. In 2021, with restrictions imposed by the pandemic, the Fair took on a hybrid format, with in person and online activities (Wiggers and Arrabal 2022, [s.p.]).

**Table 2.** AGIT mission and vision

Mission: to strengthen actions related to technology innovation that promote the protection of the institution's intellectual property; to disseminate a culture of intellectual property at the University; and to encourage the formation of partnerships with the production sector.

Vision: to be an example in innovation in the state of Santa Catarina.

Source: by the authors (2022) based on FURB (2022a, [s.p.]).

Because it is located at the Blumenau Innovation Center, the AGIT has developed a fruitful relationship with other agents established in the innovation environment in the region (Arrabal *et al.* 2021). With businesses, including those located outside of the Innovation Center, it has kept communication open for possible partnerships through the Institutional Program for Initiation Scholarships in Technology Development and Innovation – PIBITI/Businesses. The PIBITI, an open-ended published notice, develops activities in technology initiation to solve demands on the part of a business partner. The university allocates a number of hours to the supervising teacher, as well as facilities, while the business pays for the student's scholarship – an undertaking that is beneficial to all those involved (Wiggers and Arrabal 2022, [s.p.]).

The support given to the AGIT by Fapesc, through Public Notice no. 14/2019, has been fundamental in consolidating and promoting activities. Besides providing undergraduate and master's scholarships, the Notice resources have led to the hiring of a consulting service. This allowed an improvement in activities regarding technology transfer. A direct result is the development of the Technology Display, a portfolio of FURB technologies where access is available virtually (Wiggers and Arrabal 2022, [s.p.]).

In 2019 and 2020, the AGIT secured its first three technology transfers and in 2022, it received the first sum referring to royalties. In terms of intellectual property, the number of requests for asset deposits at the

INPI has gone from one in 2015 to 22 in 2020, which proves the success of the strategies planned in 2016 when the Agency was reorganized. In 2021, to top it all, the AGIT won the Santa Catarina Innovation Prize – Professor Caspar Erich Stemmer – conferred by Fapesc in the category Innovative Science and Technology Institutes (STI) (Wiggers 2021, [s.p.]; Wiggers and Arrabal 2022, [s.p.]).

Some of the most important partnerships established between FURB and the private sector and mediated by the AGIT should be mentioned, such as the Orlando Zeno Pamplona Prize for Innovation in Lighting Design, sponsored by the undergraduate program in Design and Blumenau Lighting. This campaign selected lighting projects developed by undergraduate students in Design for the production and sale by the lighting company throughout the country (Brocco, Rosa, and Arrabal 2021). The AGIT followed the entire process, from the development of the contest notice, the elaboration and registration of the request for industrial design with INPI, up to the royalties agreement with Blumenau Lighting (FURB 2022d, [s.p.]).

In addition, in relation to articulating agreements with the NITs at other ISTs in the state, special attention should be given to the role the AGIT played in procedures for creating the Santa Catarina NIT Network, or NITSC Network. As a participant in Fapesc notice no. 14/2019, under which the actions for the NIT Network developed, the AGIT was able

to share its experiences and sound practices, as well as learn from other participants.

The future of the AGIT, considering the level reached by the Coordination for Intellectual Property in term of organization, with well-defined, full-fledged workflows, will focus on strengthening the field of innovation and technology transfer. The expectation is to implement the position of Innovation Manager and further the enterprising vision of researchers at the institution. The Agency will also continue the effort that led to so many important results in such a short period of time.

## **Main legislation in effect**

Resolution 71/2018 – Approval of the FURB Innovation, Intellectual Property and Technology Transfer Policy.

## **Contact**

Address: Câmpus 2, Sala Centro de Inovação Blumenau-102, 1º andar, Rua São Paulo, 3250, Itoupava Seca, Blumenau, SC.

E-mail: [agit@furb.br](mailto:agit@furb.br)

Site: <https://www.furb.br/web/5465/inovacao-e-pesquisa/agencia-inovacao-tecnologica>

LinkedIn: <https://br.linkedin.com/in/agitfurb>

YouTube: <https://www.youtube.com/channel/UC7QwRe2og1Tn6t1tBvqUENg>

Instagram: @agitfurb | <https://www.instagram.com/agitfurb/>

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**06.**

**AREA OF TECHNOLOGY  
TRANSFER AT EMBRAPA –  
SWINE AND POULTRY**

The origins of the Brazilian Corporation of Agricultural and Livestock Research (Embrapa) go back to the 1970s. To decrease the deficit between the growing demand for and the national offer of food and grains, the Ministry of Agriculture, Livestock and Food Supply idealized a company for agricultural research that would revive the foundations of agricultural practices in the country with the goal of modernization in technological terms, and making them more productive and competitive (Embrapa 2022a, [s.p.]). In 1972, Law no. 5.851 authorized the Executive Branch to establish the public company for this purpose.

The effective establishment of Embrapa took place the following year with Decree no. 72.020 which authorized the company's statutes and determined its installation. The new company replaced the National Department for Agricultural Research (DNPEA), in charge of coordinating the federal research agencies already in place, and took over 92 facilities: 9 regional institute headquarters, 70 experimental sites, 11 properties and 2 national centers. With this initial structure, Embrapa began to operate as the manager of the entire system of agricultural research at the federal level (Embrapa 2022a, [s.p.]).

The institutional model adopted by Embrapa was to set up research units in different states, focusing on regional products. The establishment of the first product-based units occurred in 1974 – wheat in Passo

Fundo (state of Rio Grande do Sul); rice and beans in Goiânia (state of Goiás); beef cattle in Campo Grande (state of Mato Grosso do Sul); and rubber trees in Manaus (state of Amazonas) (Embrapa 2022a, [s.p.]). In 1975, the National Center for Swine Research, located in the town of Concórdia, Santa Catarina, was created.

The establishment of Embrapa Swine came about with the growth in the pig market in the Alto Uruguai region of Santa Catarina, which led to the choice of Concórdia as headquarters for the center. After the Minister of Agriculture visited Concórdia and observed the independent work being done on farms and in companies on the genetic improvement and evaluation of swine, the procedures to establish the Center at the location were soon underway (Souza 2011, 24-26).

Between 1976 and 1978, experimental fields were set up, as well as a unit for genetic improvement and a research lab, in the District of Tamanduá. In 1978, with the expansion of poultry production in Brazil, Embrapa decided to invest in scientific research in the area. Due to similarities in the productive chains, the new area of investment was added to the National Center for Swine Research, which then became Embrapa Swine and Poultry (Souza 2011, 25-26).

Working from the most basic facility, and with the arrival of the first researchers, the Center “[...] needed to assert itself in a world in

which everything was yet to be done as far as agricultural research is concerned." (Souza 2011, 27). In the very first years of activity, the company showed important results, such as delivering solutions for disease, the genetic improvement of cattle, progress in animal feed and the development of equipment for animal handling.

Currently, the center has an area of 210 hectares (approx. 519 acres) and a compound of laboratories (Physical-Chemical Analyses; Animal Health and Genetics; Biogas Laboratory; Biotechnology and Nanotechnology Laboratory), Experimental Fields; Swine, Poultry and Biomethane Production Units; Centers for the Genetic Conservation of Poultry; a Slaughterhouse; a Semen Collection Center, among other installations. There are 177 employees – 42 researchers, 50 analysts, 29 technicians and 56 assistants, who work in specialized areas such as Veterinary, Husbandry, Biology, Agronomy, Environmental Technology, Molecular Genetics and Biology, Epidemiology, Animal Health and Nutrition, Agrobusiness and more (Embrapa 2021a, [s.p.]).

Research at Embrapa Swine and Poultry revolves around five thematic centers: Poultry Production; Swine Production; Poultry Health; Swine Health, and the Environment. In 2020, the technical team at the center worked on 61 research projects – 37 as leaders and 24 as participants in action plans and activities carried out at other centers and institutions (Martins and Surek 2022, [s.p.]).

In the last two years, the dynamics used for approving and managing projects at Embrapa underwent some changes and an agenda focused on innovation was consolidated. The new form of projects management "[...] has allowed Embrapa to build a greater and more dynamic proximity to productive chains, enhancing its commitment to finding solutions in the field of agriculture (Martins and Surek 2022, [s.p.]).

The guidelines for this innovative stance come directly from the headquarters in Brasília – more specifically from the Office for Innovation and Business (SIN) and from the Office for Research and Development (SPD). At the Center, the agents responsible for implementing changes are mainly part of the divisions of Technology Transfer, Research and Development. The following section will describe how the competencies of the Center of Technology Innovation (NIT) have been carried out at Embrapa, with special emphasis on the role of Embrapa Swine and Poultry.

## **Getting to Know the Embrapa NIT**

The activities of innovation, technology transfer and management of intellectual property are an organic and integral part of the workflow at Embrapa ever since its establishment when the nature of the company is considered: it is a public IST for research, development and innovation.

However, the coordination of these activities stems from only one NIT, the SIN, located in the central unit in Brasília, which is connected to the Executive Board of Innovation and Technology.

Before the Innovation Law emerged in 2004, Embrapa already relied on two internal guidelines regarding technology transfer and the protection of knowledge produced at the institution: the Institutional Policy for the Management of Intellectual Property (Resolution no. 22/96, of 07/02/96) and the Technology Business Policy (Resolution no. 10/99, of 03/16/1999). By setting down these directives in the 1990s, it placed itself at the forefront in trying to “[...] reconcile its public mission and the much-needed approximation with the productive industry [...]”, which would become one of the guiding principles of the Innovation Law (Silva, Dias, and Folle 2007, 61).

After the Intellectual Property Policy was approved in 1996, Embrapa took measures to project an institutional environment that would be conducive to implementing the policy. Consequently, in 1997, it created the Department of Technology Transfer and Business (DTC), and in 1998, what they called the Areas of Technology Business at Decentralized Units, and the Office for Intellectual Property under the Director-President. In 1999, the DTC became the Assistance for Technology Transfer Affairs and underwent several changes in the following decades, both in terms of organization and classification (Silva, Dias, and Folle 2007, 61-62).

Currently, as mentioned before, activities directed to innovation and business at Embrapa are coordinated by the Board for Innovation and Technology, managed by the SIN, which is

[...] a tactical level organizational unit, co-responsible for managing the macro processing of innovation and responsible for the management process of assets, innovation and business management, marketing management and the management of the scheduling and commercial use of assets (Embrapa 2022c, [s.p.]).

It also coordinates the Embrapa network of innovation and business which includes the Innovation and Business Bureaus (EIN), at the Decentralized Units, giving support to the implementation of attributions by the SIN (Embrapa 2022c, [s.p.]).

The SIN is made up of coordinating bodies and managing bodies with specific responsibilities. These are the; Coordination of the Internal Network Development for Innovation and Business; Coordination of Digital Innovation; Coordination of Planning and Administrative Control; Coordination of Legal Support to Innovation and Business; Access to Markets Management; Assets Management; Innovation Management; Management of Process, Product and Market Integration; and Marketing Management. There are approximately 153 collaborators to carry out these operations (Embrapa 2022c, [s.p.]).

Besides the central framework, each Decentralized Unit has a team focused on innovation and business processes. At Embrapa Swine and Poultry, this interface, which carries out many of the attributions of the NIT, is the Area of Technology Transfer. Within the Unit organizational chart, this area holds the position of Assistant Management of Technology Transfer (CHTT), along with the Assistant Management of Research and Development (CHPD) and the Assistant Management of Administration (CAA). The three are linked to the General Management.

The Management of Technology Transfer centers its activities on mediation with the external environment, specifically with the productive sector and other organizations. It has strong ties to the Management of Research and Development in the sense that it guides research projects to adopt an open innovation model and work with technical operations that favor or derive from research that has been carried out, such as the establishment of official partnerships and the protection and licensing of assets (Martins and Surek 2022, [s.p.]).

Since the Unit was established in 1975, the competencies carried out today by the Area of Technology Transfer have always been performed by some department at the institution, albeit with different names. However, they were increasingly perfected and guided towards the fulfillment of the institutional objectives and priorities of each period.

From 2010 on, for example, greater emphasis on interacting with the production sector was observed, focusing on building partnerships for co-created and co-developed projects, and raising external resources (Martins and Surek 2022, [s.p.]).

The Unit's operations are guided by the normative instruments that come from Headquarters, especially the Innovation Policy, a norm developed by the SIN and in effect since 2018. The Policy "[...] aims to give both research and the execution of the innovation management process greater flexibility and celerity [...]", and represents "[...] Embrapa's position in relation to the future scenario of innovation, empowering the company to incorporate the advances laid down by the S T & I Legal Milestone." (Embrapa 2018, [s.p.]).

According to the document, in regard to innovation, Embrapa follows these guidelines: a) the promotion of a management directed towards innovation and excellence; b) the establishment and consolidation of environments that encourage open innovation; c) the promotion of a culture, practices and an internal environment geared towards innovation; d) the expansion of Embrapa's participation and role in the innovation market; e) sharing the risks and benefits of innovation; and f) the promotion of the diversification and expansion of mechanisms to fund innovation (Embrapa 2018, [s.p.]).

With full adherence to the Innovation Policy, the Unit is able to coordinate strategies, structures, processes and the work teams to strengthen Embrapa's competencies and capacities. The responsibilities of the Area of Technology Transfer, which is more directly involved with this mandate, are defined in item 3.3 of the Unit's Internal Statute, as seen in the Table below.

**Table 1.** Embrapa Swine and Poultry Area of Technology Transfer competencies

- a. To coordinate the process of composing and revising documents that are aligned with the company strategy, as well as the planning and updating of its strategies.
- b. To analyze the strategic demands related to the Unit's external and internal environments and determine the Unit's planning through the consolidation of research and development (R&D), Technology Transfer (TT) and Institutional Development agendas.
- c. To coordinate the inquiry on and evaluation of the Unit's technical and administrative activities.
- d. To promote the Unit's relationship and integration with other Embrapa units and with public and private organizations.
- e. To hold permanent meetings with the Unit's Assistant Management to share information, guide and align decision-making on strategic topics.
- f. To implement the necessary actions to fulfill the Unit's aims and mission.
- g. To support the Executive Board and the Central Units in topics related to the Unit.

Source: by the authors (2022) with a copy of item 3.3 of the Embrapa Swine and Poultry Internal Statute (Embrapa 2020b, [s.p.]).

The Area of Technology Transfer currently consists of two departments which basically have the competences of an NIT: the Prospecting and Technology Evaluation Department (SPAT) and the Articulation and Implementation of Technology Planning Department (SIPT).

The SPAT, with a team of five collaborators, among other functions, identifies problems which may result in technology solutions; does an *ex-ante* analysis of the impact of research projects led by the Unit; evaluates the impact and level of enactment of technologies produced; and guides the process of registering the intellectual property of the technologies created by the Unit. It's worth noting that when evaluating the technological readiness level, Embrapa uses the Technology Readiness Level (TRL) scale, while in managing and qualifying assets, it uses the Gestec system (Embrapa 2020b, [s.p.]; Martins and Surek 2022, [s.p.]).

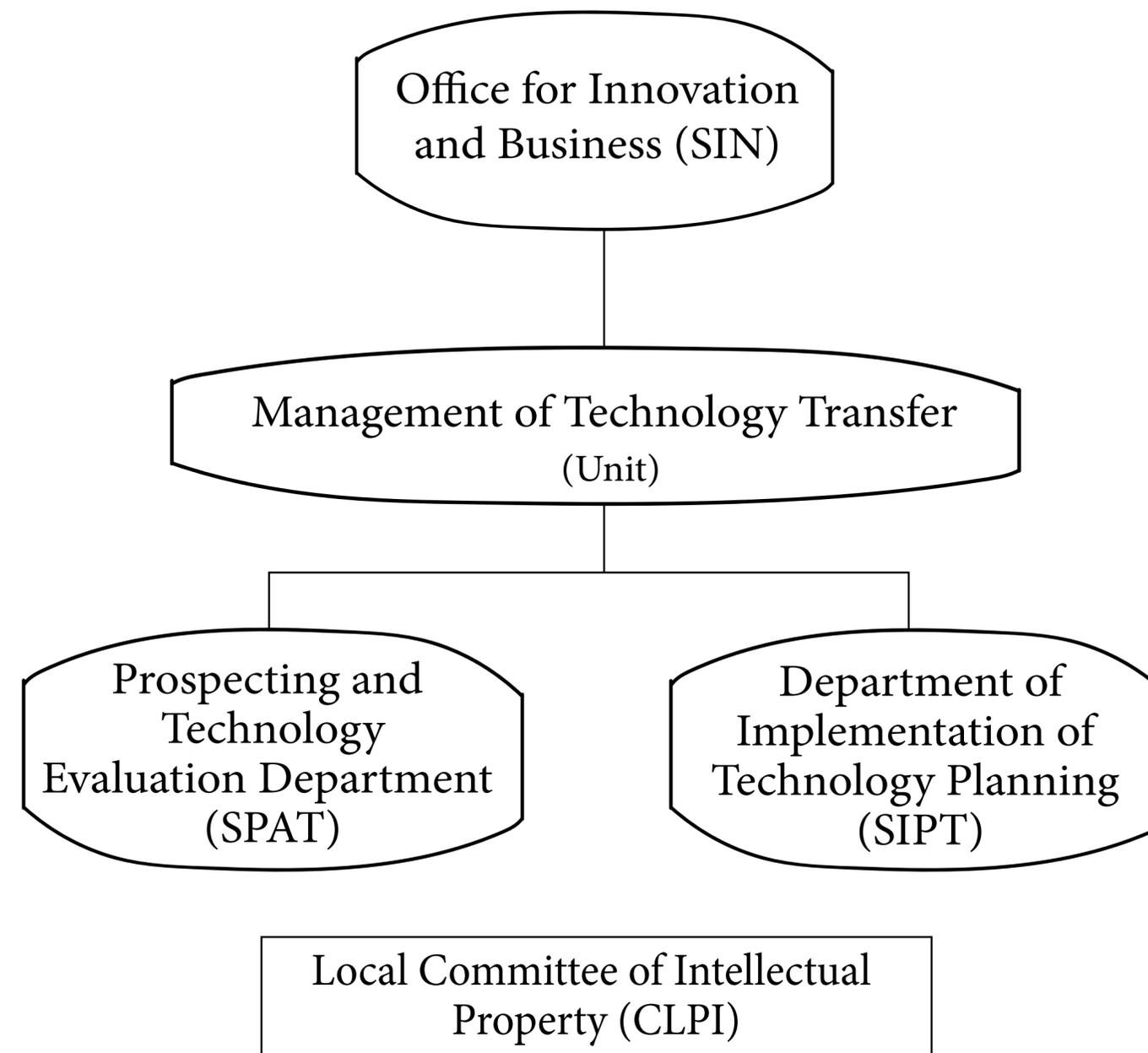
On the other hand, the SIPT team, made up of six collaborators, facilitates the necessary means to carry out the technology transfer process and the delivery of technological products that are the object of partnerships agreements. In this sense, it interacts with external agents to create technology transfer projects; plans and coordinates the enactment of business contracts; gives support to the creation of technology transfer events sponsored by partnering agents; and

organizes and disseminates the Unit's technology portfolio (Embrapa 2020b, [s.p.]; Martins and Surek 2022, [s.p.]).

The institution's organizational chart (see Figure 1 below) also includes the Local Committee for Intellectual Property (CLPI), a council that deliberates on the feasibility of potential requests for protection. The Local Committee is led by the Assistant Manager of Technology Transfer and is formed by secretaries and ordinary members (Martins and Surek 2022, [s.p.]).

In cases in which the intellectual property of assets belongs exclusively to Embrapa, the deposit procedures involve steps taken both at the Unit and at the SIN. At the Unit, the area of Technology Transfer draws out a qualification report which is evaluated by the CLPI. After approval by the CLPI, a marketing plan is developed for the asset and it is referred to the SIN, which is responsible for carrying out the registration and/or deposit. Due to limitations in resources, the company is very meticulous and gives priority to protecting and keeping the titles of technologies that are profitable to the institution (Embrapa 2022b, [s.p.]; Martins and Surek 2022, [s.p.]).

**Figure 1.** Embrapa Swine and Poultry Area of Technology Transfer organizational chart in regard to NIT competencies



Source: by the authors (2022) based on Embrapa (2020b [s.p.]).

Focused on the changes taking place in the productive environment and innovation ecosystem, Embrapa has also undergone changes in the framework of its processes. Hence, the constant demand for updates and training of teams. Opportunities for training are the result of SIN or Unit projects. At the SIN, one of the initiatives is called Dialogue for Innovation, a monthly activity that brings together collaborators from the area of technology transfer to integrate activities and training regarding specific material (Embrapa 2021c, [s.p.]; Martins and Surek 2022, [s.p.]).

At the Unit, besides training the team that is directly connected to technology transfer, the Management is concerned with informing researchers about innovation, technology transfer and intellectual property. More to the point, SPAT and SIPT team members participate in the Embrapa professional proficiency program, with the opportunity of attending an MBA program in Business or Project Management (Martins and Surek 2022, [s.p.]).

Throughout the year, workshops and strategic seminars about different topics of interest to research, development and innovation (RD&I) in swine and poultry productive chains are held. Yearly, the Planning Week is held, a time in which RD&I actions are discussed for the short, mid, and long term, including support for all areas – laboratories, experimental fields, finance department, committees and commissions – that give

support to research and technology transfer activities (Martins and Surek 2022, [s.p.]).

The acculturation for innovation also reaches the external public through events and free courses. Many of these activities are idealized and carried out with the help of partners, whether representatives of the production sector – especially agroindustry and its representative entities – or other agents in the local S, T & I ecosystem – such as Innovation Centers like the Chapecó Pollen Park (Martins and Surek 2022, [s.p.]).

In the recent chain of events promoted by Embrapa Swine and Poultry, the structuring of the 2021 Inova Program – Digging, Shocking and Innovating – is remarkable. The Program was built to integrate two past experiences: the challenges of ideas at InovaPork in 2019, and InovaAvi in 2020. The proposal for InovaPork was to promote impact innovation in pig farming through the gathering of innovative ideas at any stage of evolution with the potential of becoming a business and bringing solutions for the swine productive chain (Embrapa 2019, [s.p.]). The InovaAvi, on the other hand, emerged the following year with the same purpose, but directed to the productive chain of poultry (Embrapa 2020a, [s.p.]).

In this sense, the Inova Program represents “[...] the evolution of challenges and ideas and gives strength to a movement of innovation in pig and poultry farming [...]”, with the aim of “[...] cultivating solutions

in development that can have an impact on productive chains, as well as boosting partnership opportunities among those working in the engaged sectors." (Embrapa 2021b, [s.p.]). In the first edition held in the second semester of 2021, 32 proposals were enrolled, 10 of which were selected for the final – five in each of the Program axes (InovaPork and InovaAvi).

Fapesc is a partner of Embrapa Swine and Poultry in carrying the Inova Program through. The Foundation's funds were essential for the first InovaPork to take place in 2019, with the project approved by Public Notice no. 01/2019 (Proeventos 2019/2020). With resources from Public Notice n. 34/2021 (Proeventos 2021/2022), Embrapa held the I Conference of Cultured Meat in August 2022 (Martins and Surek 2022, [s.p.]).

Besides notices that fund events, the Unit participated in Public Notice n. 14/2019 – the Support Program for the Implementation and Consolidation of Centers for Technology Innovation (NITs). Among the developments stemming from this notice is Embrapa Swine and Poultry's participation in the movement to create and develop the Santa Catarina NIT Network, or NITSC Network, where experiences in managing NITs are shared and connections among state ISTs are made (Martins and Surek 2022, [s.p.]).

The work developed in the Unit has produced results, as can be seen in the Unit's projects portfolio. These can be placed in three categories:

Assistance to Innovation, Pre-technological Assets and Technological Assets. In 2020, in the first category (Assistance to Innovation), the Unit operated in 14 actions and research studies that assisted in formulating or carrying out public policies. Among these is the important research in winter grains for animal feed. In the same year, the Unit's technical team, with the organization and participation in technical meetings and workshops, technically subsidized the Office of Agriculture, Livestock and Fisheries of Santa Catarina in developing the Assistance Program for Winter Grain Crops (Martins and Surek 2022, [s.p.]).

In the area of Pre-technological Assets, results came in the form of databases (22), biological collections (16) and technical scientific methodologies (2). In Technological Assets, there were results in cultivars (10), agriculture and livestock (6), machinery and implements (4) and products and/or agricultural and livestock supplies (01) (Martins and Surek 2022, [s.p.]).

Throughout the last decade, recognition of the activities carried out by Embrapa Swine and Poultry has translated into prizes both regionally and nationally. Among the most recent honors achieved are: a) winner of the 7<sup>th</sup> edition of the 2017 Santa Catarina Stemmer Prize in Innovation in the category innovative institution; b) winner of the Innovation in Poultry Research Prize, awarded by the Rio Grande do Sul Poultry Industry Association (SIPARGS) for the Nanovo project: Nanostructured overcoating of commercial eggs (2018); c) third place

in the 2020 Edition of the Santa Catarina Stemmer Prize in Innovation, in the category Innovative Technology and Science Institution; and d) awarded by the Ministry of the Environment in the 8<sup>th</sup> edition of the A3P 2020 Prize for the Project BiogásFORT® (Martins and Surek 2022, [s.p.]).

In 2022, Embrapa underwent the Transform Project which aims at perfecting the Company's organizational, operational and managerial model, guided by operational and productive excellence, quality improvement and cost reduction, which will possibly alter the current model at the NIT.

## Main legislation in effect

Statute no. 037.005.001.012 – Defines the Embrapa Innovation Policy.

## Contact

Address: Rodovia BR-153, Km 110, Distrito de Tamanduá, Caixa Postal: 321, CEP 89715-899, Concórdia, SC

E-mail: [suinos-e-aves.imprensa@embrapa.br](mailto:suinos-e-aves.imprensa@embrapa.br)

Site: <https://www.embrapa.br/suinos-e-aves>

<https://www.embrapa.br/secretaria-de-inovacao-e-negocios-sin>

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**07.**

**COORDINATION OF PROJECTS  
AND INNOVATION (CIPI) OF THE  
UNIVERSITY OF THE STATE  
OF SANTA CATARINA  
(UDESC)**

The University of the State of Santa Catarina (Udesc) was established in 1965 by State Decree no. 2802 as the result of joining three Schools in Santa Catarina: The School of Education (Faed), the Higher Institution of Business and Management (Esag) – both located in Florianópolis and inaugurated in 1963 and 1964, respectively – and the Joinville School of Engineering (FEJ), inaugurated in 1956.

In the 1970s, the institution expanded with the establishment of the Higher Institution of Veterinary Medicine in Lages, the Higher Institution of Sports Education in Florianópolis, and the inauguration of the university campus in Joinville. Therefore, the university “[...] that was born with the mission of developing state regions in different areas, brought along something new in the Brazilian university scenario in the establishment of multicampus facilities.” (Santhias 2015, 17).

In the 1990s, Udesc is accredited as a university by the MEC and achieves didactic-scientific, administrative and managerial autonomy through the establishment of the University Foundation of the State of Santa Catarina, hence offering totally tuition-free education. In the following decades, it created teaching centers in other regions in the state: in 2002, the Western Educational Center (CEO); in 2006, the centers in São Bento do Sul (Ceplan), Alto Vale do Itajaí (Ceavi), and Laguna (Ceres); in 2010, the Higher Education Center of Foz do Itajaí (Cesfi), in Balneário Camboriú (Udesc 2016, [s.p.]).

Currently, the university has 12 units in ten cities, besides 27 in-person support centers for distance learning in a partnership with the Open University of Brazil (Udesc 2016, [s.p.]). Guided by the idea that teaching, research and outreach activities are indissociable, the Udesc institution has become attuned to the social-economic and cultural profile of the regions where it is located.

In Florianópolis, where Campus I is located, education and service provision programs are offered. In Joinville and São Bento do Sul, corresponding to Campus II, programs attend to the demands of the industrial sector, especially engineering and computer sciences, besides teaching degrees. At Campus III, in Lages, agriculture-veterinary sciences predominate. In the western region, Campus IV, in alignment with the agricultural-industrial area expectations, Chapecó, Pinhalzinho and Palmitos offer programs in Husbandry, Food Engineering and Chemical Engineering. At Campus V, in Ibirama and Balneário Camboriú, the fields of Engineering and Management predominate; while Campus VI, in Laguna, offers programs in Fishery Engineering, Biological Sciences and Architecture and Urbanism (Udesc 2022a, [s.p.]).

The student body at Udesc is approximately 15 thousand, distributed among 59 undergraduate and 51 master's and doctorate programs. More than 95% of permanent faculty members at the institution have master's or doctorate degrees. The outreach program annually holds 700 activities with the aim of giving back to the community what was

learned in classes and with research. Projects such as the Veterinary Hospital and the School Clinic in Physical Therapy assist more than 600 thousand people every year (Udesc 2022a, [s.p.]).

Scientific production at the university involves around 220 research groups, certified by the National Council for Scientific and Technological Development (CNPq), with projects in eight broad fields: Agriculture, Biology, Health, Exact and Earth Sciences, Human Sciences, Applied Social Sciences, Engineering, Linguistics, Letters and Arts (Udesc 2022a, [s.p.]).

In the last decade, Udesc has focused on including innovation transversally in its activities, contributing to the development of solutions for the academic environment and for the community in general. Actions hence are conducted by the Coordinating Body for Projects and Innovation (CIPI), a department that also operates as the Udesc Center for Technology Innovation (NIT). Below, the story of the NIT, in its setup with the CIPI, will be described.

## **The CIPI: getting to know the Udesc NIT**

At Udesc, an administrative structure with the same functions in the area of intellectual property and innovation was in place before the establishment of an NIT. Since 1995, the university includes a unit called the Copyright Office (EDA), part of the National Library, with functions

that include forwarding requests for the registration of works. To aid the agency, in 2007, Udesc established the Coordinating Body for Intellectual Property (COPI) (Roczanski 2022, [s.p.]).

The Coordinating Body emerged to aid the EDA, but concomitantly it started to prepare a culture of innovation and intellectual property at the institution. In this sense, it organizes educational activities such as the Basic Program in Innovation and Intellectual Property, aiming at informing the academic and external community about the Santa Catarina Innovation Law, and the Scientific Research and Innovation Seminar in which the then Secretary of Technology Development and Innovation of the Ministry of Science, Technology and Innovation, Álvaro Prata, participated (Udesc 2009, [s.p.]; Roczanski 2022, [s.p.]). However, the activities at the COPI were still sporadic.

Between May 2009 and December 2011, Udesc's participation in the Project for the Establishment and Development of an Agreement of Technology Innovation Centers in Santa Catarina (PRONIT) led to a reflection on the model for managing innovation and intellectual property at the university. The training programs offered under the project confirmed the need to implement a department to encourage innovation more systematically, as well as protect and capitalize from research results developed at Udesc more effectively. At that moment, the development of an innovation policy and the institutionalization

of the NIT was already on the table, though these plans did not immediately follow through (Roczanski 2022, [s.p.]).

In 2013, with changes made to the university's Internal Statute, the COPI incorporated the Department of Projects and Partnerships that had previously been linked to the Research and Graduate Studies Department. The new rules expanded the aims of the Coordinating Body: "[...] previously focused on IP management, now it coordinates activities related to partnerships with public and private institutions, innovation, technology transfer and intellectual property at Udesc [...]", besides "[...] prospecting partnerships in the various divisions with the intention to enable institutional projects." (CIPI 2020, [s.p.]). After reformulation, the agency became the Coordinating Body of Projects and Innovation (CIPI).

The CIPI was conceived, and remains until this day, linked to the Chancellor's Office. In the first years, its structure was made up of the Coordinator – the employee Carla Regina Magagnin Roczanski –, and a public employee responsible for the EDA. At the time, an effort was made to visit the Udesc centers, promoting lectures during some of these visits with the aim of disseminating the activities of the CIPI at the campuses. With time, and due to the demand, the Joinville Center of Technological Sciences assigned an employee to work part time in the Coordinating Body (Roczanski 2022, [s.p.]).

Among the first accomplishments of the CIPI, resuming the process of developing the Udesc Innovation Policy was a priority. Based on the minutes that were being elaborated by the COPI under PRONIT, a final text was created and approved by the University Council on October 16<sup>th</sup>, 2014 as Resolution no. 090/2014. The policy, formally called the Institutional Program for Innovation and Innovation Scholarships, assigned the management of the university's innovation and intellectual property activities to the NIT through the CIPI. Therefore, in practice, the CPI went on to have the functions of the Udesc NIT, although its responsibilities far exceeded those of an NIT (Udesc 2014, [s.p.]).

The first version of the internal statute of the CIPI was elaborated in 2015. The document reaffirmed the competency of the CPI to coordinate the Udesc NIT (art. 5, I), with similarities between the CIPI and NIT employees and the possibility of assigning personnel at the discretion of the Academic Administration, which included employees at Centers where research and innovation were being developed. As for the structure, the law defined the Department of Projects and Partnerships (SEPROJ) as the central agency of the CIPI, aided by the Technical Committee of Innovation and Intellectual Property (CTIPI), a collegiate board responsible for assisting in the implementation of the university's innovation and intellectual property policies (Udesc 2015, [s.p.]).

In 2016 changes in the administration were followed by changes in the composition of the coordinating body. The SEPROJ was dissolved and

the Controllershship Department for External Resources Agreements (SECORE), originally linked to the Office of Planning, was incorporated. The inclusion of the SECORE gave the CIPI the management of the external resources budget that Udesc raised. This organizational model is still in effect and was institutionalized by Resolution no. 16/2017, with a new text for the Internal Statute of the Coordinating Body (CIPI 2020, [s.p.]).

The CIPI responsibilities are established by art. 5 of the Internal Statute and can be seen in Table 1 below.

**Table 1.** CIPI competencies according to its Internal Statute

- a) To coordinate the NIT, as well as promote and bolster the intellectual property policy.
- b) To give support to the development and transfer of technology and stimulate innovation.
- c) To disseminate and carry out the policies and norms of intellectual property, innovation and entrepreneurship at Udesc approved by the competent forums.
- d) To advocate the creation and consolidation of emerging businesses based on innovative scientific knowledge.
- e) To encourage joint actions between Udesc and public and private national and international institutions with the aim of forming human resources in the management of intellectual property innovation and entrepreneurship.
- f) To standardize instruments for the signing of contracts, confidentiality agreements and the necessary documents to establish partnerships and the transfer of technologies.

- g) To assist and boost technologically-based companies through pre-incubation and incubation activities for companies.
- h) To maintain agreements with development agencies.
- i) To recommend the implementation, coordination, direction and systematization for innovation and intellectual property policy at Udesc.
- j) To support, stimulate and promote the registration of intellectual property at Udesc.
- k) To represent Udesc internally and externally in issues related to innovation and intellectual property.
- l) To operationalize requests from independent inventors regarding the adoption of an invention.
- m) To assist in elaborating projects for raising funds.
- n) To program, coordinate, carry out and control activities related to raising external funds.
- o) To provide the necessary documents for the funding of projects approved by public notices.
- p) To provide registry with agencies for funding of research and development projects at the university.
- q) To assist research groups, or teams of researchers, and outreach faculty members in submitting projects to various development agencies.
- r) To find and disseminate public notices that fund research, outreach, teaching and graduate programs of an institutional nature.
- s) To monitor and follow notices published by development agencies with regular assistance programs.
- t) To disseminate the services provided by the Udesc laboratories.
- u) To annually elaborate the Plan for Parliamentary Amendments to be petitioned at the Federal Legislative.

Source: by the authors (2022) with a partial copy of art. 5 of the CIPI Internal Statute (Udesc 2017, [s.p.]).

Along with the SECORE, the Technical Committee for Innovation and Intellectual Property (COMIPI), a consulting body established to

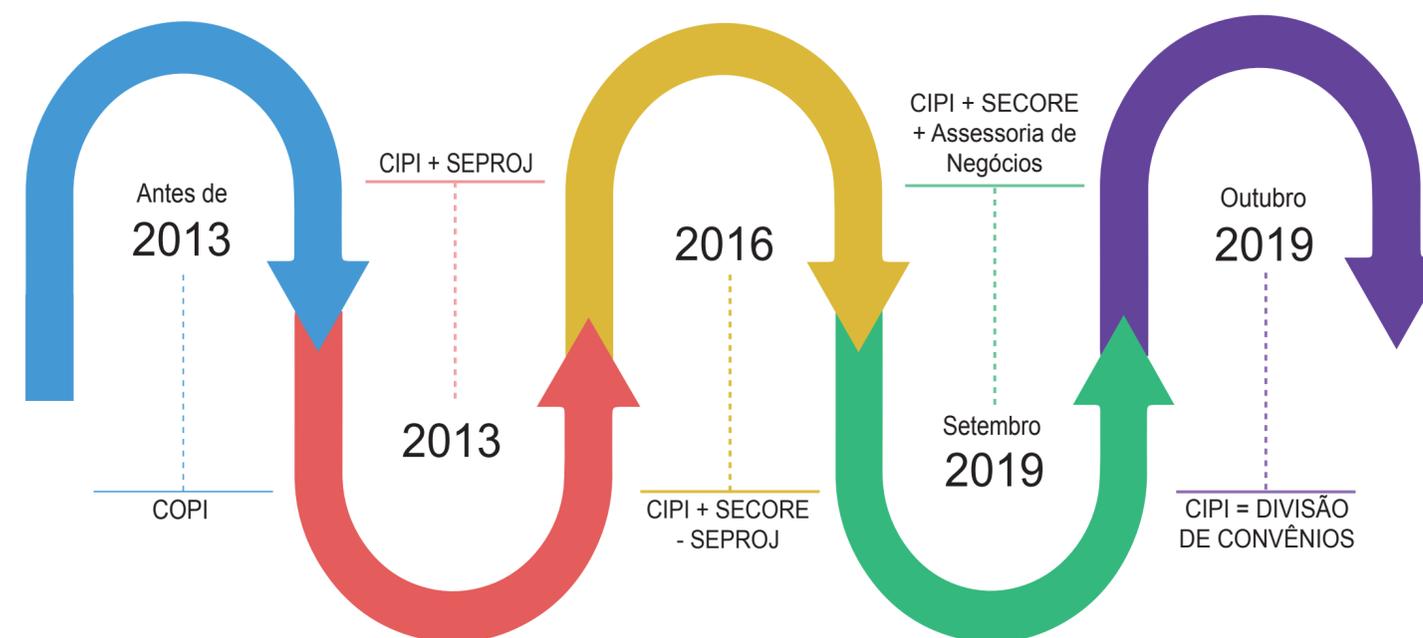
replace the CTIPI, is also part of the CIPI. The COMIPI is made up of a Projects and Innovation Coordinator, who act as President; the Dean for Research and Graduate Studies; the Dean for Outreach, Culture and Community Programs; the Research Directors at the Udesc Centers; and NIT representatives at the Udesc Centers. Among the competencies of the Committee, some of the most important are following processes requesting the maintenance of intellectual property titles at Udesc, procedures for invention, licensing and transfer, and the prospecting of opportunities for partnerships (Udesc 2017, [s.p.]).

Due to the multicampus character of the university, the CIPI's position has been to define personnel to operate at the Centers, representing the NIT. The NIT representatives are the “[...] NIT’s arms at the twelve Centers: they help in disseminating actions, and are go-betweens concerning demands.” (Roczanski 2022, [s.p.]). The CIPI invests heavily in training to give these representatives the necessary know-how concerning local needs and to be able to answer the demands of the public.

Since 2019, besides the SECORE and the COMIPI, the CIPI has brought in a department to manage agreements made by the university. The Coordinating Body follows up and monitors all the phases of these agreements by aiding researchers to develop a Work Plan; making reports concerning the contents of minutes; referring documents to higher levels at the university; receiving resources and checking on their use; and, finally, accountability (CIPI 2020, [s.p.]; Roczanski 2022, [s.p.]).

With the intention of strengthening interactions with the innovation ecosystem in Santa Catarina, in 2019 a department for assisting in business deals was created that would work on bringing researchers and the productive sector together. In 2020, the university organizational chart went through changes and the position of confidentiality in charge of this task was relocated to another coordinating body. Informally, however, the CIPI has continued to mediate the relationship between the university and companies as much as their possibilities allow (CIPI 2020, [s.p.]).

**Figure 1.** CIPI timeline

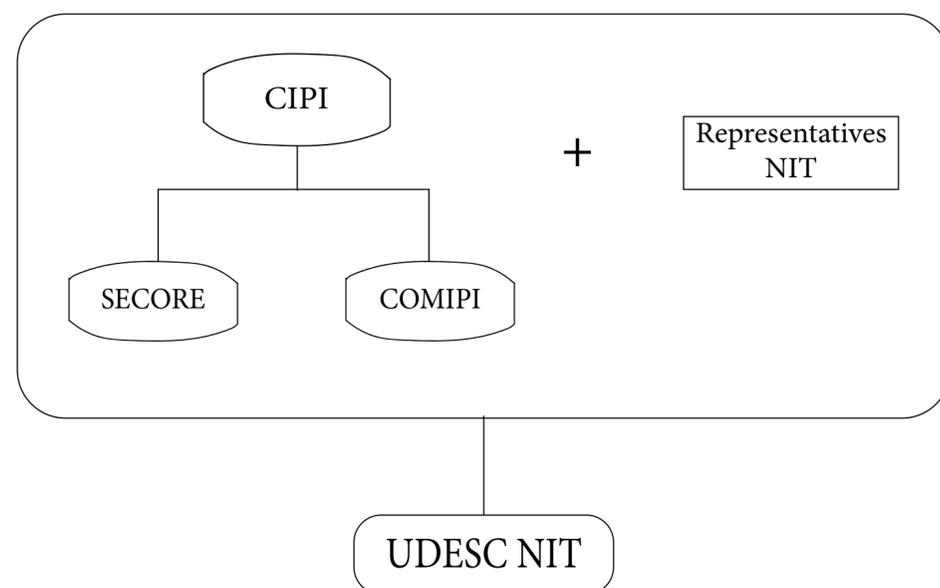


Source: CIPI (2020, [s.p.]).

Therefore, at Udesc the “[...] NIT was planned to have a similar structure as that of a committee, encompassing all of the CIPI [...]” (CIPI 2020, [s.p.]), as can be seen in Figure 2. Although the department’s responsibilities were thought of and defined in the Internal Statute within what is expected from an NIT, with time, other activities – that were important to the university but with no direct connection with the department’s aim – were delegated to the Coordinating Body.

Currently, activities related to innovation, technology transfer, protection of intellectual property and entrepreneurship are placed alongside operational activities such as budget execution and processing institutional agreements and contracts (CIPI 2020, [s.p.]).

**Figure 2.** NIT Udesc Organizational chart



Source: by the authors (2022) based on CIPI (2020, [s.p.]).

Among the tasks the CIPI performs more directly involved with intellectual property and innovation is the organization of the Inventors Notice and the Scholarship to Boost Innovation. The Inventors Notice is released annually with the aim of regulating the process at CIPI of projects with the potential to become intellectual property titles for the university. The Udesc faculty, students and employees who are interested in protecting their inventions by depositing their patents can participate in the Notice. If a proposal is chosen, the registration process begins, with a search for prior art, an evaluation by the COMIPI, the development of patent requests and the deposit for inventions. These procedures are done by a company with expertise in these procedures hired with Udesc resources (Roczanski 2022, [s.p.]).

The Scholarship to Boost Innovation, by contrast, is a measure instituted by the University Innovation Policy with the purpose of giving support to “[...] members of the university community who are involved in innovation activities with technical-financial assistance from development agency(ies) and/or (a) public or private external productive entity(ies).” (Udesc 2014, [s.p.]). In other words, a researcher develops an innovative project with aid from a scholarship given by a development agency or company that will directly benefit from the results. The first of these scholarships was implemented in 2020 (Roczanski 2022, [s.p.]).

The Udesc Technology Showcase, available on the institution’s online site, reveals there are 19 patent and utility model requests, 3 trademark

registers, 3 crop registers and 5 software registers. A successful case, for example, is the Pircinque and Jonica strawberry cultivars, improved at the Center for Agriculture and Veterinary Sciences (CAV) in Lages, created from Italian strawberries. Besides mediating the register of these cultivars, the CIPI is responsible for managing royalties (Udesc 2022c, [s.p.]).

Aside from these specific routine tasks, the CIPI does its best to create a culture that is favorable to innovation beyond the university walls. Hence, it holds training programs and events that involve both the internal and external public, integrating arenas where innovation can be discussed collectively.

The Coordinating Body for Innovation Projects, representing the NIT, has a seat at the Florianópolis Municipal Committee for Innovation and at the Acafe Innovation Chamber. It is also a part of the movement to develop the Santa Catarina NIT Network, in which it is important to mention Udesc's role as coordinator during the first term (2019-2020), and of the Santa Catarina Pact for Innovation. Concomitantly, its connection with the production sector is propelled by proximity with representative agencies and commercial associations such as the Federation of Industries of the state of Santa Catarina (FIESC) (Roczanski 2022, [s.p.]).

Fapesc also has an important role in boosting the Udesc NIT. To begin with, by funding research in the most diverse fields that, in turn, become input for innovation. Secondly, by releasing notices to

support NITs, such as Notice no. 14/2019, in which Udesc participated. The resources granted by this public notice helped improve activities and led to the formation of a work group that presented the Academic Administration with a proposal to restructure the NIT, with its effective institutionalization within the CIPI sphere (Roczanski 2022, [s.p.]).

The CIPI demand was not accepted but the regulation of the NIT, with its own instrument, is still a goal, now with the strength of a movement called Bolster the Udesc NIT Project. The expectation is that detailed rules regarding the limits and possibilities of the NIT's relationship with the private sector are defined, attempting to favor the establishment of partnerships and reinforce its role in the area of technology transfer (Udesc 2022b, [s.p.]).

The project also intends to institutionalize and create the internal network of the Udesc NIT, formed by representatives from each center; define actions to attend to institutional needs and those of the Centers in stimulating innovation and entrepreneurship; and mapping out and documenting the most important NIT processes (Udesc 2022b, [s.p.]).

In addition, another challenge the department will have to deal with is the limited team, currently made up of a coordinator, an employee and 2 interns who are not exclusively dedicated to NIT activities. Expanding the staff, as well as continuing to invest heavily in training, are essential measures for the Udesc NIT to continue growing and for innovation to be a part of every area of the university.

## Main legislation in effect

Resolution no. 090/2014 – Establishes and regulates the Institutional Program for Innovation and the Udesc Scholarship Program for Innovation.

Resolution no. 16/2017 – Creates a new text for Resolution no. 089/2015, which approves the CIPI Internal Statute.

## Contact

Address: Av. Madre Benvenuta, 2007, Itacorubi, Florianópolis, SC, CEP: 88.035-901.

E-mail: [cipi.reitoria@udesc.br](mailto:cipi.reitoria@udesc.br)

Site: <https://www.udesc.br/inovacao>

Instagram: <https://www.instagram.com/cipi.udesc/>

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**08.**

**CENTER FOR TECHNOLOGY INNOVATION  
(NIT) OF THE CORPORATION FOR  
RESEARCH IN AGRICULTURE AND  
RURAL OUTREACH OF SANTA CATARINA  
(EPAGRI)**

The Corporation for Research in Agriculture and Rural Outreach of Santa Catarina (Epagri) is a state-owned company connected to the State Secretary for Agriculture, Fisheries and Rural Development that mainly operates in the field of professional and technological education, technical assistance and rural and fishery outreach.

In the beginning of the 1990s, the public administration of Santa Catarina underwent a process of reorganization. The administrative reform also affected the State Systems of Agricultural Research and Rural Outreach, where there was a fusion of the Santa Catarina Company of Agricultural and Livestock Research (EMPASC), the Santa Catarina Company of Technical Assistance and Rural Outreach (EMATER-SC), the Santa Catarina Credit and Rural Assistance Association (ACARESC) and two more agencies that operated in specific areas – the Santa Catarina Credit and Fishery Assistance Association (ACARPESC) and the State of Santa Catarina Apiculture Institute (IASC). From this alliance the Epagri emerged, created by Decree no. 1.080/91, in the form of a mixed economy enterprise (Epagri 2022d, [s.p.]).

For its first strategic plan, Epagri chose two institutional restructuring projects as priorities: one to create sustainable rural development; the other to advance organizational modernization. In 2005, it incorporated the Institute for Agricultural Economy Planning of Santa Catarina (Cepa/SC Institute) and became a state-owned company with changes made to its legal nature (Epagri 2022d, [s.p.]).

Currently, Epagri is organized around three broad objectives: a) to promote the preservation, recovery, conservation and sustainable use of natural resources; b) to work for the competitiveness of Santa Catarina's agriculture in a context of globalized markets, adjusting products to consumer demands; and c) to promote the improvement in the quality of life of rural and fishing environments (Epagri 2022d, [s.p.]). Outreach, research and development activities in the Company are distributed among nine programs that carry out these objectives: Fish Farming and Fishing; Fruit Farming; Management and Markets; Grains; Olericulture; Cattle raising; Management and Institutional Development; Human and Social Capital; and Development and Environmental Sustainability (Epagri 2022c, [s.p.]).

Located in Florianópolis, Epagri has Outreach Units – Regional Management, Municipal Offices and Training Centers – and Research Units – Specialization Centers, Experimental Stations and Experimental Fields – spread out in the entire state (Epagri 2022g, [s.p.]). It employs around 1657 people, of which at least 14% have either a master's or a doctorate degree, and 22.5%, a college degree (Epagri 2022d, [s.p.]).

The Social Report demonstrated that in 2020, for every *real* applied at Epagri, the social return was R\$ 6.92 for the population of Santa Catarina (Epagri 2021b, 8-9). The opportunities and improvement for farmers and fish farmers, which reflected on society as a whole, reveal the concern at Epagri with building an environment that promotes

innovation. In this scenario, the role of the Center for Technology Innovation (NIT) is remarkable, as will be seen in the main aspects of its history described below.

## Getting to know the Epagri NIT

An important factor at Epagri – a state-owned agency for research and outreach – is its impulse to primarily protect the immaterial assets that it produces. Epagri directly pursues the development of technologies for rural and fishing activities, with special emphasis on new cultivars. This circumstance reveals the company's interests in the protection of intellectual property especially in relation to the Ministry of Agriculture and Law no. 9.456/1997. It is no coincidence that the responsibilities of the NIT related to intellectual property have always been a part of the operational activities of the Company though they were initially carried out in a disconnected way.

In the 1990s, in the absence of a proper department to carry out the registry of crops and requests for protection, Mário Angelo Vidor – then the Coordinator of the Program for Seeds and Seedlings – performed these duties. With a keen ability to communicate with the Ministry of Agriculture, Mário carried out the processes needed regarding species of fruit, forest, grains and pastures. With the Innovation Law of 2004 and the projection of an NIT, interest in innovation grew and strategies

to bring this agenda closer to that of intellectual property started to be discussed at Epagri (Vidor and Neubert 2022, [s.p.]).

The movement gained momentum and produced its first results in 2008 with Epagri participating in the Project for the Establishment and Development of an Agreement of Technology Innovation Centers in Santa Catarina, known as PRONIT. At PRONIT, Company representatives took part in training programs and developed guidelines for the intellectual property policy and the NIT statute, thus starting to plan its implementation.

In 2009, Epagri gave its approval to the Institutional Policy for the Management of Intellectual Property through a Decision by the Executive Board (DEX), and instituted the NIT in annex 2 of the same ruling as the coordinating body to apply and evaluate the Policy (Epagri 2009, [s.p.]).

With the Institutional Policy for the Management of Intellectual Property – updated the following year (DEX Decision no. 09/2010) –, Epagri intended to lay out a balance between its social mission and the pursuit of financial results that could revert to the public system. General guidelines were defined regarding the several forms of intellectual property that could arise at the company, as well as the operational mechanisms needed to use the existing prerogatives found in laws on the issue. The Policy also strongly encouraged the cooperation between Epagri and other institutions, and included the possibility of

deploying employees to work alongside partners in the development of innovation (Epagri 2009, [s.p.]; Epagri 2010b, [s.p.]).

Concomitantly, as a complement to the document that established the NIT, in 2010, Epagri developed the department's Internal Statute, consolidated by DEX Decision no. 5/2010. In its 1<sup>st</sup> article, the document granted the NIT the role of consulting advisor to the Executive Board with the aim of managing the policy of stimulus to scientific research and technological innovation and to enable strategies and actions related to intellectual property at Epagri both internally and externally (Epagri 2010a, [s.p.]).

In this initial format, the NIT structure included the Administration, carried out by a Board, and the Executive Aid Group, a subordinate level of assistance to the NIT. The first agency comprised the Director of Science, Technology and Innovation, who was the President; the Manager of Research and Innovation; a researcher for the Management of Research and Innovation, and a representative for each of the Research Units. Additionally, and according to the Statute, the Executive Aid Group should include at least four researchers, a lawyer and a financial consultant (Epagri 2010a, [s.p.]).

In the model idealized for the NIT, the board emerges as a decision-making body with responsibilities described in Table 1; while the executive aid group would be responsible for operational routine in the following activities: a) following requests for protection

and the maintenance of intellectual property titles; b) following the evaluation of technologies, processes and products for referral of any requests to obtain intellectual property copyright; c) the analysis and development of norms and reports on matters assigned to the group by external and internal legislation; and d) carrying out tasks defined by the NIT Board (Epagri 2010a, [s.p.]).

**Table 1.** NIT Board competencies (2010)

- a) To evaluate and regulate NIT activities according to legislation in effect.
- b) To define guidelines for the establishment of an institutional policy for the protection and transfer of knowledge.
- c) To deliberate about matters that are assigned by legislation, whether external or internal to the institution, as well as by the Executive Aid Group.
- d) To protect the establishment and development of an institutional policy to stimulate the protection of inventions, licensing, innovation and other forms of technology transfer, setting criteria for the enforcement of intellectual property copyright which is owned by Epagri.
- e) To evaluate demands for the application of innovation presented by the agriculture and livestock business sector and by society.
- f) To establish norms for the availability of researchers on the Epagri staff to work at scientific and technological institutions in Santa Catarina.
- g) To participate with the Management of Research and Innovation in the evaluation and classification of results arising from research activities and projects.
- h) To define the institutional policies related to its area of competence, including the application of revenue derived from intellectual property.
- i) To evaluate the requests of independent investors for Epagri to adopt an invention.

- j) To promote the protection of inventors and the dividends of results stemming from their inventions.
- k) To suggest the convenience and promote the protection of inventions, innovations and technology transfers developed at the institution, as well as their maintenance and distribution.
- l) To define and implement the institution's system for selecting products and processes that are the subject of protection.
- m) To be diligent with the protection of Epagri's immaterial assets.
- n) To encourage and aid in training the human resources needed for the implementation and continuous development of the policy for management of intellectual property.
- o) To set mechanisms to follow up on deposits of requests regarding intellectual property, with the aim of opposing any request for protection of processes or products demanded on behalf of a third party or of any of its employees when these are the result of research activities carried out by the company.
- p) To coordinate the development of operational norms for requests forwarded by any Epagri Unit regarding formalization with the competent agencies of petitions for recognition of intellectual property for the invention, creation or acquisition of processes or products that originated at Epagri.
- q) To coordinate the creation and maintenance of the Epagri Committees for Intellectual Property and Internal Committees for Biosafety.
- r) To act in alignment with the other NITs supported by Fapesc.
- s) To propose business clauses that are considered indispensable to the contracts signed by Epagri to the Executive Board.
- t) To contribute by settling administrative disputes within the Company regarding the invention of processes or products subject to the process of protecting their intellectual property.
- u) To develop its own internal statute and submit it to the Executive Board.

- v) To evaluate the convenience of outsourcing services concerning requests, follow-ups and the maintenance of requests for protection of intellectual property and propose these to the DEX.

Source: by the authors (2022) based on art. 5 of the Internal Statute (Epagri 2010a, [s.p.]).

In August 2010, during the same Decision that updated the Policy for the Management of Intellectual Property (DEX n. 9/2010), the institutionalization of the Epagri NIT was reiterated with a copy of the main points of the Internal Statute in one of the annexes.

However, although these pieces of legislation represented impressive progress in conducting issues related to intellectual property and technology innovation within Epagri, the fulfillment of the measures listed therein did not take place immediately. In practice, between 2010 and 2016, the NIT activities were performed by what was then the Research Management and limited to actions by the Executive Aid Group. Efforts were concentrated in disseminating a culture of innovation and raising awareness among peers, and mainly the Board, as to the importance of having an NIT at the Company. Despite research and innovation being part of Epagri's DNA, a certain resistance in accepting modernization is a feature of the agricultural sector. With the NIT's proposal it was no different: "[...] there was a level of resistance in understanding what the NIT was and what its purpose was. The NIT was not tangible, even for the Board." (Vidor and Neubert 2022, [s.p.]).

In the process of promoting the NIT, the most expressive effort came from employees allocated to the Epagri headquarters in Florianópolis. Later, with the reach the company was known for in the state of Santa Catarina, and in observance to a PRONIT recommendation, the Research Management began to coordinate actions with the representatives of the 13 units throughout the state. This operational model and structural organization did not thrive and, for about 6 years, activities at the NIT were limited to certification, registration and the protection of inventions, which were essentially cultivars (Vidor and Neubert 2022, [s.p.]).

In the middle of 2016, with the growing demand to regulate partnerships in compliance with the guidelines of the legal milestone for innovation and other complementary laws, the organization of the NIT was resumed. Still part of the State Department for the Management of Research and Innovation, by 2017, a document was drawn with *Basic guidelines for the signing of legal instruments related to research and innovation*, with models of minutes for different demands for partnerships and their respective internal processes (Vidor and Neubert 2022, [s.p.]).

Subsequently, in 2019, the Epagri NIT gained its own format and separated from the Research Management. In the Epagri internal organizational chart, the NIT emerges as a department tied to the Board of Science, Research and Innovation (DPCI) – hierarchically

the same as the State Department for the Management of Research and Innovation (Research Management) and the State Department for Communication and Marketing (Marketing Management) – with the operational nature of being a consulting body (Epagri 2022a, [s.p.]). Besides advantages in terms of autonomy and recognition, detaching the NIT from the Research Management recognized the department's aims, which do not only include protecting products and processes resulting from research, but also those stemming from outreach.

With the changes made in 2019, the Epagri NIT began a path towards constant and gradual consolidation, grounded on a well-defined mission, vision and values (see Table 2 below). In 2019, it was chosen by Fapesc Public Notice no. 14, the Support Program for the Implementation and Consolidation of Centers for Technology Innovation (NITs), whose resources helped to strengthen the NIT by improving its management model with activities such as the training of personnel and the exchange of experiences with other NITs in the state. Some of the activities carried out with the aforementioned Public Notice are: a) the 2021 NIT Organization and Management Workshop, with the presentation of cases of partnering ISTs: the University of Southern Santa Catarina (Unisul), the Federal University of Santa Catarina (UFSC) and the Brazilian Corporation of Agricultural and Livestock Research (Embrapa) (Vidor and Neubert 2022, [s.p.]);

b) the Seminar on Research and Innovation in Agriculture; and c) two courses on the Technology Readiness Level methodology (TRL/MRL).

The current layout at the NIT is the result of the new version of the Internal Statute (DEX Decision 02/2021), approved in February 2021, replacing DEX Decision 05/2010 and DEX Decision 09/2010. The change in the Statute, led by the NIT team, meets the need of adapting the norms to legislative updates and new institutional interpretations, demands and challenges, as well as to make processes more dynamic and operations and the coordination of decision-making processes at NIT easier (Epagri 2021a, [s.p.]).

With the reformulation, the Epagri NIT took on a more significant role in boosting innovation, which is clearly stated in the definition of its general aim:

[...] to be diligent in observing the establishment, maintenance and development of the Epagri Innovation Policy, as well as the elaboration of strategies and the execution of actions related to the intellectual property of Epagri creations and the permanent establishment of an internal environment that promotes innovation (Epagri 2021a, [s.p.]).

Besides the Epagri Innovation Policy – which is being evaluated by the Board to be approved in 2022 – operations at the NIT are guided by the Innovation Policy of the State Department of Agriculture, Fisheries

and Rural Development (SAR) and the Innovation Policy of the State of Santa Catarina, as well as the laws in effect in the state and in the country (Epagri 2021a, [s.p.]).

Table 2. NIT mission, vision and values

Mission: to encourage the adequate protection and transfer of inventions at Epagri, with the aim of integrating these with the community and contributing to rural, social and technological development in the state and in the nation.
Vision: to be an example, as an NIT, in the state and around the nation, as a facilitator of scientific, technological and cultural development of social and environmental interest, creating remarkable benefits and competitiveness for Epagri, for Santa Catarina and for Brazil.
Values: care for the image of Epagri and the state of Santa Catarina; appreciation for the potential of Epagri researchers and partnering institutions; transparency; an ethical behavior; social and environmental responsibility; trust; a commitment to the development and dissemination of solutions for farmers, productive chains, productive systems and arrangements in Santa Catarina.

Source: by the authors (2022), copy of information from EPAGRI (2022e, [s.p.]).

In terms of the organizational structure (Figure 1), the current structure of the NIT includes 3 bodies: Coordination, the Coordination support team and the Collegiate Board. The Coordination is carried out by the Coordinator, a public employee at Epagri, whose responsibilities are described in art. 7 of the Statute – as seen in Table 2 below – and based on the Innovation Policy, Since 2016, the NIT is coordinated by

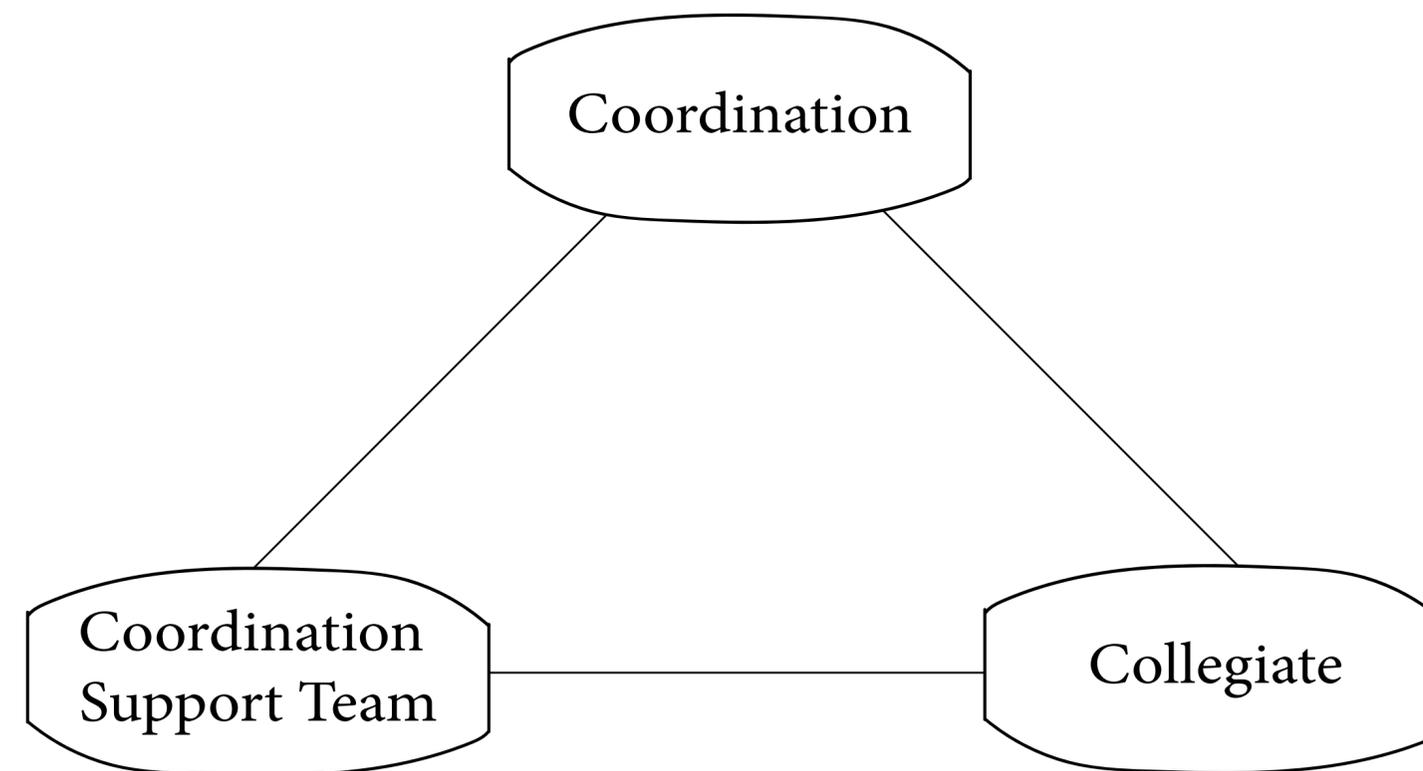
Enilto de Oliveira Neubert, who's responsibilities are the management of the center and negotiation with the Board to which the NIT is linked, and with other Company departments (Epagri 2021a, [s.p.]; Vidor and Neubert 2022, [s.p.]).

The Coordination support team, in the terms of the Statute (Epagri 2021a, [s.p.]), is made up of full-time employees from the Company's technical area; it can also exceptionally depend on the assistance coming from the administrative/operational, financial and legal areas. Currently, Mário Vidor, who is responsible for the register and protection of cultivars, is part of the support team.

Concomitantly, the Collegiate Board, considered NIT's most important decision-making forum, is formed by at least a) the NIT Coordinator; b) the Director of Science, Technology and Innovation; c) the Director of Rural and Fishery Outreach; d) the Manager of the State Department of Fisheries and Innovation (DEGPI); e) the Manager of the State Department of Rural and Fishery Outreach (DERP); f) research and/or outreach analysts who are part of the NIT team; g) Representatives of the DEGPI, the DERP, the Legal Department (DJUR), the State Department of Economic Financial Management (DEGEF) and the State Department of Technology Information (DEGTI). In addition to the Board's extensive operations, work groups are formed according to NIT demands (Epagri 2021a, [s.p.]; Vidor and Neubert 2022, [s.p.]).

Table 3 shows the responsibilities of the Collegiate Board, which are the same as those of the Coordination. Differently from the first NIT Internal Statute, which reflected the priorities of its time and was not emphatic, or was even silent, regarding prospecting technologies, innovation and innovation transfer, the new legislation highlights and promotes these aspects in the company.

**Figure 1.** NIT-Epagri internal organizational chart



Source: by the authors (2022) based on Epagri (2021a, [s.p.]).

**Table 3.** NIT Coordination and Collegiate competencies (2021)

- a. To focus on this establishment, maintenance and development of the institutional policy to stimulate the protection of creations, licensing, innovation and other forms of technology transfer.
- b. To organize and develop support activities for innovation in the ecosystem in which Epagri is situated.
- c. To evaluate and classify technologies resulting from research activities and projects in compliance with legal provisions.
- d. To evaluate requests from independent inventors for the adoption of an invention according to article 22 of Federal Law no. 10.973/2004.
- e. To comment on the convenience of promoting the protection of creations developed at Epagri, whether individually or in partnerships, as well as define and implement the institutional system of selecting products and processes subject to protection.
- f. To comment on the convenience of disseminating creations developed at Epagri that are subject to protection under the intellectual property law.
- g. To follow the processing of requests and the maintenance of the Epagri intellectual property titles.
- h. To prospect technologies and competitive intelligence solutions in the field of intellectual property aiming at guiding innovation at Epagri.
- i. To propose strategies for innovation transfer created by Epagri individually or in partnerships.
- j. To promote, comment and follow the relationship of Epagri with companies, agencies and public corporations, especially regarding activities related to technology transfer contracts, licensing, assigning right of use, providing technical services and partnership deals.
- k. To coordinate, aid and give opinions on deals and agreements for technology transfer managed by Epagri, notwithstanding the responsibilities of the Executive Board and of every contract manager and auditor.

- l. To assist, guide and evaluate demands presented by the business sector and by society to Epagri for innovation operations.
- m. To work in coordination with other NITs and ISTs, whether public or private, including those in the NIT network, and interact with different innovation ecosystems of interest to Epagri.
- n. To promote a culture of innovation at Epagri, stimulating continuous training in issues pertaining to the NIT.
- o. To propose tools that will help in managing relations between Epagri and third parties involving research, development and innovation.
- p. To propose drawing up and revising the Internal Statute and changes made, submitting it to the Epagri Executive Board for approval.

Source: by the authors (2022) based on art. 7 of the Internal Statute (Epagri 2021a, [s.p.]).

Because of its characteristics – as part of an institution for research and outreach in the agricultural, livestock and fishery sectors – the demands at the Epagri NIT in relation to the protection of its technological assets are directed mainly to registering and protecting cultivars at the Cultivar National Registry (RNC) and in the National System for Cultivar Protection (SNPC). Most of the company programs has at least one registered technology, with emphasis on cultivars with an annual productive cycle, such as rice, beans and vegetables, which present quicker results in research and development, besides fruit farming cultivars (Vidor and Neubert 2022, [s.p.]).

The Epagri portfolio includes both physical and digital technologies, procedures for vegetable or animal production, and for those that generate products, divided into eleven categories: grown and registered

cultivars; equipment; strains, input; mapping/zoning; methodology; agricultural-livestock or aquaculture procedures; agricultural-industrial processes; breeds/lineage; agricultural-livestock, aquacultural or agricultural-industrial production systems; and software (Epagri 2022f, [s.p.]). These technologies can be found on the NIT web page which stands out as a showcase for business in our digital times.

Among the more than 400 technologies developed and registered by Epagri, the SCS417 Monalisa (apple cultivar), the SCS123 Pérola (irrigated rice cultivar) and the SCS373 Valessul (onion cultivar) stand out, all under SNPC protection; as well as the Agroconnect website, a platform with agrometeorology information concerning atmospheric conditions, weather forecasts and the occurrence of disease in certain cultivars; and the Infoagro app which offers information to farmers and public policymakers to help in decision-making (Epagri 2022f, [s.p.]).

Between 2016 and 2021, the Epagri NIT analyzed 476 legal instruments, such as transfer technology and licensing contracts, right of use assignment or use of protected invention contracts, contracts for specialized technical service provision and research, development and innovation partnership agreements. Of these, 52.2% were partnerships with the private sector; 27.3%, with teaching institutions; 14.1% with public institutions; and 6.4% with international institutions (Epagri 2022b, [s.p.]).

The NIT is part of the movement to build the Santa Catarina NIT Network, or NITSC Network, in which it communicates with the NITs from other

state ISTs. Specifically, among its most important partnerships are the UFSC, the University of the State of Santa Catarina (Udesc) and, due to similarities in their goals, Embrapa (Vidor and Neubert 2022, [s.p.]).

Communication with Embrapa is particularly strong regarding the implementation of the TRL/MRL, and has led to a great number of learning experiences. The Embrapa Innovation Office is a reference in Brazil in the use of the technological readiness level and the intention of the Epagri NIT is to define an internal strategy for establishing a TRL based on the Embrapa experience. This would be an important step in publicizing and negotiating the Company's technologies. The sphere of action of the NIT includes not only this project, but many others.

To operate with greater quality and speed, the team plans to make internal adjustments that involve updating normalizations, defining workflows, and implanting a risk control system in the management and standardization of legal instruments. In addition, other challenges include a greater integration with innovation systems by establishing an open innovation proposal and the expansion of business models (Vidor and Neubert 2022, [s.p.]).

Another future project is to increase the presence of the NIT at the research units by recovering the strategic planning created during the PRONIT period. To make this goal feasible, a representative with the knowledge and competency to identify demands and connect with headquarters would have to be present at every unit. Thus, the idea

is that the Epagri NIT would increasingly “extend its arms over the hinterland” (Vidor and Neubert 2022, [s.p.]).

In its brief history of challenges and success, the Epagri NIT is consolidating a path that is still being made, and has had a significant role in promoting innovation and protecting intellectual property in the agricultural sector of Santa Catarina, bringing benefits to many farmers and to the population in general.

## Main legislation in effect

DEX Decision no. 09/2010 – Approval of the new version of the Institutional Policy for Intellectual Property Management.

DEX Decision no. 02/2021 – Approval of the new version of the NIT Internal Statute.

## Contact

Address: Rodovia Admar Gonzaga, 1347, Bairro Itacorubi, Florianópolis/SC.

E-mail: [nit@epagri.sc.gov.br](mailto:nit@epagri.sc.gov.br)

Site: <https://nit.epagri.sc.gov.br/>

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**09.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
ALTO VALE DO RIO DO PEIXE  
UNIVERSITY (UNIARP)**

The Alto Vale do Rio do Peixe University (Uniarp) is one of the most important higher education institutions in the Midwestern region and the only university located in the town of Caçador. Its origins go back to the Alto Vale do Rio do Peixe College (Fearpe), established on September 26, 1971 by Municipal Law no. 27/1971, through the efforts of the population of Caçador under the leadership of Bishop Dom Orlando Dotti to bring higher education to the countryside.

Activities at Fearpe began in June 1972 with the Education and Letters programs. The 150 initial vacancies were filled mainly by elementary school teachers from Caçador and other towns in the region such as Rio do Sul, Campos Novos, Curitibanos, Piratuba and Videira. The first years at the College were challenging, due to a lack of investments, the difficulty in forming a qualified faculty, limited facilities and logistics (Ceccato, Hahn, and Martins 2021, 18; Santos 2013, 8-10). Until 1976, when campus construction was partially concluded, all classes took place at the Nossa Senhora Aparecida School auditorium (Santos 2013, 13).

In the following decades, new programs were implemented and Fearpe, previously a public-law foundation, became “[...] a private-law, public, philanthropic, non-profit institution with administrative, property, economic-financial and didactic-programmatic autonomy.” (Ceccato, Hahn, and Martins 2021, 25).

In 1990, Fearpe joined with other state educational foundations – the Educational Foundation of the Santa Catarina Alto Uruguai (Feauc), the University Foundation of the Santa Catarina Northern Plains (Funploc), the Educational Foundation of Northern Santa Catarina (Funorte) and the Educational Foundation of the Santa Catarina Central Plains (Feplac) – in proposing a project to establish the Contestado University (UnC). After being sanctioned by the Federal Council of Education in 1992, the proposal started to pick up pace and was definitely recognized as a university in 1996. Its establishment was put into effect in 1997 (Santos 2013, 36-37).

The UnC academic administration was established in Caçador. The period that followed is described as being one of expressive growth in the student body, the improvement of facilities, the beginning of activities in the graduate programs, and the expansion of research and outreach programs, among other achievements. After 2006, however, conflicts between the UnC maintaining foundations, and the demand by the state public ministry that these foundations unify, led to reconsidering the arrangement made (Ceccato, Hahn, and Martins 2021, 36-40).

After a frustrated attempt to unify – that divided opinions and mobilized the academic community – the split between the institutions was approved by the General Assembly in December 2009. In the same

act, Uniarp was created, maintained by the University Foundation of the Alto Vale do Rio do Peixe (Funiarp) (Ceccato, Hahn, and Martins 2021, 39-54).

The new phase saw the expansion of the Fraiburgo university campus – established in 1989 –, the approval of two graduate programs *stricto sensu* – the Academic Master's Program in Society and Development (2015) and the Professional Master's Program in Elementary Education (2016) –, the beginning of distance learning (2017), and the establishment of the undergraduate program in Medicine (2018) (Ceccato, Hahn, and Martins 2021, 64-69).

Currently, Uniarp offers over 30 programs in bachelor's degrees, teaching degrees and higher education degrees in technology in Applied Social Science, Exact and Earth Sciences, Health Sciences and Human Sciences. There are 5 thousand students, over 300 faculty members, as well as technical and assistant staff, working in facilities that include 147 classrooms, 37 laboratories, a library, a theater, a multiactivity arena, and much more (Uniarp 2022, [s.p.]; Fapesc 2022, [s.p.]).

One of Uniarp's most recent actions to qualify services rendered to the academic and external community was the establishment of the Center for Innovation and Technology (NIT). The institutionalization of the NIT emphasizes the role of the institution in promoting innovation

in Caçador and the surrounding region, and creates an expectation of excellent results in the short, medium and long run. The section below presents the main aspects of the process of establishing the NIT and what lies ahead.

## Getting to know the Uniarp NIT

To narrate the history of the Uniarp NIT is to describe the first steps of a movement still in the making and to investigate the reasons that triggered this process. Differently from most of the NITs that make up the ecosystem in Santa Catarina, this NIT is still being implemented: construction began in 2021 after an idea nurtured since at least 2017 ripened among the university leaders involved.

That year, Uniarp faculty and managers started a movement to propel the region's S, T & I ecosystem. The absence of an innovative and technological economic matrix in the region seemed to be a lost opportunity, which the leaders saw as a chance for Uniarp, the most important higher education institution in the area, to head the movement (Hahn 2022a, [s.p.]).

Meetings, planning and raising awareness among local agents took approximately two years with the coordination of other implicated parties such as the municipal authorities, the National Service for Commercial Instruction (SENAC), the Commercial and Industrial

Association of Caçador (ACIC), the Federation of Industries of the State of Santa Catarina (FIESC) and the Federal Institute of Santa Catarina (IFSC). In 2019, the Caçador Office for Economic Development agreed to fund the formation and maintenance of an Innovation Center in the town. Thus, The Inova Contestado Center for Innovation opened its doors in July 2019 with the goal of providing a physical environment for entrepreneurs to hold training courses, activities, policies and other programs (Hahn 2022a, [s.p.]; Caçador 2021, [s.p.]).

Uniarp cooperated as a partner in all of the phases of establishing the Center for Innovation, though the management of activities was carried out by the Caçador Office for Economic Development. In 2021, after the balance of the Center's first two years was released, there was a clear perception that, in spite of the facilities, very few innovative projects had developed due to a lack of a culture of entrepreneurship in the region. Hence, Uniarp understood it had to "take a step back" and organize itself internally to make a more strategic contribution based on its fields of expertise – teaching, research and outreach – and strengthen the regional innovation ecosystem (Hahn 2022a, [s.p.]).

The change in direction was greatly influenced by guidelines received from Fapesc through its President Fábio Zobot Holthausen who, after visiting the university, encouraged the creation of a NIT

to be a coordinating forum of activities related to innovation at the institution. The change goes hand in hand with an institutional shift that began in 2019, when innovation, creativity and entrepreneurship were included as guidelines for the Institutional Pedagogical Project (PPI), under the scope of the Institutional Development Plan (PDI) 2019-2022 (Hahn 2022a, [s.p.]).

In August 2021, Professor Ivanete Schneider Hahn, who taught undergraduate classes and the Academic master's classes in Development and Society, was assigned, through Decree no. 078/2021, to form and coordinate the Uniarp NIT, a department linked to the Academic Administration. The implementation of the NIT has demanded a great deal of work in convincing and bringing awareness to all the university stakeholders, and gained strength when the university participated in Fapesc Public Notice n. 29/2021 which was directed to projects for facility improvement (Uniarp 2021, [s.p.]; Hahn 2022a, [s.p.]).

With the funds from the notice, Uniarp carried out an important phase in implanting the NIT: building its physical space. The NIT headquarters was planned to hold a makerspace, a classroom, and a teaching and coworking laboratory, and is a source of pride for everyone involved in institutionalizing the Center (Hahn 2022b, [s.p.]). In Professor Hahn's words, "[...] once the space is there, people feel as if they are welcome to occupy it. The place comes "alive". This builds

interest and helps in forming the intended culture of innovation. We are now at a new level!" (Hahn 2022a, [s.p.]).

Concurrently, the NIT team, today formed by Professor Hahn and two scientific initiation interns, are working on developing a proposal for an Institutional Innovation Policy. Uniarp does not have this kind of policy just yet, and for this reason is using other community university policies for its first version, along with information from the Innovation Law and updates of the 2016 legal milestone. The path towards approving the document is long – with the required scrutiny of the Institutional Attorney's Office, the University Council and the Board of Trustees –, but it will represent the effective formalization and regulation of the NIT (Hahn 2022a, [s.p.]).

The initial phase of the NIT has also been marked by the development of a visual identity for the project and its position in social medias. The NIT trademark, seen in Figure 1, represents the shape of the map of the 15 towns in the Alto Vale do Rio do Peixe, a region that is benefitting from an innovation habitat beginning to be outlined at the Center. On social networks, a page shares moments in the path of the NIT and releases scientific information concerning topics related to innovation and entrepreneurship (NIT-Uniarp 2022b, [s.p.]).

**Figure 1.** Uniarp NIT visual identity



Source: copied from Hahn (2022b, [s.p.]).

For the Uniarp faculty and managers, the opening of the NIT, with the introduction of the implementation phases, aims and purposes, took place in May 2022. At the time, representatives of the academic administration, undergraduate and graduate program coordinators, the Pedagogical Support Center, and the Model Office (responsible for the NIT office project); as well as department coordinators, researchers and teachers were present. Bringing these representatives together was part of the strategy to include the NIT and innovation in the Pedagogical Projects of the undergraduate and graduate programs, as well as research and outreach projects, to give impulse to an education directed to entrepreneurship (NIT-Uniarp 2022a, [s.p.]).

The structuring of the Uniarp NIT is being conducted for the Center to be able to reach specific objectives. The first is to stimulate S T & I activities, first within the university and, soon after, in other S T & Is in the region. For a successful and long-lasting NIT experience, the coordinating body believes that an atmosphere of innovation that is able to provide feedback to NIT activities is essential (Hahn 2022a, [s.p.]; Hahn 2022b, [s.p.]).

The second aim is to integrate researchers, teachers, students, professionals, entrepreneurs and public agents in the Alto Vale do Rio do Peixe region. The challenge here is to bring these groups together so that research carried out at the university becomes more significant and aligned with regional demands. Since the region stands out as one of the main centers of forestry, oleaceous products and fruit farming in the state, there is enormous potential for the development of technologies targeting these production sectors (Hahn 2022a, [s.p.]; Hahn 2022b, [s.p.]).

The third and fourth aims are connected: to give support to the development of research carried out at Uniarp and at other regional ISTs, and disseminate and democratize access to results. Support to research will be planned with the Research Coordination. As for dissemination, the NIT team intends to develop pathways, reports and more dynamic forms of making local scientific production more accessible and well-known, fostering the community's reception.

It is a known fact that knowledge confined to libraries, institutional repositories and scientific journals does not reach its full potential (Hahn 2022a, [s.p.]; Hahn 2022b, [s.p.]).

In the long run, after boosting applied research and the development of new products and processes, the aim of the NIT is to manage intellectual property and mediate technology transfer from Uniarp to the community (Hahn 2022a, [s.p.]; Hahn 2022b, [s.p.]). This phase will represent the NIT's full maturity, translated into receiving values from royalties, for example, and the effective fulfillment of its purpose.

With operations at the NIT, the expectation is to benefit students and researchers at the university – especially those connected to the Academic Master's in Development and Society; the Professional Master's in Elementary Education; and the Uniarp Research Support Fund – and at other ISTs; Alto Vale do Rio do Peixe entrepreneurs and inventors, as well as associations and federations representing these categories; local government agencies, and regional innovation agents, such as the Inova Contestado Center for Innovation and the Videira Center for Innovation (Hahn 2022b, [s.p.]).

The future of the Uniarp NIT is rich with the challenges and opportunities of a project that is still starting out. The prospect thus is to carry out all the steps in planning the implementation and including them in daily academic activities. Then, to go beyond institutional limits by interacting

with other agents in the regional innovation ecosystem, overseeing opportunities and laying the groundwork for new frontiers.

## Main legislation in effect

Decree no. 078/2021/Chancellor – Assigns a faculty member to coordinate the Uniarp NIT.

## Contact

Address: Rua Victor Baptista Adami, 800 – Centro, Caçador – SC, 89500-199, Bloco D, 3º Andar.

E-mail: [uniarp@uniarp.edu.br](mailto:uniarp@uniarp.edu.br)

Site: <https://uniarp.edu.br/>

Instagram: @nituniarp | <https://www.instagram.com/nituniarp/>

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**10.**

**CENTER FOR INNOVATION AND  
TECHNOLOGY TRANSFER (THE NITT)  
OF THE COMMUNITY UNIVERSITY  
OF THE CHAPECÓ REGION  
(UNOCHAPECÓ)**

The Community University of the Chapecó Region (Unochapecó) is a community-based higher education institution created by Resolution no. AS/002/2002 of March 11, 2002. It is located in the city of Chapecó and maintained by the University Foundation for Western Development (Fundeste).

Fundeste was created in the beginning of the 1970s as the result of a community movement with the aim of bringing higher education to the western region of Santa Catarina. July 4<sup>th</sup>, 1970, when a general assembly involving authorities and representatives of 37 municipalities occurred, is considered the pivotal moment of the creation of Fundeste. Its formalization, however, only happened in December 1971, through Municipal Law no. 141, and its solemn installation was carried out in February 1972 (Fundeste 2022a, [s.p.]).

Still in 1972, the Foundation offered its first program, Pedagogy. Two years later, it relocated to the address where Unochapecó is currently located and began offering programs in Administration and Accounting Sciences. The 1980s were the beginning of Fundeste's lato sensu graduate activities, with the first class of the Specialization in Production Engineering program graduating in 1982. Around this time, the first research and outreach programs were also created: the Center of Memory of the Western Region of Santa Catarina (CEOM) and the Continuing Education Sector (SEP) (Fundeste 2022a, [s.p.]).

In 1990, Fundeste joined the University Foundation of Western Santa Catarina (FUOC), from Joaçaba, and the Alto Vale do Rio do Peixe Foundation for Entrepreneurship Education (FEMARP), from Videira, in the constitution of the University of Western Santa Catarina (Unoesc), which took charge of higher education in Chapecó. Despite the suspension of its academic activities, Fundeste remained a legal entity, functioning as a co-maintainer of the Unoesc Foundation until 2021 (Unochapecó 2022a, [s.p.]).

Motivated by the desire to form a university in Chapecó, in the second semester of 2000, local leaders began planning the reactivation of Fundeste, which was effectively carried out in March 2021. On August 27, 2002, the Foundation became responsible for all activities in the Chapecó Campus, which became Unochapecó, in a participatory and dialogical process involving multiple regional actors, including members of labor committees, the General Assembly and the Board of Trustees of Fundeste (Unochapecó 2022a, [s.p.]).

Accredited by State Decree no. 5.571 of August 27, 2002, the 2000s were a period of consolidation and growth for Unochapecó. Among its innovations are the creation of the Regional Institute for Sustainable Development (2003) – currently named Goio-En Institute –, which is maintained by Fundeste, and the approval of the first graduate program, *stricto sensu*, in Environmental Sciences (2005). Furthermore,

Unochapecó's infrastructure was increased, and it invested heavily in the qualification of its faculty (Fundeste 2022a, [s.p.]).

In the 2010s, its education, research and outreach activities were expanded, and innovation became a relevant and sought-after dimension, especially with the inauguration of the Pollen Science and Technology Park. Presently, in addition to its main campus, Unochapecó is also installed in São Lourenço do Oeste, reaching a total of 6,610 students in undergraduate and graduate programs, *stricto* and *lato sensu* (Fundeste 2022b, 60).

At the undergraduate level, 58 programs are offered in the in-person and distance modalities, which are divided into six schools of knowledge: School of Management and Business; School of Communication and Creativity; School of Human Sciences; School of Health Sciences; School of Agricultural and Environmental Sciences; and the Polytechnic School. At the *stricto sensu* graduate level, six master's and three doctoral programs are offered; and, at the *lato sensu* graduate level, over 40 options of specializations are offered, in the in-person and distance modalities (Fundeste 2022b, 60).

The university's scientific production is organized around 38 research groups, which are registered with the National Council for Scientific and Technological Development (CNPq). Its outreach activities are represented by 15 institutional programs – many of which are carried

out with the aid of external partners –, and 63 projects integrated into program curricula (Fundeste 2022b, 84).

Unochapecó's vision is “[...] to be a reference as a community-based, democratic, innovative, entrepreneurial and internationalized university.” (Unochapecó 2022b, [s.p.]). Following this stance, the university has, in recent years, prioritized the strengthening of relationships with the production sector and social organizations, “[...] improving its instruments for supporting development, focusing on the technological innovation, agility and quality of the services it provides.” (Unochapecó 2022b, [s.p.]).

Among the structures that contribute to the construction of an innovation culture at the university are the Agency for Innovation Management and the Center for Innovation and Technology Transfer (NITT). The following section recalls the main historical aspects of this strategic sector and presents the perspectives that comprise its sphere of action.

## **The NITT: getting to know the Unochapecó Center for Innovation and Technology**

The history of the Unochapecó NITT developed within a wide-ranging process of institutional and academic-pedagogic repositioning, which has been taking place for over ten years, in the sense of reinforcing the

role of the university in its relationship with the production sector and the government. In this process, The NITT was one of the pillars that sustained Unochapecó so that the latter could become a reference institution in terms of innovation in western Santa Catarina.

The NITT was created in 2008 via University Council Resolution no. 036/2008, due to the need to decentralize activities and accelerate the processing of procedures and initiatives related to technology innovation, intellectual property protection, technology transfer and the development of institutional projects. Its creation also sought to meet the provisions of the Technology Innovation Law (Law no. 10.973/04) and the recently-enacted Santa Catarina Innovation Law (Unochapecó 2008c, [s.p.]).

The institution of the NITT was strategic in that context for fostering an innovation culture in the university environment, alongside the work done by the Unochapecó Technology Incubator (INCTECH) since 2003. On the other hand, with regard to the regional community, the formation of the NITT broadened the debate being developed at the time on the necessary conditions for creating a Technology Park in Chapecó (Fantinelli *et al.* 2017, [s.p.]).

The NITT was registered on the institution organizational chart as connected to the Research, Outreach and Graduate Studies Department, in an advisory role, to fulfill a double objective: a) to support the development of projects, in terms of management; and

contact with development agencies, with regard to research, outreach and service provision; and b) to coordinate and operationalize actions based on technology innovation in all fields of science and technology, facilitating the establishment of partnerships with the production sector (Unochapecó 2008c, [s.p.]). The NITT's competencies, as defined in art. 8 of Resolution no. 36/2008, are shown in Table 1 below.

The Center was presented to authorities, representatives of academia and the entrepreneurial field, and students on June 5, 2008, in a ceremony with a lecture by the Director of Science, Technology and Innovation of the Santa Catarina Office for Sustainable Economic Development. Located on the ground floor of Block F, the NITT's first Coordinator was Luiz Henrique Castelan Carson, a professor of the undergraduate program in Food Engineering (Unochapecó 2008b, [s.p.]).

One year later, Resolution no. 30/2009 of the University Council approved the NITT's structure. It was understood that, considering its roles and activities, two mediators were needed: one in the field of technology innovation, and another in the field of prospection and fundraising. The political representation of the NITT in academia, the production sector and other sectors of society would be carried out by the General Coordinator; meanwhile, the technical and administrative support activities would be done by a project analyst, on a full-time basis (Unochapecó 2009e, [s.p.]).

**Table 1.** Unochapecó NITT competencies

- a) To propose the Unochapecó Intellectual Property Policy.
- b) To identify any needs and potential for research, outreach and service provision activities for the community.
- c) To explore the potential of the NITT's activities in undergraduate and graduate teaching.
- d) To implement, consolidate and ensure the maintenance of the institutional policy encouraging the protection of creations, licensing, innovation and other forms of technology transfer.
- e) To support the development of research, outreach and service provision projects that seek to raise external funds.
- f) To organize, mediate and be responsible for the management of transactions for the provision of services by Unochapecó with the community.
- g) To opine on the convenience of patent applications and promote them, in addition to providing an opinion on the convenience of disclosing the creations developed at the institution subject to intellectual protection.
- h) To map the research and development needs of industries and opportunities for fundraising.
- i) To promote the training, in technological innovation, of Unochapecó collaborators.
- j) To stimulate and support the development of cooperation projects involving companies, ISTs, and other organizations.

Source: by the authors (2022), with a copy from art. 8 of Resolution no. 36/2008 (Unochapecó 2008c, [s.p.]).

The proposal for the Unochapecó Industrial Property and Technology Transfer Policy, which was defined in the NITT Regulation, was one of the first measures taken by the sector. After it was composed, discussed and processed at the University Council, the Policy became known via

Resolution no. 032/2010. This document established the criteria for managing the rights and obligations inherent to intellectual creations produced in the institution, as well as those related to technology transfer, through the commercialization and licensing of intangible goods owned by the university (Unochapecó 2010b, [s.p.]).

With regard to the NITT, the Policy had, among other merits, that of defining its role in the different stages of the protection process – from the reception of invention disclosures to their eventual filing and licensing of industrial property (Unochapecó 2010b, [s.p.]). In 2015, the Policy's text was amended, and the new version, gathered in University Council Resolution no. 179/2015, remains in effect.

In the NITT's first years of operation, given that studies with a potential to result in requests for intellectual property protection were still in their initial stages, demands were mainly related to mediating service provision contracts, as well as prospecting and managing projects of interest to Unochapecó.

The NITT established a partnership with the Association of Municipal Councils of Western Santa Catarina (Acamosc) to carry out training on topics such as legislative practices, development and territorial planning, and to promote a course in Public Planning and Aspects of the Environmental Code of Santa Catarina – programs aimed at municipal public officials (Unochapecó 2008a, [s.p.]). Furthermore, in its first year, it provided services to the municipalities of São Lourenço do Oeste (SC)

and São Valentim (RS) in the creation, respectively, of the Municipal Plan for Social Interest Housing and the Integrated Participatory Strategic Planning (Unochapecó 2009c, [s.p.]).

As a project office, the NITT was crucial for the execution, at Unochapecó, of the project named Technology Development and Transfer for the Cultivation and Processing of Phyto-therapeutic Medications in the Western Region of Santa Catarina, by the Ministry of Agrarian Development and the Caixa Econômica Federal bank. The project is remembered as “the NITT’s first success case in project management” and its results were presented at the Seminar for Technology Development and Transfer in the Cultivation and Processing of Phyto-therapeutic Medications in the Western Region of Santa Catarina, which was carried out with the NITT’s support (Unochapecó 2011a, [s.p.]).

In 2009, the NITT raised funds from the state government through Fapesc Public Notice no. 12/2009 to carry out the Western Santa Catarina Strategic Structuring for the Development of Innovation program. This resulted in the creation of the Inter-institutional Doctorate in Manufacturing Engineering, in partnership with the Federal University of Rio Grande do Sul (UFRGS); the creation of the project Professional Master’s Degree in Technology and Innovation Management; the creation of three regional incubators in the cities of Palmitos, Saudades and Seara; the creation of undergraduate programs in Mechanical

Engineering and Electrical Engineering; and the implementation of the research center strategy and structuring of the stricto sensu graduate programs at Unochapecó (Unochapecó 2013b, [s.p.]). These initiatives fostered scientific production with a potential for innovation and, in the case of the regional incubators, brought the university closer to the production sector, leveraging the NITT’s activities.

While it carried out administrative routines, the NITT also took important steps in the dissemination of issues related to its field of operations. In 2009, it organized the 1st Southern Brazilian Seminar on Innovation and Technology Transfer, which gathered scholars and leaders from the public and private sectors to debate topics such as the innovation and development of technology, the regulation of university/company contracts, industrial property as a competitive advantage and the formation of technology parks (Unochapecó 2009b, [s.p.]). The event’s success ensured that it would become a tradition in the NITT calendar, reaching, in 2018, its fourth edition.

The NITT progressed toward its purposes, but, as it was a structure in development, it still faced challenges, especially with regard to improving its management model and to the execution of activities. The search for knowledge from the most diverse sources – courses, congresses, experience exchanges with other ISTNITs etc. – functioned as a formula for overcoming difficulties. Its participation in the Project for the Establishment and Development of an Arrangement of

Technological Innovation Centers in Santa Catarina (PRONIT) from 2009 to 2011 was a significant fact in this regard.

PRONIT – provided by the Funding Authority for Studies and Projects (Finep) and promoted by the Euvaldo Lodi Institute (IEL), Fapesc and the Federal University of Santa Catarina (UFSC) – offered training on subjects such as: project development and management, searching in patent databases, development of service provision contracts, assessment and evaluation of technologies, intellectual property and technology transfer management (Unochapecó 2009d, [s.p.]). These activities, which always featured the participation of NITT representatives, were developed mainly in Florianópolis. In Unochapecó, PRONIT was presented in November 2009, with the participation of Eliza Coral, consultant for the IEL (Unochapecó 2009a, [s.p.]).

The involvement in PRONIT allowed the development of technical competencies and the strategic planning for consolidating the NITT, and allowed the increase of the team, with funding being directed toward the hiring of an intern. On the other hand, it strengthened the NITT's contact with other educational institutions, planting the seed of the network as an organization and integration mechanism between Santa Catarina's NITs.

These incentives from the external environment led to a growth in the institutional visibility and importance of the NITT, indicating the need

of creating means for its expansion. Thus, in August 2010, the sector gained a new facility in Block E of Unochapecó. At the time, the NITT was coordinated by professor Rose de Oliveira Mendes, and the growth of its physical infrastructure coincided with the launch of the Center for Software Residency (CRS), which joined, alongside the NITT and INCTECh, Unochapecó's nascent Innovation Network (Unochapecó 2010a, [s.p.]).

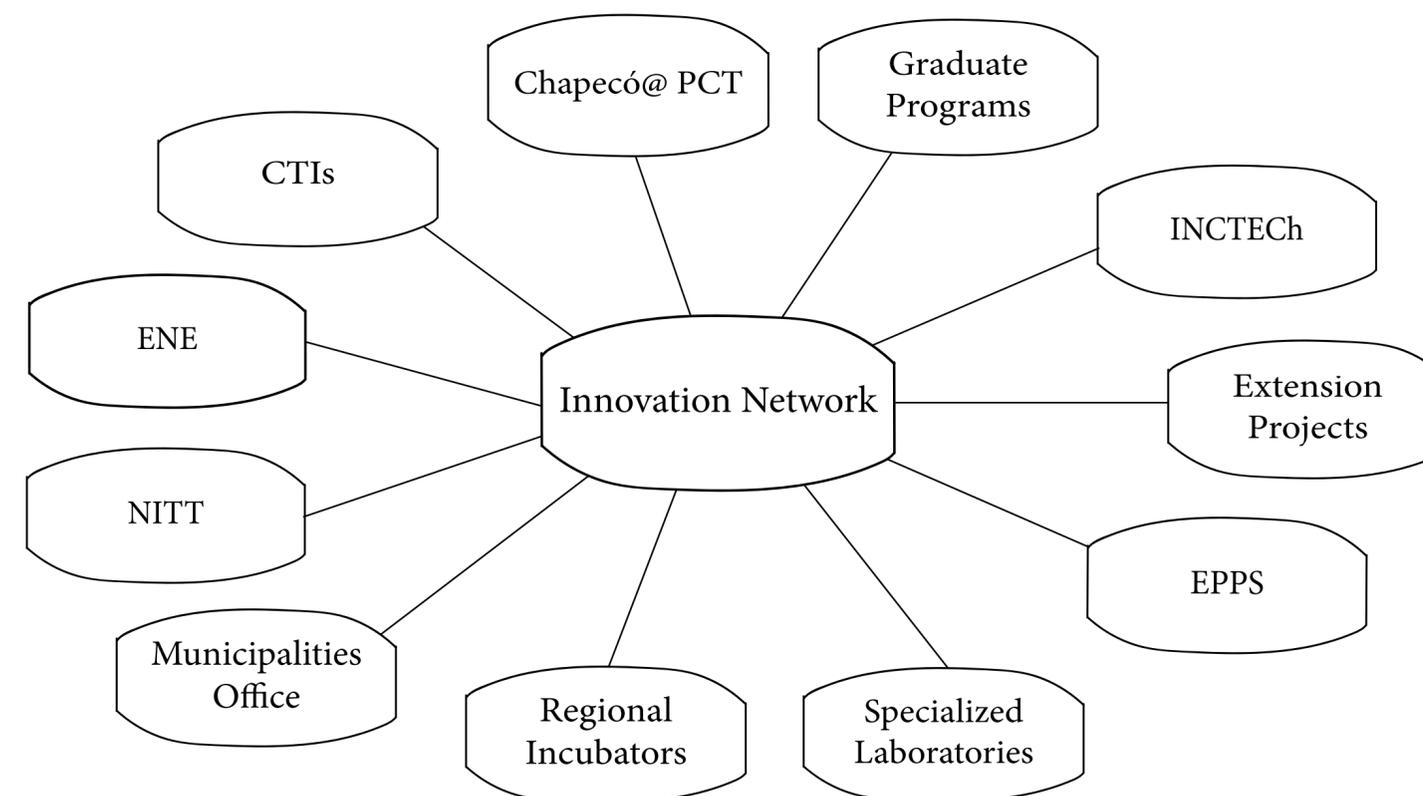
In this first phase of the NITT's history (2008-2013), the institution's interaction with the production sector resulted from both an organic movement, motivated by the demands of researchers and companies, as well as singular events with enormous potential to showcase the NITT, such as participations in trade fairs. The NITT was present in two editions of the Multisolutions in Management, Services and Technology Fair (Expen), organizing the Innovation Management Workshop in its first edition, in 2011 (Unochapecó 2011b, [s.p.]). In the Farming, Industry and Commerce Fair-Expo of Chapecó, Efapi, which took place the same year, the NITT had its own stand, an opportunity to publicize its activities and search for new partnerships (Unochapecó 2011c, [s.p.]).

The creation of the Chapecó @ Science and Technology Park (PCT) – currently Pollen Science and Technology Park –, by Ordinance no. 132/2012, inaugurated a new period in the governing of innovation at the university, directly impacting the sectors in charge of this

function, including the NITT. The formalization of the PCT was the result of a long planning process beginning in 2008, which involved interinstitutional debates and negotiations, and the development of the local innovation ecosystem. After two scouting missions in 2010 and 2011 to learn about reference parks in the Catalonia region, in Spain, the implementation project of the Park was structured in a definitive way (Fantinelli *et al.* 2017, [s.p.]). The NITT staff, especially its coordinators, was involved in all stages of this process.

In 2013, the Unochapecó Innovation Network was institutionalized, with the centralization of different actors involved in the consecution of the PCT. Some of these were already operational, such as the NITT and INCTECh, and others had been recently founded, such as the Office for Projects and Service Provision (EPPS), the Municipalities Office (EM) and the Office for Business and Entrepreneurship (ENE). The implementation of the Network contributed to “[...] the relationship of the agents of the production sector with the research, outreach and teaching capacities installed at the university [...]” (Fantinelli *et al.* 2017, [s.p.]), and provided support for carrying out the Park’s next implementation phases.

**Figure 1.** Innovation Network Organizational Chart (2013)



Source: by the authors (2022), based on Fantinelli *et al.* (2017, [s.p.]).

The formation of the Network altered the work dynamics of the NITT, especially with regard to project control and service provision, tasks that were absorbed by the EPPS. Consequently, in this new configuration, the NITT started to mainly carry out interinstitutional cooperation activities, as well as technology innovation and intellectual property management. In terms of its facilities, it was transferred to the third floor of Block G, with the Innovation Network. The NITT was coordinated, in this period, by professor Radamés Pereira (Fontanela 2022, [s.p.]).

In spite of these changes, the NITT's protagonism as a mobilizer and multiplier of knowledge was unchanged, within and outside the university. In 2013, the NITT promoted an international workshop on Regional Innovation Systems, with the participation of professionals from Brazil, Italy, Germany, Argentina and Colombia; moreover, it supported the hosting, by the IEL, of the Workshop for the Integration of the Regional Innovation System of the Chapecó Region (Unochapecó 2013a, [s.p.]). Between 2013 and 2014, it organized, in partnership with the Federal University of Santa Catarina (UFSC) and the National Institute of Industrial Property (INPI), two editions of the International Congress for Open Innovation in the Food and Beverage Industry (Fontanela 2016, 155).

Furthermore, 2013 marks the joint organization – by the NITT and INCTECH – of the first Innovation Marathon. In the form of a competition, the Marathon provided tools for the development of innovative businesses based on ideas from undergraduate and graduate students, fostering projects for incubation with INCTECH. In 2018, the competition reached its sixth edition (Unochapecó 2018, [s.p.]).

The fruits of the acculturation for innovation and intellectual property, as well as of the consistency of the studies developed at Unochapecó, began to be harvested in 2014, with the filing of the first patent application owned by the institution (Unochapecó 2014, [s.p.]). At this stage, the

processing of applications for intellectual property protection followed established pathways, as it does today.

In the NITT's history, staff training has always been a priority. In many periods, employees and interns allocated to the center participated in courses offered by the INPI, the World Intellectual Property Organization (WIPO) and other institutions in the field. In 2014, Unochapecó celebrated a Cooperation Agreement with Fondazione Bruno Kessler (FBK) from Trento, Italy, to carry out collaborative projects and, in the following year, the NITT Coordinator, professor Cristiani Fontanela, and two other university representatives conducted studies for three weeks at the Italian institution. (Fontanela 2016, 156).

The visit to Italy allowed them to learn about the Trentino innovation system and the model adopted by FBK in the management of intellectual property and technology transfer rights. As a result of this international exchange, Unochapecó promoted the Seminar for Scientific Innovation and Industrial Applications: integration between Brazil and Italy, which was organized by the NITT and the Graduate Program in Technology and Innovation Management, and sponsored by FBK and Fapesc (Fontanela 2016, 156).

Other international experiences the NITT participated in, and that also contributed to the improvement of activities in the sector, were: a) the Technology Management and Regional Development International Workshop, in Córdoba, Argentina, in June 2015; b) the 25th International

Conference for Management of Technology – IAMOT, in the state of Florida, United States, 2016; and c) the 26th International Association for Management of Technology Conference – IAMOT 2017, in Vienna, Austria, in May 2017 (Fontanela 2022, [s.p.]).

The beginning of the activities of the Chapecó Center for Technology Innovation, which also houses Pollen Science and Technology Park, in 2021, inaugurated a new stage in the history of the NITT. Unochapecó took on the management of the Park, and, similarly to the other members of the Innovation Network, now denominated Agency for Innovation Management, the NITT operated outside the location, a circumstance that significantly favors an integration with the other actors of the regional innovation ecosystem (Fontanela 2022, [s.p.]).

In this context, events and training sessions are promoted in a collaborative manner by the Agency's offices, with outstanding performance by NITT members. Even before the inauguration of the Center for Innovation, and when Pollen Park was still known as Chapecó@ Science and Technology Park, its schedule already featured summits, hackathons, talks and other activities (Fontanela 2022, [s.p.]).

Currently, in Unochapecó's organizational chart, the NITT is linked to the Agency for Innovation Management, which, in turn, answers directly to the Chancellor. Its team is formed by three members: Professor Cristiani Fontanela – NITT Coordinator and professor of the undergraduate and master's programs in Law at Unochapecó –, a project analyst

and an administrative technician. In addition to demands in the field of intellectual property protection, the NITT mediates all agreements and contracts established between Unochapecó and the production sector, be it for the negotiation and commercialization of technologies developed by university researchers, or for conducting research projects and joint developments (Fontanela 2022, [s.p.]).

**Figure 2.** Unochapecó NITT Visual identity (2022)



Source: The NITT archives (2022).

With the adoption, by Unochapecó, of the Experience-Based Learning (Abex) education model in 2021, NITT activities achieved even greater institutional relevance. Abex promoted the restructuring of the Pedagogical Course Projects (PPC), expanding professional practices and contact with the community based on the identification of problem situations and proposing projects to face them. Student activities,

when involving interventions in external spaces, are monitored by the NITT in all its phases – from the formalization of cooperation to the presentation of results (Fontanela and Fiori 2021, [s.p.]).

Within the scope of Abex alone, more than 50 projects have already been aided by the NITT. In general, in the last five years, the number of cooperation agreements signed with the production sector has amounted to over 80. Regarding intellectual property, there are seven patent requests under analysis by the INPI, eight industrial designs and two computer programs registered, the latter in joint ownership (Fontanela and Fiori 2021, [s.p.]).

In 2019, the project *Maintenance and Consolidation of the Unochapecó NITT jointly with the Chapecó Center for Innovation and Chapecó@Science and Technology Park*, proposed by the NITT Coordinator, was approved by Fapesc Public Notice no. 14/2019. In this project, a mapping of the competencies of the institution's professors was done, an information booklet on intellectual property was published, the NITT technology portfolio was organized and made available electronically on the Unochapecó page; an intern was hired; team training was promoted, events were held, among other actions (Fontanela 2022, [s.p.]).

In addition to internal improvements, the Unochapecó NITT has been involved actively in the constitution of the Santa Catarina Network of Innovation Centers – the NITSC Network –, an initiative promoted by Public Notice no. 14/2019. The NITT Coordinator, professor Cristiani

Fontanela, participated as a member of the Network Management Committee in the 2021-2022 period (Fontanela 2022, [s.p.]).

The NITSC Network is not, however, the only space for discussion and collective construction where the NITT participates. In the city of Chapecó, the NITT is represented in the Chapecó Municipal Council for Science, Technology and Innovation (CMCTI). At a national level, it is part of the National Forum of Innovation and Technology Transfer Managers (FORTEC). Additionally, it communicates with associations representing the business sector of Chapecó and surrounding region, and with other universities in the state (Fontanela 2022, [s.p.]).

For over a decade, the path followed by the Unochapecó NITT is intertwined with the university's own history in promoting innovation, both institutionally and in the western region of Santa Catarina. Consolidated in a favorable environment to new connections, such as the Pollen Science and Technology Park, the NITT remains committed to keeping itself up-to-date and equipped to attend, with quality and efficiency, the demands of the academic community and its partners.

## **Main legislation in effect**

Resolution no. 36/2008/CONSUN – Creates the Unochapecó NITT.

Resolution no. 30/2009/CONSUN – Approves the NITT's structure.

Resolution no. 179/2015/CONSUN – Updates the Unochapecó Industrial Property and Technology Transfer Policy.

## Contact

Address: Pollen Parque Científico e Tecnológico, R. Eduardo Pedroso da Silva, 195 E – Efapi, Chapecó – SC, CEP 89809-060.

E-mail: the NITT@unochapeco.edu.br

Site: <https://www.unochapeco.edu.br/the NITT>

Instagram: @pollenparque | <https://www.instagram.com/pollenparque/>

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**11.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
UNIVERSITY OF THE EXTREME  
SOUTH OF SANTA CATARINA  
(UNESC)**

Being community-based, the University of the Extreme South of Santa Catarina (Unesc) is maintained by the Educational Foundation of Criciúma (Fucri), the first institution to offer higher education programs in the southern region of Santa Catarina. Its creation in the 1960s attended to the issues faced by the residents of the region, who, until then, needed to migrate to the capital or to other states in search of professional qualification.

The movement in favor of higher education in Criciúma gained maximum expression on June 22 and 23, 1968 when the Seminar of Pro-Implementation Studies for University Education of South Santa Catarina was held. The event gathered educators, intellectuals, politicians, magistrates, community leaders and the press, and resulted in the enactment of Law no. 697, which created Fucri. In addition to responding to the organized community's call, the creation of the institution also fulfilled a promise made by the then-mayor Ruy Hülse in his election campaign (Unesc 2018, [s.p.]).

Initially, Fucri offered programs aimed at training teachers, expanding its options, over time, to meet the demand of the business sector. Classes took place at the Madre Tereza Michel School and, from 1971 onwards, at the General Oswaldo Pinto da Veiga Technical School (SATC). The first facilities on the current campus, located in the University District, in Criciúma, were inaugurated in June 1974 (Unesc 2018, [s.p.]).

Until September 1991, Fucri maintained four education units: the School of Education and Sciences of Criciúma (Faciescri), the Superior School of Physical Education and Sports (Esede), the Superior School of Technologies (Estec) and the School of Accounting and Administrative Sciences (Escca). With the beginning of the process of recognition of the Foundation as a university, regimental unification was necessary, with the integration of the four entities and the creation of the Criciúma Union of Colleges (Unifacri) (Unesc 2018, [s.p.]; Unesc 2020, 10).

In August 1992, the Federal Council for Education accepted the inquiry letter for the transformation of Unifacri into Unesc, a process that was carried out in 1997. Thus, Unesc emerged as a university committed to promoting “[...] the social insertion and development of the community where it is located, through quality education and the production and dissemination of knowledge via research and outreach activities.” (Unesc 2020, 14). Fucri remained the maintainer of the new institution, as well as of the Unesc School.

Currently, with the mission of “[e]ducating, through teaching, research and outreach, in order to promote the quality and sustainability of the living environment [...]” (Unesc 2020, 16), Unesc offers 56 undergraduate programs, distributed in in-person and distance modalities; eight master's programs, five doctoral programs; in addition to several specialization courses. There are approximately 12 thousand students at its ample facilities, with classrooms, a library, a science and technology

park, integrated clinics in the health area, among other unique features (Unesc 2020, 24).

In terms of research, it has 84 groups registered with the National Council for Scientific and Technological Development (CNPq), which develop ten programs and 232 projects, making the university's scientific production stand out due to the quantity and quality in national rankings. On the other hand, it brings direct benefits to the regional community through 20 programs and 62 projects in the outreach modality, such as the Center of Legal Practice (CPJ), the Specialized Rehabilitation Center (CER) and the Accounting and Fiscal Support Center (NAF) (Unesc 2020, 24).

In recent years, Unesc has invested heavily in internationalization, encouraging and promoting academic mobility experiences in partnership with foreign higher education institutions. Another frontier that has been explored successfully is innovation, with actions for the formation and consolidation of an internal ecosystem in this sense.

Among the actors that make up this ecosystem, the Center for Technology Innovation (NIT) can be highlighted as one of the first entities of its type to be instituted in the State. The following section recovers the main historical aspects of the Unesc NIT and presents the perspectives that constitute its sphere of action.

## Getting to know the Unesc NIT

The history of the Unesc NIT merges with that of the Agency for Development, Innovation and Technology Transference (ADITT), the institution to which it is linked. In 2008, to meet internal demands and explore development opportunities in the field of innovation, Unesc created, through Resolution no. 03/2008, the ADITT, to support the Graduate Education, Research and Outreach Department.

The ADITT was created with the aim of regulating and facilitating the relationship between the university and companies, mediating the development of projects with public and private organizations, and managing the provision of technological services and the offering of training and consultancies by Unesc. The initial setup of the Agency's organizational chart consisted of a Director, a Center for Innovation and Technology Transfer Management (NUGITT), the Fundraising Support Departments (SEACAR) and Service Provision (SPS) (Unesc 2008, [s.p.]).

In this format, the Director, chosen and appointed by the Chancellor, assumed the position of the ADITT Coordinator. His powers included representing the Agency in the university and community administrative bodies; the management, supervision and regulation of the activities performed; the establishment of administrative routines for forwarding prospected demands and developed projects and services; the preparation of the sector's annual work plan, among others (Unesc

2008, [s.p.]). The ADITT's first Director was Professor Elídio Angioletto, from the Materials Engineering program.

The SEACAR carried out functions related to raising external funds for institutional and inter-institutional projects, as well as the dissemination of public notices for available financial assistance. Thus, the department monitored all phases of the projects, from submission and supplying of documentation to approval, and the development and completion of activities, while also offering accountability support to researchers (Unesc 2008, [s.p.]).

The SPS, on the other hand, mediated the process of contracting or providing technology services. Under its assistance were activities such as the structuring of a database, with the registration of professionals from different areas to allow possible recruitment for the development of programs and projects; meeting the demands for services coming from the external community with the potential to generate financial return for the university; the proposal and establishment of agreements or contracts on the service provisions; the coordination of consolidating actions relative to the Unesc service provision policy, among others (Unesc 2008, [s.p.]).

Lastly, the NUGITT functioned as the institution's NIT, in accordance with the determinations of the Technology Innovation Law. The department's mission was to "[p]erform actions to protect the intellectual heritage of Unesc and the community; promote the

transfer of research results to society [...]," seeking to strengthen and expand the interaction between Unesc and the production sector (Unesc 2009a, [s.p.]). This interaction had the ultimate goal of benefiting education and research activities and contributing to the development of the country (Unesc 2009a, [s.p.]).

The responsibilities of the NUGITT, listed by art. 7 of the Resolution that officialized the ADITT, are shown in Table 1. The NUGITT's first Coordinator, Professor Roseli Jenoveva Neto, from the Administration field, was named by Ordinance no. 98/2009/Reitoria (Unesc 2009b, [s.p.]).

**Table 1.** NUGITT competencies (2008)

- a) Development, in addition to the quality and sustainability of the living environment.
- b) To propose an institutional policy to foster creation and the protection of creations, licensing, innovations and other forms of technology transfer.
- c) To encourage actions that result in an objective and accurate diagnosis of technological bottlenecks in production processes.
- d) To mediate the development of partnerships seeking the creation and execution of projects that result in the technological innovation of products, processes or services.
- e) To evaluate the adoption of independent inventions and encourage the development of projects that enable their use and industrialization.
- f) To make available, on a database, up-to-date information on innovation and skill management methodologies.
- g) To support the creation and use of innovation management tools.

- h) To negotiate the ownership of intellectual property and the registration of eventual innovation resulting from the projects.
- i) To encourage and guide actions to protect creations and licensing.
- j) To protect intellectual property rights.
- k) To mediate negotiations, agreements/contracts involving intellectual property.

Source: by the authors (2022), with a copy of art. 7 of Resolution no. 03/2008/Reitoria (Unesc 2008, [s.p.]).

In their first decade of operation, the ADITT and the NUGITT functioned in an integrated way, even with regard to coordination and staff identity at certain periods. This phase was marked by awareness-raising actions to pave the way for a culture of innovation at the university, and by the conception of instruments that helped define the limits of the Agency's and the Center's activities.

In 2010, members of the NUGITT team participated in the planning commission that created the Unesc Science, Technology and Innovation Park (Iparque), which was inaugurated the following year (Unesc 2010, [s.p.]). Professor Elidio Angioletto, the first ADITT Director, assumed the coordination of the Implementation Committee of Iparque. As the park space was inaugurated, with the installation of four research institutes – the Institute for Environmental and Technological Research, the Food Institute, the Institute for Socioeconomic Research, and the Engineering Institute– and of the Technology Incubator for Ideas and Businesses (ITEC.in), Unesc's

innovation ecosystem gained density, increasing the demand for the services offered by the ADITT and the NUGITT (Unesc 2011b, [s.p.]).

In light of this new institutional moment, in 2011, the University Council approved Resolution no. 10 on intellectual property and the management and protection of its rights. The Resolution – which has been updated, but remains in effect – sets the criteria for the participation of professors, researchers, and administrative and academic technicians in the financial results obtained by the commercial exploitation of protected creations. In its art. 8, it delegates to the ADITT the support of technology transfer, the encouragement and promotion of legal protection, as well as the economic use of intellectual creations (Unesc 2011a, [s.p.]).

At that point, the great functional approximation between the ADITT and the NUGITT resulted in the latter ceasing to be mentioned in Resolution no. 17/2012/Reitoria, which was responsible for updating the provisions relative to the Agency. The instrument centered on the ADITT, without operating divisions between sectors, activities to stimulate innovation, regional development and technology transfer, in addition to intellectual property management, fundraising and event holding (Unesc 2012, [s.p.]).

In 2015, Unesc reinforced its commitment to building a university environment marked by innovation when it began to discuss the

creation of institutional policies in this field. By virtue of Ordinance no. 005/2015, a new commission for conducting the tasks was started, formed by 13 professors from different specialties and chaired by Professor Melissa Watanabe (Unesc 2015, [s.p.]). The completion of this long process, marked by the alignment of objectives, the manifestation of different deliberative entities and the fulfillment of a series of formalities, happened in October 2016, with the approval of the Innovation Policy, by the University Council, through Resolution no. 13/2016.

The Innovation Policy revitalized the Unesc Center for Technology Innovation (NIT). With the advent of this standard, the sector was renamed NIT – no longer NUGITT, as established in Resolution no. 03/2008 – and, alongside the ADITT, was established as a competent entity to manage innovation, intellectual property and technology transfer activities at the university. In addition to forwarding internally the demands related to these subjects, the Policy tasked the NIT with establishing partnerships with other NITs and ISTs, to promote innovation, carry out common projects, and comply with government determinations, such as the development of research and the presentation of results (Unesc 2016, [s.p.]).

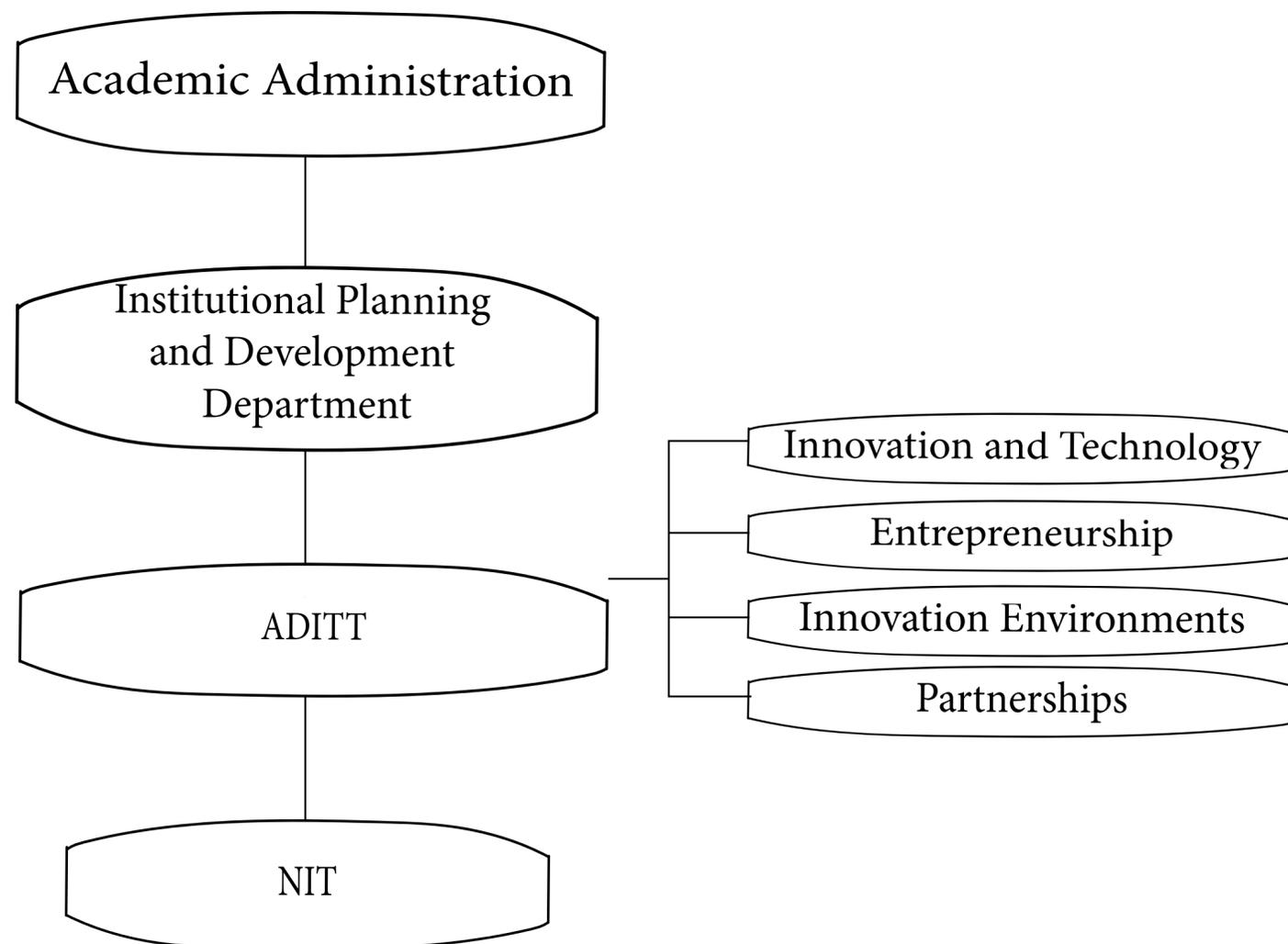
The introduction of guidelines to instruct the academic community on innovation and intellectual property was not limited, however,

to the creation of legal instruments. The group of faculty members involved in the formulation of the Innovation Policy also launched the Booklet on Innovation and Intellectual Property with Unesc, which presented basic concepts and described the procedures to be adopted to guarantee the protection of intellectual property rights resulting from innovations.

The Booklet was created so that the information it contained would serve as a “[...] starting point for a wide dissemination and maturation of the culture of innovation in the University [...]” (Watanabe *et al.* 2016, 4), hence a light and playful format was preferred for its design (Watanabe and Silva 2017, [s.p.]). Professor Michel Alisson da Silva, the ADITT's then-Coordinator, represented the Agency and the NIT in the task of producing and disseminating the material.

Based on these efforts, the ADITT, linked to the Institutional Planning and Development Department, has become a reference space for innovation and intellectual property at the university. The NIT, in turn, as the Agency field linked to the Innovation and Technology pillar (see Figures 1 and 2), enhanced operational processes and the relationship with other institutional programs with similar purposes, such as the Center for Entrepreneurship and the Technology Incubator (Portal Engeplus 2020, [s.p.]).

**Figure 1.** NIT position in Unesc Organizational Chart



Source: by the authors (2022), with a copy from ADITT (2022, [s.p.]).

**Table 2.** ADITT pillars

<p>Innovation and Technology: identifying, organizing and connecting knowledge generated by education, research and outreach.</p> <p>Entrepreneurship: attracting and developing agents to lead projects that balance the 3 dimensions of sustainable development.</p> <p>Environments and Innovation: environments with state-of-the-art structure and technology to promote and foster research, development, innovation and entrepreneurship.</p> <p>Partnerships: to be an active agent in promoting the innovation and entrepreneurship ecosystem in order to foster sustainable socioeconomic development.</p>
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Source: by the authors (2022), with a copy from ADITT (2022, [s.p.]).

Under the coordination of professor Evânio Nicoleit – in charge of the institution since 2018 –the NIT has worked heavily on the standardization of workflows. One of the measures adopted was the issuing of documents, such as forms and commitment agreements, for all types of protection demanded, and the distribution of these models on the NIT website to facilitate access by researchers. Moreover, the organizational chart for requests for intellectual property registration is available on the website, which informs the interested parties of process proceedings in the NIT (Nicoleit 2022, [s.p.]).

In the processing of requests, the NIT forms an ad hoc committee to evaluate the viability of the proposal and Unesc's interest in the registration. If an approval is granted, the search for prior art and

the writing of protection requests are the only steps of the process delegated to a service provider. The management of the titles granted, with the payment of an annuity with the competent authority, is carried out fully by the NIT (Nicoleit 2022, [s.p.]).

Currently, applications for patent deposits are the most common requests, especially in the Science, Engineering and Technology (SET) field, in the development of materials, products and processes. There are over two dozen requests being processed by the National Institute of Industrial Property (INPI), in addition to some concessions, such as one given to a patent for the invention of an eye drop to treat intraocular inflammation, which was made effective in 2021. The NIT provides support for researchers to develop computer software, with two programs being registered thus far (ADITT, 2020, [s.p.]; Nicoleit 2022, [s.p.]).

In addition to activities related to intellectual property, another important work environment for the NIT is its direct relationship with students, professors and researchers to clarify doubts. The NIT serves the public both at the Iparque facilities – in environments such as the Talent Lab and the Technology Incubator –, as well as at university headquarters, where the NIT's office is located. Information sharing also happens through events, which are often promoted jointly with the ADITT and are open to the general public, such as Startup Weekends. On the other hand, to meet specific demands, the NIT organizes lectures in

undergraduate classes or *stricto sensu* graduate programs (Nicoleit 2022, [s.p.]).

Interaction with the production sector is favored by the existence of strategic spaces inside the university for this purpose, such as Iparque and the Technology Incubator. The NIT team offers support to incubated businesses, and provides consulting services in the field of intellectual property and technology transfer for companies in the region. This approach is expected to become increasingly intense with the launch of Unesc Connect, the university's Innovation Hub (Nicoleit 2022, [s.p.]).

Unesc Connect is a platform that aims to “[...] ensure that different people, with varied projects and demands, are connected [...] to develop solutions inside and outside the University.” (Unesc 2022, [s.p.]). The program was designed to integrate Unesc's innovation actors; startups; small, medium and large companies; public and private schools; potential entrepreneurs; innovation consultancies; government entities; associations; startup accelerators; investment funds and the academic community (Unesc 2022, [s.p.]).

In the words of Unesc Innovation Manager, Professor Oscar Rubem Montedo, the initiative seeks, ultimately, “[...] to develop innovation in the internal ecosystem, but also externally, seeking to bring the University closer to the community.” (Unesc 2022, [s.p.]). The experience of demonstrating the university's potential in a virtual environment to create connections with external agents is not new, however.

In 2020, the NIT and the ADITT, with the support of Fapesc, organized the Unesc Technology Showcase. The showcase is a portfolio that presents technologies developed at the university, as well as outreach projects and research groups, divided into four major areas of knowledge: Science, Engineering and Technologies (CET); Applied Social Sciences (CSA); Humanities, Sciences and Education (HCE); and Health Sciences (SAU) (ADITT 2020, [s.p.]).

The goal of the Showcase is

[...] to promote and disclose opportunities for companies, social organizations and public agencies interested in establishing partnerships with Unesc, either through Intellectual Property Licensing or Technology and Knowledge Transfer. (ADITT 2020, [s.p.]).

Currently, there are over one hundred initiatives on display, and this number is expected to grow with the inclusion of data on the university laboratories (Nicoleit 2022, [s.p.]).

Since its establishment at Unesc, the NIT has maintained a productive relationship with Fapesc, achieving results such as the aforementioned Technology Showcase. In 2009, the university participated in the Project for the Establishment and Development of an Arrangement of Technological Innovation Centers in Santa Catarina (PRONIT), provided for by the Funding Authority for Studies and Projects (Finep) and co-financed by Fapesc. There, the NIT team took part in training

sessions on innovation, intellectual property, technology valuation and, especially, strategic planning and management of NITs, a fundamental skill to face the challenges encountered during the NIT's first years of operation (Unesc 2009c, [s.p.]).

In 2019, the project *Strengthening and consolidation Unesc's Innovation Policy in the local ecosystem and its interactions in the Santa Catarina Network of Innovation Centers*, proposed by the NIT Coordinator, professor Evânio Nicoleit, was included in Fapesc Public Notice no. 14/2019. With this program, in addition to the internal improvements allowed by the funding acquired, the Unesc NIT established contact with NITs from other ISTs in Santa Catarina, participating in the movement for the construction of the Santa Catarina Network of Innovation Centers, the NITSC Network. Professor Evânio, representing the Unesc NIT, was a member of the Network Management Committee in the 2021-2022 period (Nicoleit 2022, [s.p.]).

The Unesc NIT is also part of the Criciúma Innovation Center Implementation Committee, an initiative developed in partnership with other institutions in the southern region of Santa Catarina, and with the support of the state government through the Office for Sustainable Economic Development and Fapesc. It is expected, therefore, that the NIT will keep expanding its network of relationships, be it with actors in the production sector or with other research and development institutions (Nicoleit 2022, [s.p.]; Unesc 2020, [s.p.]).

As a future project, the Unesc NIT intends to fully internalize the process of requesting intellectual property protection, carrying out prior art and title wording searches on its own account. In addition, it hopes to contribute, in a consistent way, to institutional economic sustainability, generating, through technology transfer, service provision and other means, revenues for the institution (Nicoleit 2022, [s.p.]).

The path ahead is long and full of challenges, which must be overcome via the continuous training of staff, the institutional support and integration of the NIT in the innovation ecosystem, internally – which has been growing since the creation of the ADITT – and externally. The overall expectation is, therefore, to make the Unesc NIT increasingly remembered as a reference agency in the south of the state.

## Main legislation in effect

Resolution no. 03/2008/Reitoria (altered by Resolution no. 17/2012/Reitoria) – Creates the ADITT.

Resolution no. 10/2011/CONSU (altered by Resolution no. 07/2012/CONSU) – Provides for intellectual property and the management and protection of the rights related to it.

Resolution no. 13/2016/CONSU – Approves the Unesc Innovation Policy.

## Contact

Address: Av. Universitária, 1105, Bairro Universitário, Criciúma, SC, 88806-000,

Bloco Administrativo – Sala 21.

E-mail: [aditt@unesc.net](mailto:aditt@unesc.net)

Site: <https://aditt.unesc.net/nit>

Instagram: [@inovacaounesc](https://www.instagram.com/inovacaounesc/) | <https://www.instagram.com/inovacaounesc/>

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**12.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
CATARINENSE FEDERAL  
INSTITUTE  
(IFC)**

The Catarinense Federal Institute (IFC) is the result of the integration of the federal agrotechnical schools of Concórdia, Rio do Sul and Sombrio, and the agricultural colleges of Araquari and Camboriú, linked to the Federal University of Santa Catarina (UFSC). Law no. 11.892 of 2008, which established the Federal Network of Professional, Scientific and Technological Education, created 38 Federal Institutes of Education, Science and Technology, among which is IFC.

In the same year of its creation, IFC gained a new campus in Videira, which replaced the outreach of the Concórdia agrotechnical school operating in the town. In the following years, as a part of the expansion plans of the Federal Network, nine other campuses were established in the towns of Abelardo Luz, Blumenau, Brusque, Fraiburgo, Ibirama, Luzerna, Rio do Sul, Santa Rosa do Sul, São Bento do Sul and São Francisco do Sul. Its Academic Administration, in turn, is located in Blumenau (IFC 2022c, [s.p.]).

The Institute is characterized as offering education at different levels: initial and continued education for workers, high school-level technical professional education, higher education at the undergraduate and graduate levels – *lato* and *stricto sensu*. Due to a legal requirement, IFC dedicates at least 50% of its available slots to high school-level technical professional education, and at least 20% to higher education in licentiate undergraduate programs (Souza 2013, 123).

Its offering of programs seeks, preferably, to meet the needs of the regions the campuses are located in, in order to promote “[...] the transformation of the social and economic context, contributing to the development of local and regional productive arrangements.” (IFC 2022c, [s.p.]). The Institute is also guided by the

[...] integration between science, technology and culture as inseparable dimensions of human life and, at the same time, by the development of the capacity for scientific investigation, essential to the construction of intellectual autonomy and citizen participation. (IFC 2022b, [s.p.]).

Since it developed from agrotechnical training schools and agricultural schools, the program in agriculture and cattle ranching, in modalities integrated or subsequent to high school, is present in most campuses, in a farm-school regime. This is a remarkable characteristic of IFC, which has housing and cafeterias for students in these programs, especially those who experience socioeconomic vulnerability (IFC 2022b, [s.p.]).

Currently, in its technical professional education at the high school level, considering the offerings of all campuses, there are 37 courses in the high school-integrated modality, and 20 in the subsequent modality. At the higher education level, there are over 20 undergraduate programs, divided between bachelor’s degrees and licentiate degrees; six *lato sensu* and six *stricto sensu* graduate programs – five professional

master's degrees and one academic master's degree. In the first semester of 2022 alone, approximately 3,200 students enrolled at the Institute, distributed among all the levels of education mentioned above (IFC 2022d, [s.p.]).

Differently from the traditional university model, which is focused mainly on basic research, IFC's scientific identity is based on applied research, geared toward the solution of local and regional demands. It also has the distinction of connecting higher education to basic and professional education, a circumstance that contributes to the existence of researchers with very diverse profiles. Given the potential of research in the generation of innovation, the Center for Technology Innovation (NIT) has a strategic role in the organizational structure of IFC. The following section presents its historical background and scope of operations.

## Getting to know the IFC NIT

The origin of the IFC NIT is closely linked to the reorganization of the federal education system, with the creation of the Federal Network of Professional, Scientific and Technological Education (RFEPCT) in 2008, and the consequent structuring of the Federal Institutes, replacing the Federal Centers for Technology Education (CEFETs) and agrotechnical schools. In 2010, to foster the operation of the new institutions, the

Office for Professional and Technological Education (SETEC) signed commitment agreements, establishing guidelines to be implemented in the short, medium and long term by the Institutes.

Its agreement with IFC established, in goal no. 16, the need to implement the NIT as well as programs to stimulate cooperative organization, which also encouraged research, innovation and entrepreneurship (SETEC and IFC 2010, [s.p.]). Thus, to attend to this determination, and in light of a nascent but still modest demand for work, the IFC NIT was created in July 2011, through Supreme Council Resolution no. 009/2011. Before this milestone, in the context of the old agrotechnical schools of the state of Santa Catarina, referrals about intellectual property – which were very scarce – were conducted ad hoc by the management (Barros 2022, [s.p.]).

Resolution no. 009, which remains in effect to this day, defines the NIT as the entity responsible for “[...] promoting adequate protection for inventions created within IFC, as well as the development of policies to encourage a culture of innovation.” (IFC 2011, [s.p.]). It has a coordinating function and is linked to the Research, Graduate Education and Innovation Management, which, in turn, is linked to the Research, Graduate Education and Innovation Department. The NIT was established in the IFC Academic Administration building in the city of Blumenau.

In addition to creating and providing the general guidelines for the NIT's activities, Resolution no. 009/2011 established: a) the procedure for processing intellectual property registration requests; b) the rules for entering into technology transfer and licensing agreements; c) the rules for the provision of technology innovation services by the IFC; and c) the form of managing the income resulting from intellectual property, technology transfer, the provision of services and similar activities (IFC 2011, [s.p.]). To collaborate with the NIT's activities, the Permanent Internal Committee on Intellectual Property was established in 2012, a competent authority that analyzes and deliberates on the merit of requests for intellectual property protection (Barros 2022, [s.p.]).

However, in their first years of activity, although formally existing, both the NIT and the Committee did not have an expressive performance. The challenge could be found at the base: a culture of applied research had yet to be created at the Institute, which needed to explore the potential of students, professors and facilities to generate innovation and, consequently, intangible assets (Barros 2022, [s.p.]).

With time and the consolidation of the institution, prospects began to change. In 2018, a revitalization process at the NIT began, with the appointment of a new Coordinator – the employee Rafael Paes de Barros, Master in Intellectual Property and Technology Transfer for Innovation – and the extinction of the Permanent Internal Committee

on Intellectual Property (Barros 2022, [s.p.]). On the symbolic level, after extensive awareness-raising work, carried out by the NIT staff alongside top management, IFC's institutional mission was reformulated, with the inclusion of innovation as one of the aspects of the professional education offered by its units (IFC 2018, [s.p.]).

After these events, the NIT began an upward trajectory in the fulfillment of its competencies, reaffirming its commitment to the mission and objectives outlined when it was created (Tables 1 and 2). In this process, two aspects have proven to be fundamental: the autonomy of the staff in the decision-making processes and in conducting activities, and the standardization of workflows (Barros 2022, [s.p.]).

The staff, comprising the Coordinator, a technical-administrative employee and an intern (Figure 1), performs all functions related to the NIT, including requests for the protection of intellectual property with the competent authorities, as well as the steps that precede it – such as the search for prior art and the wording of patent applications. There is, therefore, no outsourcing of activities. This is possible due to the organization of the forms to be filled out by the interested parties, from which a maximum of information is extracted, and the experience of the employees in performing these routines. These measures and aspects optimize the processing of demands (Barros 2022, [s.p.]; IFC 2019a, [s.p.]).

**Table 1.** NIT-IFC mission and aims

Mission: to promote intellectual property protection and technology transfer, and to promote, support and monitor the technological innovation activities occurring at IFC, strengthening its relationship with the community and the development of the country.

Aims: to add value to the production of scientific and technological knowledge by IFC; to support and encourage technology transfer in all fields of science and technology, in compliance with the current legislation.

Source: by the authors (2022), with copies from arts. 3 and 4 of Resolution no. 009/2011 (IFC 2011, [s.p.]).

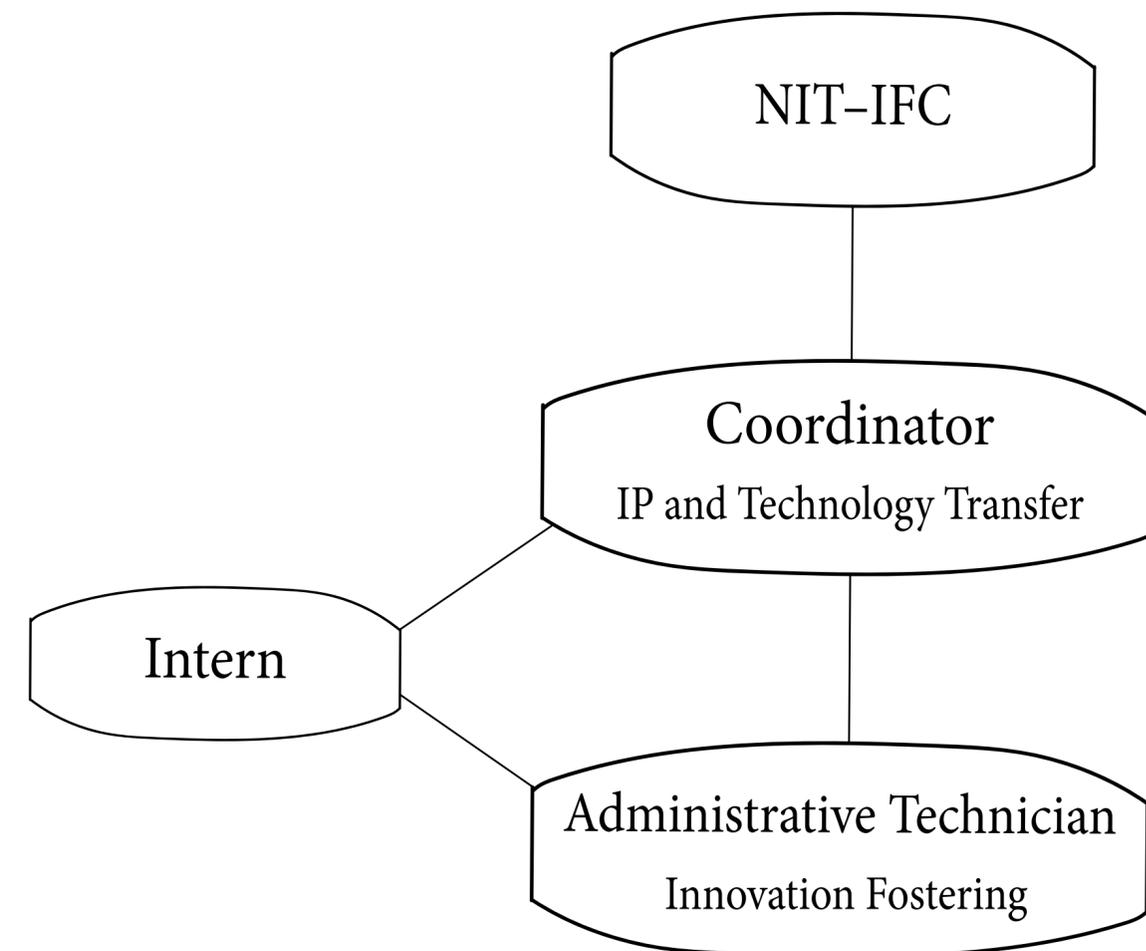
**Table 2.** NIT-IFC competencies

- a) To develop and ensure the institutional policy for encouraging the protection of creations, licensing, innovation and other forms of technology transfer.
- b) To evaluate and classify the results stemming from research activities and projects for the fulfillment of the dispositions in Law no 10.973 of 2004 and its alterations.
- c) To evaluate the requests for independent inventors to adopt inventions.
- d) To issue reports on the convenience and to promote registration requests or patent requests with the competent authority and to monitor the protection process, at a national and/or international level, of the creations developed at the institution and their licensing.
- e) To express opinion on the convenience of disclosing the creations developed in the institution, susceptible to intellectual protection.
- f) To monitor and ensure the maintenance and defense of the institution's intellectual property titles.
- g) To monitor the processing of requests and the maintenance of the institution's intellectual property titles.

- h) To evaluate agreements, contracts or covenants to be signed between the IFC and public or private institutions that are directly related to the process of technology innovation.
- i) To promote technology transfer and licensing actions by entering into contractual instruments, with the approval of the chancellor.

Source: by the authors (2022), with a copy of art. 6 of Resolution no. 009/2011 (IFC 2011, [s.p.]).

**Figure 1.** NIT-IFC internal organization chart



Source: by the authors (2022), based on Barros (2022, [s.p.]).

The IFC NIT activities are currently developed according to three fields: the fostering of applied research projects; intellectual property; and technology transfer. The first field includes the launching of internal notices for proposals and the disclosure of external notices in research, development and innovation. Among the NIT's recurrent practices is the opening of notices for innovation projects with induced demand by IFC (Barros 2022, [s.p.]; IFC 2022a, [s.p.]).

Also in this regard, in 2021, via parliamentary amendment, 1 million *reais* were allocated for the implementation of a project to develop equipment that aids in the management of agroforestry cultivation systems. The research and development of its products will take place at the Luzerna campus, and the experimentation phase, in Concordia. The NIT, as an intermediating instance of R&D projects, is preparing to monitor this process, which promises to generate innovative results (Luzerna 2021, [s.p.]; Barros 2022, [s.p.]).

In the field of intellectual property, as already mentioned, the NIT assesses the possibility and feasibility of protection requests, and, after the approval by the Research, Graduate Education and Innovation Department and the Academic Administration, it deals with the bureaucratic procedures for implementation. Since the creation of the NIT in 2011, and until 2022, an exponential growth was observed in the number of requests in various categories – patents, industrial design, computer programs, among others. In 2020, the NIT reached the mark

of 100 requests filed – most of them still under analysis –, and this total is expected to reach 150 requests in 2022 (Barros 2022, [s.p.]; IFC 2021b, [s.p.]).

The increased demand for the protection of products and processes developed reflects the strengthening of research activities in the institution. In this point, Fapesc plays a strategic role: in addition to IFC researchers actively participating in the Foundation's notices, in their various modalities, a specific call for proposals was published in 2020 offering resources to support the Institute's research groups (Public Notice no. 20/2020). On the other hand, there has been an internal mobilization, coordinated by the NIT, for the construction of a culture of innovation and intellectual property at IFC (Barros 2022, [s.p.]).

In 2018 and 2019, the NIT team visited all the Institute units. On the campuses, it held lectures and strengthened contact with local directors. With this incentive, invitations to give explanations about the NIT's work began to increase. Thus, it evolved from “[...] an NIT that was not even known, to an NIT that is not only remembered, but also requested.” (Barros 2022, [s.p.]). On specific campuses, more consistent interventions were carried out, such as courses and workshops.

With the Covid-19 pandemic, technical visits had to be interrupted, and training sessions were transferred to the virtual environment. Live broadcasts were made through the IFC NIT social networks, and the Coordinator participated, as a speaker, in similar activities organized

by other institutions. In this period, and due to these programs, the NIT intensified its relationship with the Federation of Industries of the State of Santa Catarina (FIESC) and with the Santa Catarina Chapter of the Order of Attorneys of Brazil (OAB), integrating, until 2021, the Commission of Innovation Law, Intellectual Property and against Copyright Infringement, the second organization (Barros 2022, [s.p.]).

The return to in-person activities allowed the continuation of events, such as the Innovation Showcase, held in the IFC Interdisciplinary National Showcase of Scientific and Technological Initiation (MICTI). The first edition of the Showcase took place in 2019 at the 12th MICTI, with the goal of “[...] bringing to the attention of the community courses, solutions and technologies developed at IFC [...]” and encouraging “[...] the establishment of partnerships for the development of new projects aligned with the demands of local productive, cultural and social arrangements.” (IFC 2019b, [s.p.]). The second edition of the Showcase should occur in 2022.

Also in 2019, NIT actions received a boost with resources coming from Fapesc Public Notice no. 14/2019. The funding allowed the hiring of three interns – one graduate student and two undergraduates students – who added to the Center’s activities, starting with a greater participation of the NIT in social networks. It was also with this notice that the NIT expanded its communication with the NITs of other state ISTs, within the scope of the NITSC Network (Barros 2022, [s.p.]).

More recently, another milestone is the creation of the IFC Innovation Policy, approved on October 14, 2021, through Superior Council Resolution no. 51/2021. The Policy – which is based on the new S, T&I legal framework (Law 13.243/16) and Decree no. 9.283/2018 – is the main regulation on innovation, intellectual property and technology transfer at the institution (IFC, 2021a, [s.p.]). The constituting commission was formed by the NIT Coordinator, in the condition of President; by representatives of the Education, Research, Graduate Studies and Innovation, and Outreach Departments; and by unit representatives. The text went through public consultations and was approved by collegiate boards (Barros 2022, [s.p.]).

The Innovation Policy reaffirms the NIT’s competence to manage the intellectual property belonging to IFC (art. 4); to conduct the technical and economic evaluation and the technical and accounting audit of technology transfer activities (art. 7, sole paragraph; and art. 9, sole paragraph); to mediate negotiations in partnership or technological cooperation agreements (art. 13, §2); to opine on the management of financial resources from knowledge and technology transfer (art. 17, caput); among others (IFC 2021a, [s.p.]).

Ten years after the creation of the IFC NIT, you can say that, among the responsibilities it was given, it has managed to consolidate itself in activities related to intellectual property and the promotion of innovation. The next steps for the NIT involve improving actions related

to technology transfer and its relationship with the production sector, in general. So far, the university-company relationship, mediated by the NIT, depends fundamentally on the initiative of researchers, who make the first contact with the private sector and coordinate possible partnerships (Barros 2022, [s.p.]).

For the coming years, should there be a workforce to support the planning process, it is expected that the NIT should get closer to the production sector to understand its demands in a more organic way. Additionally, it should continue improving its work, which has yielded good results in the field of intellectual property and the promotion of research and development projects.

## Main legislation in effect

Resolution no. 009/2011/CONSUPER – Institutes the IFC NIT.

Resolution no. 51/2021/CONSUPER – Provides for the Regulation of the IFC Innovation Policy.

## Contact

Address: Rua das Missões, 100, Bairro Ponta Aguda, CEP 89051-00, Blumenau/SC.

E-mail: [nit@ifc.edu.br](mailto:nit@ifc.edu.br)

Site: <https://nit.ifc.edu.br/>

Instagram: [@nit.ifc | https://www.instagram.com/nit.ifc/](https://www.instagram.com/nit.ifc/)

Facebook: <https://www.facebook.com/nit.propi.ifc/>

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**13.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
FEDERAL INSTITUTE  
OF SANTA CATARINA  
(IFSC)**

The Federal Institute of Education, Science and Technology of Santa Catarina (IFSC) is one of the oldest educational institutions in the state. It originated from the School of Apprentice Craftsmen of Santa Catarina, founded in 1909 in Florianópolis, with the aim of professionally training young individuals of less privileged socioeconomic classes. Over the years, it has undergone significant transformations, most of them being reflected by changes in the institution's nomenclature.

In 1937, the Apprentice Craftsmen School became the Industrial Lyceum of Florianópolis, and five years later, the Industrial School of Florianópolis. At that time, already linked to the federal government, *the Industrial* – as it was known – focused on training labor to support the industrial expansion that the country was going through, offering basic industrial courses and mastery courses (Almeida 2010, 49).

Ministerial Ordinance no. 331, of June 17, 1968, transformed the institution into the Federal Technical School of Santa Catarina (ETF-SC), beginning the process of eliminating the gymnasium secondary program<sup>1</sup>, with the purpose of specializing the school in technical high school programs. The basic education reform introduced by the Law of Directives and Bases of Federal Education in 1971 made the closing of the primary courses at EFT-SC definitive (IFSC 2020, 40).

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1 Gymnasium secondary schools prepare students for higher education studies. It is equivalent in the United States to preparatory high schools.

Between the 1970s and the early 1990s, EFT-SC experienced a period of expansion in its programs, which were no longer limited to the industrial field; and in territory, with the opening of its first units outside the state capital. The units in São José, Jaraguá do Sul and Joinville were inaugurated, respectively, in 1988, 1994 and 1995. The 1990s were also marked by the implementation of a new program modality: the post-high school technical course, known today as the subsequent modality (Almeida 2010, 111-118).

After the transformation of all Federal Technical Schools into Federal Centers for Technology Education (CEFETs) by Law no. 8948/1994 – with their implementation being bound to the publication of a specific decree –, the management of ETF-SC began to develop, with the school community, the institutional project for its “cefetization<sup>2</sup>.” This process culminated in the creation of CEFET-SC, by a presidential decree, in 2002. The new moment brought novel features such as the inauguration of higher education programs in technology and *lato sensu* graduate programs, and the expansion of the number of campuses (IFSC 2020, 40).

With the establishment of the Federal Network of Professional, Scientific and Technology Education in 2008, CEFET-SC became the Federal Institute of Education, Science and Technology of Santa

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2 Using the acronym CEFET as a verb.

Catarina (IFSC). IFSC is a public and autonomous institution linked to the Ministry of Education, which offers professional education at the high school and higher education levels (bachelor's degrees with an emphasis on engineering and technical areas, licentiate degrees and superior programs in technology), as well as *lato sensu* and *stricto sensu* graduate programs (IFSC 2020, 41).

Today, the Institute is composed of twenty campuses, one advanced campus, one reference center and an innovation center, in addition to its Academic Administration, which is located in Florianópolis. In 2019, it had 186 technical programs, 33 higher technology programs, 23 bachelor's degrees, 14 licentiate degrees, 31 specializations and 6 master's degrees. It has a total of over 44 thousand students enrolled, approximately 1.4 thousand faculty members, and 1.1 thousand administrative employees (IFSC 2020, 48).

With a strong presence in applied research and outreach, IFSC is rooted in the Santa Catarina context and actively contributes to the development of the state. In this perspective, it has elected innovation as one of its values, investing in practices that encourage creative actions and are capable of providing differentiated solutions to society (IFSC 2020, 45).

In IFSC's structure, the sector that is responsible for fostering innovation and protecting the rights thereof – including those related to intellectual property – is the Department of Innovation, better known as the NIT. The

next section recalls the trajectory of the NIT and presents its challenges and scopes of action.

## Getting to know the IFSC NIT

The creation of the IFSC NIT is an immediate result of the Innovation Law, which, in 2004, made this type of agency compulsory in public ISTs. To adapt to the legislation and the need for an entity that would ensure the fostering of innovation and scientific and technological research, interfacing with the production environment, the CEFET-SC Board of Directors approved the creation of the NIT on December 3, 2008.

The creation of the NIT was formalized by Resolution no. 030/2008, which provided the guidelines for structuring the Center. There was much to be done, given that, before this turning point, the demands in the field of innovation and intellectual property – still minimal –, were processed ad hoc by management, without organized workflows or a specific team to provide support (Dutra 2022, [s.p.]).

Resolution No. 030/2008 defined the NIT's mission as “[...] to strengthen the relationship of CEFET-SC with the community, involving government agencies, companies and other civil society organizations [...]”, in order to support actions based on technological innovation, benefit education, research and outreach activities and promote, ultimately,

"[...] the transfer of knowledge in favor of the economic, technological and social development of the nation." (CEFET-SC 2008, [s.p.]).

In CEFET-SC's organization chart, the NIT is established as a Coordination, linked to the Research and Graduate Education Management, and is installed in an office at the Academic Administration headquarters in the Coqueiros, a district of Florianópolis (CEFET-SC 2008, [s.p.]). The NIT's first Coordinator was Professor Mario Lucio Roloff. Between 2009 and 2011, it was managed by Professor Mario de Noronha Neto, who later assumed the IFSC Research, Graduate Studies and Innovation Department (Dutra 2022, [s.p.]).

The transformation of CEFET-SC into IFSC, by force of Law no. 11.892, December 29, 2008, in no way changed the constitution of the NIT. On the contrary: it reinforced the need for the Center's implementation, in view of the declared purpose of the federal institutes to perform and foster applied research, entrepreneurship, and scientific and technological development, in addition to promoting the production and transfer of technologies, including those of a social nature (Brasil 2008, [s.p.]).

The first years of the NIT's operations were marked by a number of challenges. The predominant culture at IFSC was still that of a technical school, with an emphasis in education, and, with a limited budget, the research carried out had little potential to generate innovation. Over time, and with a greater allocation of resources for research, the

NIT began to receive requests for the clarification of doubts and the forwarding of the first submissions for intellectual property protection (Dutra 2022, [s.p.]).

The first patent application – relative to the process of Swimming Activity Monitoring (MAN) using Radio Frequency Identification (RFID) technology – was carried out in 2009. To encourage this practice, in the following years, the NIT – then transformed into the Department for Innovation and International Affairs –, in a partnership with the Research, Graduate Studies and Innovation Department, released funding notices (IFSC 2012b, [s.p.]).

The pioneering notice, in this sense, was called the Inventor's Notice, with an inaugural edition issued in 2011. The Inventor's Notice aimed to evaluate the potential for protecting the intellectual property of the technological creations of IFSC employees (IFSC 2012b, [s.p.]). Based on the mapping and selection of projects, a company specialized in the search for prior art and title wording would be hired. The NIT was responsible for the filing and monitoring of the requests with the National Institute of Industrial Property (INPI) (IFSC 2012b, [s.p.]; Carlson 2016, [s.p.]).

The first editions of the Inventor's Notice only took patentable inventions into consideration. Due to the diversity of the proposals submitted, the notice started including two new categories in 2016: industrial design and computer software (IFSC 2016, [s.p.]).

In 2012, the fostering of innovation was reinforced with the issuing of the Technology Prospecting Notice, aimed at IFSC Research Groups. In the scope of this notice, the NIT offered support to groups interested in redirecting their research and investing efforts in innovative projects. Professor Luiz Henrique Castelan Carlson, Head of the Innovation and International Affairs Department at the time, led this initiative, as well as the Inventor's Notice (IFSC 2012b, [s.p.]).

Among its first steps, the NIT also made a strong effort to disseminate a culture of innovation. Its activities involved, for example, offering lectures on innovation and intellectual property. One of its most notable efforts was to inform researchers about the importance of seeking information in intellectual property databases, encouraging them to identify existing products and processes, to then innovate in their own research, in order to pursue a potential registration (Souza 2013, 149).

The popularization of the NIT outside the Florianópolis campus – where it is headquartered – became possible under the Itinerant Academic Administration project. The initiative consisted in a visit by the chancellor, deans and other administration representatives to the campuses, to discuss IFSC's role. In the first edition of the Itinerant Academic Administration, in 2012, the Dean for Research, Graduate Education and Innovation, Mario de Noronha Neto, visited the Joinville and Jaraguá do Sul campuses and addressed topics such as research, graduate education and the role of the NIT (IFSC 2012a, [s.p.]). In 2014,

in its second edition, Professor Luiz Henrique Castelan Carlson visited the Chapecó, São Miguel do Oeste and Xanxerê campuses, where he gave lectures and a minicourse on the NIT (IFSC 2014, [s.p.]).

In addition to its efforts in the management of intellectual property and the acculturation of the academic community on this topic, in this initial period, the IFSC NIT performed, according to demand, the other legally-defined competencies for NITs, which were reproduced in Resolution no. 030/2008 and summarized in Table 1.

**Table 1.** IFSC NIT competencies

- a) To implement, consolidate and ensure the maintenance of the institutional policy for encouraging the protection of creations, licensing, innovation and other forms of technology transfer.
- b) To evaluate and classify the results yielded by research activities and projects to meet the provisions of Law 10.973/2004.
- c) To evaluate requests for independent inventors for the adoption of inventions.
- d) To give opinions on the convenience and promote the registration request or patent application with the competent authority, as well as monitor the protection process, at the national and/or international level, of the creations developed in the institution and their licensing.
- e) To promote actions of technology transfer, licensing, industrialization and commercialization, directly or indirectly, by means of entering into contractual instruments and similar instruments, and to promote any and all initiatives aiming at this purpose.
- f) To express opinions on the convenience of disclosing the creations developed at the institution, susceptible to intellectual protection.

- g) To monitor and ensure the maintenance and defense of the institution's intellectual property titles.
- h) To assign its rights on the creation, when necessary.

Source: by the authors (2022), with a copy of art. 8 of Resolution no. 030/2008 (CEFET-SC 2008, [s.p.]).

Fourteen years after its institution, Resolution no. 030/2008 is still the reference document for NIT activities. In the absence of an Innovation and Intellectual Property Policy, the Resolution provides important guidelines about: a) the management of resources from NIT activities; b) the division of income obtained from the economic exploitation of inventions; c) the Center's participation in the innovation process, through entering into contracts for technology transfer and licensing; and d) the creation of partnerships with the production sector and other actors of the triple helix (CEFET-SC 2008, [s.p.]).

Regarding partnerships, it should be noted that, historically, this has been one of the priorities of the IFSC NIT. It seeks

[...] to encourage and enable the establishment of strategic alliances and the development of cooperative projects involving national companies, ISTs, Support Foundations and other organizations, for the generation of innovative products and processes. (IFSC 2021c, [s.p.]).

These interactions, when formalized, are manifested in the form of research, development and innovation agreements; intellectual property contracts; technical-scientific cooperation agreements;

service provision contracts; among others. By February 2022, there were over 50 commitments signed and finalized or being carried out (IFSC 2022a, [s.p.]).

Between 2008 and 2011, although it was not an activity defined in Resolution no. 030/2018, the NIT supported researchers that were granted funding in notices by providing them with significant financial contributions for resource management and accountability. At that time, the Innovation Department had five employees, including the Head of Department – the NIT Coordinator –, all of whom put substantial effort into meeting the volume of demands (Souza 2013, 150). Since 2012, IFSC has been aided by a support foundation, the Stemmer Foundation for Research, Development and Innovation (FEESC), a private non-profit entity, which began to manage large projects (Dutra 2022, [s.p.]).

To encourage entrepreneurship, the IFSC NIT developed, or provided support to, several actions, some of which became permanent projects in the institution. In the early 2010s, for instance, it promoted the Project Hotel, a pre-incubation program that provided space at the Florianópolis campus for students to develop ideas and create their own businesses within a year (Souza 2013, 154). On the Garopaba campus, the project, which was carried out more recently, is named Technology Hotel, and its first selection of guests was made in 2021, with the approval of four proposals (IFSC 2021b, [s.p.]).

A traditional activity in IFSC's schedule is the Innovative Ideas Challenge, another action directed to stimulating innovative entrepreneurship supported by the NIT and implemented in the institution as part of the Innovation Pact. The competition, open to students from all campuses, includes a training and improvement stage for the enrolled projects using the Canvas methodology. In its final stage, the projects are presented in pitches, and the best proposals receive a cash prize to put the winning ideas into practice. In 2021, the Challenge, which occurs annually, reached its 7th edition (IFSC 2021a, [s.p.]).

Among the moments that boosted activities in the history of the NIT, a noteworthy event is the installation of the Innovation Hub in Smart Energy Systems on the Florianópolis campus in 2017. This is a research and innovation hub, linked to the Brazilian Company of Research and Industrial Innovation (EMBRAPPI), which operates in cooperation with IFSC, focusing on business demands and risk sharing in the pre-competitive stage of innovation (IFSC 2022b, [s.p.]). Although FEESC manages almost all the projects that are processed in the Hub, the NIT, as a reference in terms of innovation at IFSC, provides support and guidance to researchers (Dutra 2022, [s.p.]).

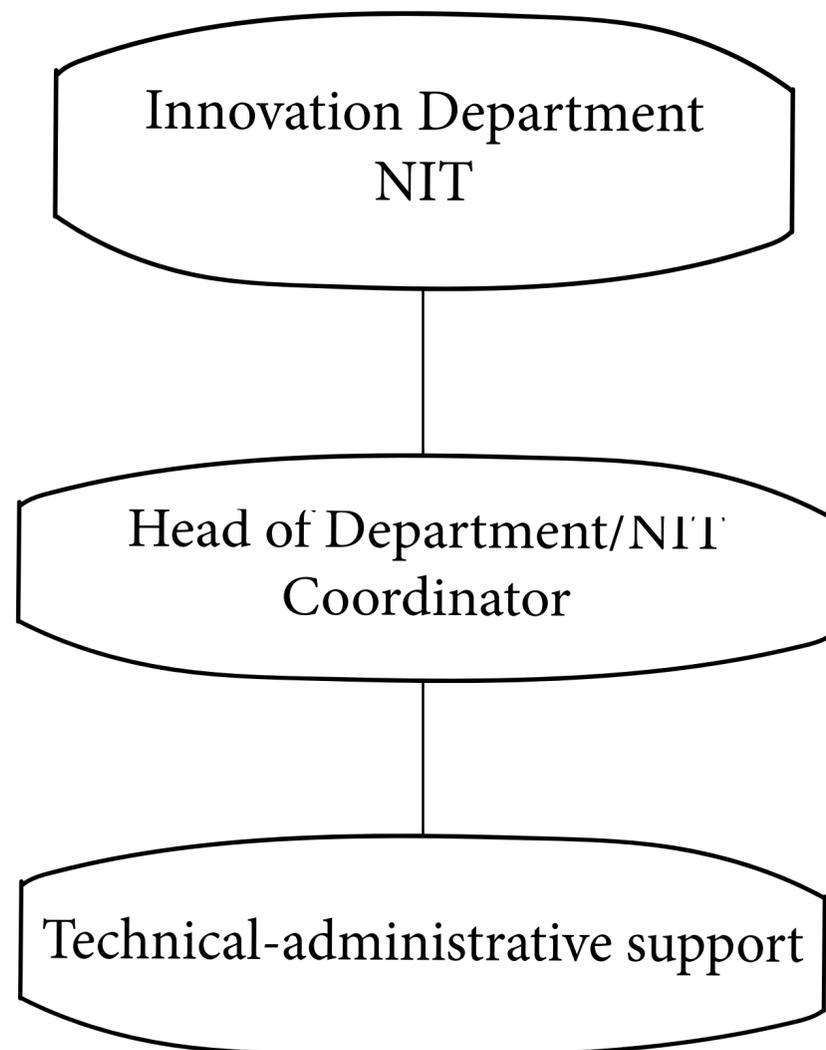
The implementation of the Hub also contributed to the expansion of the NIT relationship network. The presence of the new innovation habitat in the Florianópolis campus has promoted a more organic contact between the NIT and companies, since, as a rule, this approach

depended on the initiative of researcher to build partnerships based on their own interests and circles. Presently, the Hub is structured to serve companies in the Energy sector, but, due to its positive results, the possibility of extending its activities to other segments is being considered (Dutra 2022, [s.p.]).

Currently, the IFSC Innovation Department team, the sector that functions as the NIT, consists of five members: the Head of Department, Professor Cynthia Beatriz Scheffer Dutra, who is in charge of coordination; and four employees – Alisson Lessak, Gerson Goulart, Luiz Tumolo and Roberto Rocha –, who are responsible for technical-administrative routines (Dutra 2022, [s.p.]). Figure 1 represents the organization chart of the IFSC NIT.

One of the NIT's main spheres of action remains the processing of protection requests for products and processes resulting from research developed by servants and students. The NIT keeps the IFSC Technological Showcase updated, which can be accessed electronically. Until 2022, it has a total of 6 Industrial Design protections; 14 Computer Software registrations; and over 40 Patent applications, 10 of which have been granted. IFSC appears, in these titles, as a holder or co-holder (IFSC 2022c, [s.p.]).

**Figure 1.** IFSC NIT organizational chart



Source: by the authors (2022), based on Dutra (2022, [s.p.]) and Souza (2013, 145).

The NIT team is always in search for training, especially considering the great turnover among associates. In this sense, it participates in courses offered by INPI and the World Intellectual Property Organization (WIPO). With regard to the WIPO, for instance, the Head of Department

recently took a course on the management of intellectual property; while the team attended a course on patent search. The aim, in this case, is to appropriate the content to improve work processes, but, above all, to disseminate it among researchers (Dutra 2022, [s.p.]).

In recent months, the team has had the opportunity to mobilize all knowledge acquired in favor of a specific goal: the construction of the IFSC Innovation Policy. The Policy should comprise guidelines on innovation, intellectual property and technology transfer, and, especially, define IFSC's limits and possibilities in its interaction with the production sector – a question that currently raises a number of doubts among researchers (Dutra 2022, [s.p.]).

With this document, it is also expected that the eligibility criteria for intellectual creations to receive protection be established. The idea in this case is to explore, with increasing frequency, an alignment of the research carried out with the interests of regional productive arrangements to avoid a waste of resources caused by the maintenance of titles that do not yield benefits to society (Dutra 2022, [s.p.]; Pires 2018, 74).

The dialogue between the NIT and other instances of the Research, Graduate Education and Innovation Department is, therefore, fundamental for the achievement of these institutional objectives. The Department, through the Research Coordination departments, also plays a strategic role in the capillarization of the NIT on the

IFSC campuses. Considering the multi-campus structure of the Institute, the Research Coordinator of each campus is responsible for the mediation of demands from outside Florianópolis and those from the NIT, establishing the first contact with researchers. When possible, Innovation Department representatives visit the campuses to strengthen relationships (Dutra 2022, [s.p.]).

With regard to interactions with the external community, the IFSC NIT participates in forums of a national scope, such as the National Forum of Innovation and Technology Transfer Managers (FORTEC), and local committees, such as the Florianópolis Municipal Innovation Council. Furthermore, it is one of the member institutions of the Center of Technology Innovation for Family Farming (NITA) and is a part of the movement for the constitution of the Santa Catarina Network of Innovation Centers, the NITSC Network, organized with Fapesc Public Notice no. 14/2019 (Dutra 2022, [s.p.]).

In relation to Fapesc, it is also important to mention the participation of the NIT in the Project for the Establishment and Development of an Arrangement of Technological Innovation Centers in Santa Catarina (PRONIT), which was coordinated by the Foundation between 2009 and 2011. Indirectly, the approval of projects in notices for proposals – public and/or those specific to IFSC researchers –, especially in the last ten years, has enabled the purchase of equipment and the improvement of laboratory infrastructure. This circumstance contributed to a leap in

quality and a higher level of innovation in the research developed at IFSC, which is reflected by the NIT's achievements (Dutra 2022, [s.p.]).

With over a decade of existence, the IFSC NIT has faced many obstacles – in terms of infrastructure, budget, human resources, among others – to achieve consolidation. In the near future, the NIT is expected to continue improving its work routines, as well as to expand its team and make it more permanent, in an attempt to overcome one of the most persistent challenges of the Center's history: employee turnover (Dutra 2022, [s.p.]).

Based on the approval of the Innovation Policy, on the other hand, the institutional commitment to this field is expected to grow, so that it can integrate, in an increasingly pronounced and transversal form, IFSC's identity.

## **Main legislation in effect**

Resolution no. 030/2008/CD – Approves the creation of the CEFET-SC NIT.

## **Contact**

Address: Rua 14 de Julho, 150, Coqueiros, Florianópolis/SC, CEP: 88075-010.

E-mail: [inovacao@ifsc.edu.br](mailto:inovacao@ifsc.edu.br)

Site: <https://www.ifsc.edu.br/nit-nucleo-de-inovacao-tecnologica>

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**14.**

**INOVA CENTER FOR  
TECHNOLOGY INNOVATION  
OF THE AVANTIS UNIVERSITY  
CENTER (UNIAVAN)**

The Avantis University Center (UniAvan) is a private higher education institution that operates in nine cities in the state of Santa Catarina, with classes in distance learning and in-person modalities.

It was created in 2002 in Balneário Camboriú as the Avantis School, with the aim of contributing to the development of the city and region by offering accessible, quality education. Over the years, the institution proved to be successful in this purpose, which allowed its recognition as a University Center in 2018 (UniAvan 2022, [s.p.]). Since then, its mission is “[...] to develop quality teaching and disseminate knowledge with ethical principles for the formation of citizens committed to sustainable development.” (UniAvan 2022, [s.p.]).

UniAvan develops scientific initiation projects and provides services to the community in the form of specialized assistance and consultancy, among other activities. These responsibilities are coordinated by the Center for Scientific Research (NPC) and the Center for Outreach, respectively (NEX) (UniAvan 2022, [s.p.]).

Currently, in addition to its headquarters in Balneário Camboriú, the institution has units in Blumenau, Brusque, Florianópolis, Itajaí, Itapema, Joinville, Lages and Rio do Sul, and distance learning hubs in the states of Santa Catarina and Ceará. UniAvan offers 37 undergraduate programs, mainly in the fields of Engineering, Health, Management and Technology; over 40 *lato sensu* graduate programs and numerous outreach courses. It has also maintained, since 2015, the Avantis School,

based in Balneário Camboriú and Brusque, with slots for high school students (UniAvan 2022, [s.p.]; Selo Social 2021, [s.p.]).

To promote the quality of the services it provides, UniAvan has invested in technology and innovation by upgrading its facilities. In this regard, it has several laboratories and centers – such as clinics and spaces for health services –, a pioneering laboratory in digital dentistry, rooms for creativity and innovation activities, equipment for 3D printing, laboratories for engineering programs and a sizeable library (UniAvan 2022, [s.p.]).

In fostering innovation, especially technological innovation, UniAvan took an important step with the creation of the Center for Technology Innovation (NIT). Although private institutions are exempt from the NIT’s constitution, UniAvan is committed to structuring and consolidating the sector, to further boost the local ecosystem. The following section recalls aspects of the NIT’s history and presents its perspectives.

## **INOVA: getting to know the UniAvan NIT**

At the moment, the UniAvan NIT is going through a restructuring phase. It has been in operation for over a decade, performing activities mainly focused on the development of operating systems and laboratory management systems. However, since 2019, a movement has been

underway to reformulate its purposes and fields of operation, aiming to bring it closer to what the Innovation Law establishes.

The first efforts in this process were directed toward the creation of normative instruments and the promotion of activities, seeking to disseminate information and the creation of a culture of innovative entrepreneurship at the University Center. Hence, the history of the NIT presented here focuses on the content of these legal documents – which, for the most part, are yet to be implemented – and the schedule of events held in 2018 and 2019.

In 2019, through University Council Resolution no. 31/2019, the Regulation of the NIT – named, at the time, NITEC – was instituted. The NITEC, based in UniAvan's surrounding area, in Balneário Camboriú, and linked to the Management of Outreach and Social Responsibility, was assigned the mission of “[...] promoting technological development through the interaction between UniAvan, companies and society, contributing to economic and social development.” (UniAvan 2019, [s.p.]).

Initially, the NITEC was conceived to function as a committee, in which interested parties could join and propose projects to be carried out by the NIT under the leadership of a Coordination. In this format, the NITEC would have advisors, that would be designated as needed, and deliberative entities, such as the General Assembly, Management, Fiscal Council and Advisory Board. The sector's functions, according

to the terms of the Regulation, would involve the promotion of innovation and technology transfer, and the protection of intellectual creations developed at the University Center (UniAvan 2019, [s.p.]).

Despite the modest progress in the implementation of the NITEC's functional structure, some actions carried out between 2018 and 2019 contributed to the nascent culture of innovation and entrepreneurship at the institution. In December 2018, the 1st Edition of the EdTech Shift Hackathon was held, in partnership with the Shift Team Hackathon Community. The event focused on “creating solutions for the future of education,” and was geared toward developers, designers, marketing analysts, business analysts, students, education professionals and any individual interested in developing products in this field (UniAvan 2018, [s.p.]). The competition proposed challenges in the following topics: innovation applied to basic education; assistive technologies; innovation applied to higher education; improvement in the management processes of educational institutions; distance education and corporate education (UniAvan 2018, [s.p.]).

In 2019, a second hackathon was promoted, which focused on the legal sector and was held in partnership with the Gestalt Open Innovation company. The 2019 Global Legal Hackathon brought together multidisciplinary professionals from the fields of law, administration, software programming, technology and design, offering technological and innovative solutions and inserting Balneário Camboriú in the select

group of forty cities, from 22 countries, that hosted the global event (UniAvan 2019, [s.p.]).

In the same year, the UniAvan NIT, represented by Coordinator Thiago Berlin, participated in the 2nd BC Smart Week organized by the City Hall of Balneário Camboriú. Students from elementary schools got to know the NIT facilities and could watch objects being made using 3D printers. The program also included a lecture, given by Berlin, on the topics of entrepreneurship, innovation and technology (Balneário Camboriú 2019, [s.p.]).

In 2021, the NIT's regulation underwent changes to make its structure less complex. The resulting new guidelines were approved on September 30, 2021, via University Council Resolution no. 112/2021, a document that should guide the Center's organization and activities in the near future.

The first change introduced by Resolution 112/2021 is in the NIT name, which has changed from NITEC to Inova. Inova is linked to the UniAvan Teaching-Learning and Research Management, and, according to Article 3 of the Regulation, it may have: "a) incubators; b) consultancies for the development of Innovation and Technology; and c) technology transfer." (UniAvan 2021, [s.p.]).

Inova's responsibilities, defined in art. 4, are identical to those of the NITEC, and are reproduced in Table 1, below.

**Table 1.** Inova competencies (2021)

- a) To contribute to the identification of guidelines and priorities for the UniAvan technological innovation policy.
- b) To promote and monitor actions that have technological innovation as their goal in the diverse fields of activity at UniAvan.
- c) To create, carry out and manage projects submitted to funding agencies, government agencies, civil society organizations and companies, aiming at technological innovation.
- d) To monitor the actions of UniAvan incubators.
- e) To promote the integration of UniAvan with the production sector for the generation, management and transfer of technology.
- f) To implement, reinforce and protect, together with other sectors, the maintenance of the institutional policy for encouraging the protection of creations, licensing, innovation and other forms of technology transfer.

Source: by the authors, with a copy from art. 4 of Resolution No. 112/2021 (UniAvan 2021, [s.p.]).

Based on the exercise of these functions, in addition to meeting the competencies legally established for NITs, Inova is expected: a) to contribute to the dissemination of a culture of innovation and entrepreneurship as a tool for the socioeconomic, scientific, educational and technological development of the region; b) to interact with local, regional, national and foreign governments, in search of support and funding for the projects developed; c) to search for funding in public and private institutions, whether national or foreign, for its developed projects; d) to participate in discussion arenas about topics that have repercussions for its activities; e) to hold courses, lectures and other

actions, in virtual or in-person modalities, aimed at learning or training with regard to INOVA activities (UniAvan 2021, [s. p.]).

Inova's activities, according to the model conceived in 2021, are directed by a Commission, appointed by the UniAvan Academic Administration, which meets ordinarily once a semester, and extraordinarily whenever necessary. The composition of the group includes the NIT Coordinator, the Coordinator of the Pedagogical Centers, a Management of Teaching-Learning and Research representative, a Management of Outreach and Social Responsibility representative, a Center for Employability and Entrepreneurship representative, a UniAvan communication sector representative and a faculty representative (UniAvan 2021, [s.p.]). This structure, however, has not yet been implemented.

**Figure 1.** Inova's visual identity



Source: INOVA archives (2021).

Currently, as already mentioned, Inova performs functions related to the development of technological tools to be used by the institution

and service provision. Its team is formed by Fernando Cardoso, Systems Coordinator; Mayara Cristina, FrontEnd UI/UX programmer; and Ygor Moreira, BackEnd/Database programmer (Cardoso 2022, [s.p.]). Among the outstanding services provided are 3D printing, carried out in partnership with the Mechanical Engineering program, and the robotics service (Inova 2021, [s.p.]).

It is expected that, in the near future, Inova will be able to incorporate the tasks described in Resolution no. 112/2021 into its work routines, thus strengthening its identity as the institution's NIT. One of the priorities in this process is to educate the academic community on the subjects of innovation, intellectual property, technology transfer and entrepreneurship. Another field to be explored is its relationship with the NITs of other institutions, to exchange experiences to improve its activities.

## **Main legislation in effect**

Resolution no. 112/2021/CONSUN – Regulation of the UniAvan NIT.

## **Contact**

Address: Av. Marginal Leste, n 3600, km 132, CEP 88.339-125, Bairro dos Estados, Balneário Camboriú, SC.

E-mail: [inova@uniavano.edu.br](mailto:inova@uniavano.edu.br)

Site: <https://www.uniavano.edu.br/>

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**15.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
BARRIGA VERDE UNIVERSITY  
CENTER (UNIBAVE)**

The Barriga Verde University Center (Unibave) is a community-based higher education institution maintained by the Barriga Verde Educational Foundation (Febave), located in the Santa Catarina town of Orleans. The history of the University Center merges with that of its maintainer, a pioneer in the development and management of educational, social and cultural services in the Encostas da Serra Geral region.

Febave was founded in September 1974 as a philanthropic and non-profit organization controlled by the municipal government. Three years later, the Foundation gained administrative autonomy and started to occupy an area of 20 thousand square meters of land donated by the São José Institute and the Orleans Technical School of Commerce, with their respective buildings, furniture, equipment and books (Unibave 2022c, [s.p.]).

Febave's initial activities involved the administration of municipal schools, with the implementation of pedagogical and physical infrastructure improvements. Later, it started serving children in situations of socioeconomic vulnerability with the creation of the Center for Minors; and began to offer professional training, initially, with the School of Joiners, extending its programs, in the following years, to technical Accounting and the Secretarial Career. With regard to basic education, it created a school with a differentiated pedagogical project, for students from Orleans and other municipalities (Unibave 2022c, [s.p.]).

In 1998, it took its first steps in the field of higher education when it became the maintainer of the recently-created Alto Vale do Rio Tubarão School of Management (FAAVART). The following year, its opportunities in higher education were expanded with the authorization by the Ministry of Education (MEC) for the inauguration of the Alto Vale do Rio Tubarão School of Education (FEAVART) (Unibave 2022b, [s.p.]).

The merger of these two schools in 2004 originated the Barriga Verde Higher Education Center (CESFEBAVE), which, in 2006, reached the status of University Center, receiving the name of Unibave (Unibave 2022b, [s.p.]).

Currently, Unibave has 17 undergraduate programs in the in-person modality, and more than 20 *lato sensu* graduate programs (Unibave 2022a, [s.p.]). Unibave College, launched in 2019, offers five options of technical programs, in addition to preschool, elementary school and high school (Colégio Unibave, 2022, [s.p.]). Strongly committed to the production of new knowledge and the development of the region where it is located, Unibave has six Centers for Research and Outreach; furthermore, through projects such as the Citizenship House, the Veterinary Hospital and the University Pharmacy, it contributes directly to the community (Unibave 2021, [s.p.]).

Innovation is one of the values of the University Center, and it intends to become a reference in innovative institutions (Unibave 2022d, [s.p.]).

To this end, it plays a prominent role in coordinating local actors to express demands related to this subject; while, internally, it intends to centralize and organize its actions around two departments: the Inventa Incubator, which has already been implemented, and the Center for Technology Innovation (NIT), currently under development. The next section investigates the history of these spaces and sheds light on their perspectives.

## Getting to know the Unibave NIT

The Unibave NIT is currently being implemented. However, the University Center's role in fostering innovation, within and outside the academic space, is not recent, which is why presenting its NIT requires exploring the movements and processes that led to its creation.

Although the approximation between Unibave and the production sector has been an ongoing process, considering the institution's contributions to the region's economic development, a more induced and systematic contact began in the 2000s. In 2007, Unibave signed a partnership with a meat processing corporation to offer a Production Engineering program – the first in the region – in the in-company modality, with classes being taught at the company's plant in the town of Forquilha. Three classes graduated from the program, which later was regularly offered on the Orleans campus (Rocha 2022, [s.p.]).

Based on this experience, and due to the very consolidation of a program that communicated deeply with corporate demands, Unibave understood that it should carry out integrative university-company projects more frequently. Additionally, learning from the good practices of other institutions also became essential to expand the institutional agenda for innovation (Rocha 2022, [s.p.]).

In this perspective, the influence of the Gene Institute, operating at the Regional University of Blumenau (FURB) at the time, was particularly notable. During a technical visit to Vale do Itajaí in 2007, leaders of Unibave became acquainted with the work done at the Institute's incubator, one of the oldest in the state. What they witnessed there was a successful format and, hence, they began to discuss ways to replicate it in their institution (Rocha 2022, [s.p.]).

At a first glance, the plan seemed ambitious: after all, by its very nature, Unibave was primarily involved with education activities, and had a limited infrastructure and budget. It was essential, as initial steps, (a) to develop a culture of research, which would serve as a resource for innovation, and (b) to seek the support of local public and private actors able to contribute resources and join efforts (Rocha 2022, [s.p.]).

In this sense, in 2010, Unibave created the Center for Research and Outreach in Technology and Information (NUTEC) – transformed, in 2017, into the Center for Research and Outreach in Engineering and Technology –, considered a precursor of the NIT. The NUTEC

comprised all undergraduate programs in technology and engineering, and professional training courses, such as those in mechanics, basic electricity and electrical engineering, offered by Unibave. In addition to producing research, it served as a forum for the discussion of issues related to innovation, technology and entrepreneurship, laying the foundation for the acculturation of the academic community on these topics (Rocha 2022, [s.p.]).

Without losing sight of the challenge of strengthening its practices and projects through networking, the institution made an agreement with the Town Hall of Orleans, as well as the town's Commercial and Industrial Association (ACIO) and Chamber of Store Managers (CDL), to coordinate actions focused on innovative entrepreneurship. As its main goal, the group elected setting up an institution – it was not clear at that time whether it would be a research, technology or innovation center – that would promote this type of activity (Rocha 2022, [s.p.]).

In 2016, as a result of this agreement, Unibave's Technology-Based Incubator, Inventa, was created. Later, and with the need for a space that would go beyond the borders of Unibave, the same group mobilized to petition the public authorities of the state of Santa Catarina for the construction of an innovation center with regional reach. Due to the change in the way of implementing the Santa Catarina Network of Innovation Centers – prioritizing the occupation of sites given by towns or the private sector for the construction of new centers –, the

committee was not successful in its demand. The movement, however, did not thin out (Rocha 2022, [s.p.]).

In 2019, Unibave, ACIO and CDL became partners with the Federation of Business Associations of Santa Catarina (FACISC) for the implementation, in Orleans, of the Local Economic Development Program (DEL). The DEL, whose format derives from the German Essen model, was created with the goal of improving the conditions for economic growth, job creation and the quality of life in urban and rural centers. With the program, towns unite the public and private sectors in the execution of projects that converge toward sustainable local development (Orleans 2019, [s.p.]).

Considering the favorable external environment, Unibave understood that it would be the right moment to restructure the Inventa Incubator, with the purpose of making a more effective contribution to the dynamization of the region's economic matrix, as well as strengthening the movement for implementing the innovation center. Professors Dimas Ailton Rocha, the Dean of Administration, Graduate Education, Research and Outreach; Nacim Miguel Francisco Junior, the Inventa Coordinator; and Ana Paula Bazo, Research Coordinator, led the reorganization (Rocha 2022, [s.p.]; Unibave 2022e, [s.p.]).

In this context, the participation of Unibave in Fapesc Public Notice no. 24/2020 – Incentive Program for Incubators of Santa Catarina Companies, was decisive. Its funding allowed the revitalization of a

120-square-meter area in Block F, where living spaces, meeting rooms, five private rooms, a coworking space, a pantry and a reception area were built. The inauguration of the Inventa headquarters took place in May 2022, with the presence of authorities, entrepreneurs and the academic community (Rocha 2022, [s.p.]; Unibave 2022e, [s.p.]).

The restructuring of the Incubator, as well as the results evidenced at the inauguration ceremony, attracted the attention of the business sector. In less than six months, the structure received two anchor companies – traditional industries in the plastics field – and started the incubation of six companies, while many others are on a waiting list to present their projects. Under the DEL Program, there are three incubated companies, all focused on developing solutions for local problems (Rocha 2022, [s.p.]).

Parallel to Inventa's revitalization, Unibave decided to formally constitute its NIT. The creation of the regulation document was under the responsibility of the Administration, Graduate Studies, Research and Outreach Department, a sector to which the NIT will be linked in the institutional organization chart. The instrument is expected to be finalized and approved by the University Council by September 2022 (Rocha 2022, [s.p.]).

In addition to the competencies attributed to NITs by the Innovation Law, the Unibave NIT will offer support to the companies incubated

at Inventa, and its relationship with the Incubator and its own position in relation to the latter will be determined in the regulation. Within the scope of the NIT, undoubtedly a business office in charge of developing actions to foster entrepreneurship will be implemented (Rocha 2022, [s.p.]).

As for the dissemination of a culture of innovation, the NIT is expected to maintain and expand the schedule of events, workshops, lectures and training activities that it already holds. For at least five years, Unibave has been promoting competitions involving high school and undergraduate students, in the hackathon format. Even before the continuation of the incubator, this initiative contributed to the emergence of many companies that were created based on the ideas discussed in the hackathons (Rocha 2022, [s.p.]). On the other hand, and in a more specific way, programs from different fields carry out or participate in activities aligned to this subject.

In May 2018, for example, Pharmacy students participated in the Pharmaceutical Innovation and Intellectual Property workshop, promoted by the National Academy of Pharmacy and the Regional Council of Pharmacy of Santa Catarina (CRF/SC) in Florianópolis (Unibave 2018b, [s.p.]). In the same year, Production Engineering students attended a lecture on innovation and entrepreneurship given by Timóteo Farias, a consultant at FACISC (Unibave 2018a, [s.p.]). In August 2022, the Academic Week of the Law Program featured the

participation of Araken de Lima from the National Institute of Industrial Property (INPI) (Rocha 2022, [s.p.]).

The activities mentioned – a small sample of the set of actions taken – show how the University Center is concerned with introducing, in an organic and transversal way, innovation in the daily routine of academia.

Another concern of the institution, and especially of the team that is structuring the NIT, is to strengthen its relationship with the other actors of the triple helix even more. The Center plans to visit the town halls of the region in order to understand how their interests can be represented in the NIT. In Orleans, a steady conversation is being established with the Economic Development Office and the Legislative Branch to promote the updating of Complementary Municipal Law no. 04/2019, which provides incentives to technology and innovation-oriented companies. The goal of this dialogue is to define the role of Unibave innovation habitats in the concretization of this public policy (Rocha 2022, [s.p.]).

Another goal that is constantly renewed is enabling the Orleans Center for Innovation, to serve the Encostas da Serra Geral region. The leaders of this movement have been exchanging experiences with authorities of municipalities of similar size that are implementing, or have already finalized the implementation of, their centers, as is the case of Caçador. Moreover, representing Orleans, Professor Dimas Ailton Rocha has participated in the implementation committee of the Criciúma Innovation Center, where he has had the opportunity to

expand the NIT team's expertise on the establishment process and management of these innovation habitats (Rocha 2022, [s.p.]).

With Fapesc, Unibave has established a productive relationship that greatly affects the improvement of its institutional infrastructure and acquisition of knowledge. In recent years, six projects were approved in the field of innovation, allowing the institution to advance significantly and in a short period of time. With these resources, in addition to the restructuring of the Inventa Incubator, a training center for executives was created, which should be inaugurated in December 2022, as well as a teaching innovation room, to test active methodologies and train teachers, including those from the municipal and state school systems. Furthermore, although it has not participated in Public Notice no. 14/2019, through which the Santa Catarina Network of Innovation Centers is being formed, Unibave has already formalized its intention to participate in this collective (Rocha 2022, [s.p.]).

Despite being a relatively young educational institution, Unibave has taken important steps in achieving what it has taken on as a vision: to become a reference in generating innovation. In its scope of action, the implementation of the NIT – with the approval of its regulation and the structuring of its workflows –, added to the consolidation of the Inventa Incubator, are measures that reinforce the successful path it has been on so far.

## Contact

Address: Rua Pe. João Leonir Dall'Alba, 601, Bairro Murialdo, Orleans, SC, 88870-000.

E-mail: [pesquisa@unibave.net](mailto:pesquisa@unibave.net)

Site: <https://unibave.net/servicos-comunidade/inventa/>

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**16.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
BRUSQUE UNIVERSITY CENTER  
(UNIFEBE)**

The Brusque University Center (UNIFEBE) is one of the pioneering institutions in the offering of higher education in the Médio Vale do Itajaí region. Although it achieved accreditation as a university center in 2003, UNIFEBE's history began in 1973, when the Educational Foundation of Brusque (FEBE), its maintainer, was created.

Law no. 527/1973, instituting FEBE, defined the Foundation's goal as "the creation and maintenance of higher education institutions, as well as elementary and high schools," with its administration departments being the Board of Trustees, the Administrative Council and the Presidency. Still in the year of its creation, FEBE became the maintainer of the Superior School of Social Studies (ESES), which three years later started to offer, in addition to the Social Studies program, the Teaching Degree for Elementary Education (Glatz 2021, 20).

In the 1990s, in partnership with the Regional University of Blumenau (FURB), the Foundation expanded its offering of courses with the creation of undergraduate programs in Law and Accounting Sciences. At the same time, the first *sensu lato* graduate programs were implemented. Until 1998, FEBE and, consequently, ESES were managed by clergy from the Congregation of Priests of the Sacred Heart of Jesus, a circumstance that influenced the institution's staff for many years, with the presence of members of the Congregation in the teaching staff and management positions – especially in the Academic Administration (Glatz 2021, 23).

In 1999, ESES became the Center for Higher Education of Brusque (CESBE), marking the dissolution of its partnership with FURB in the offering of higher education programs. This new phase coincided with the acquisition of land for the construction of its own campus, in the Santa Terezinha district. The 2000s brought, in addition to the inauguration of the campus and the progressive expansion of the number of undergraduate and graduate programs offered, the recognition of the university center's quality, with the adoption of the name currently used (Glatz 2021, 25-26).

With an innovative structure, UNIFEBE has reached maturity with the mission to "[...] act in Higher Education to develop human beings committed to quality of life [...]," envisioning "[...] to excel in Higher Education, acting in the production and dissemination of knowledge for the common good, investing continuously in knowledge." (UNIFEBE 2021, [s.p.]). Since 2019, FEBE maintains, alongside UNIFEBE, the University School of Brusque – the UNIFEBE School, which operates in all three years of high school (Glatz 2021, 26).

The current management of the institution is based on four pillars: "[...] a focus on students; economic-financial balance; investment in innovation; and vocational technology for sustainable development and quality education." (Glatz 2021, 28). To fulfill this agenda in the field of innovation, despite not being under an obligation to do so by the Innovation Law, it maintains a Center for Technology Innovation (NIT),

which was instituted in 2018. The next section presents aspects of the history and structure of this part of the university center.

## Getting to know the UNIFEBE NIT

At UNIFEBE, innovation

[...] is committed to the training of specialized labor, conducting basic and applied research and experimental development, in addition to the construction of new knowledge focused on attending to local demands, topics and interests. (UNIFEBE 2018a, [s.p.]).

These efforts are made with the ultimate goal of contributing to the socioeconomic development of Brusque and its region in the fields of knowledge of the institution.

The university center NIT was formally established in 2018, through University Council Resolution no. 36, which approved the regulation of the Center. The officialization of the NIT was motivated by the need to adapt the internal organizational chart of UNIFEBE to current legislations and promote a culture of innovation in the institution. In the same movement, in 2018, the UNIFEBE Innovation Policy was instituted, being formalized by Resolution no. 35 (Silva 2022, [s.p.]).

The Innovation Policy elects strategic fields of action for the achievement of its mandate. These are: a) the implementation of specific and/or

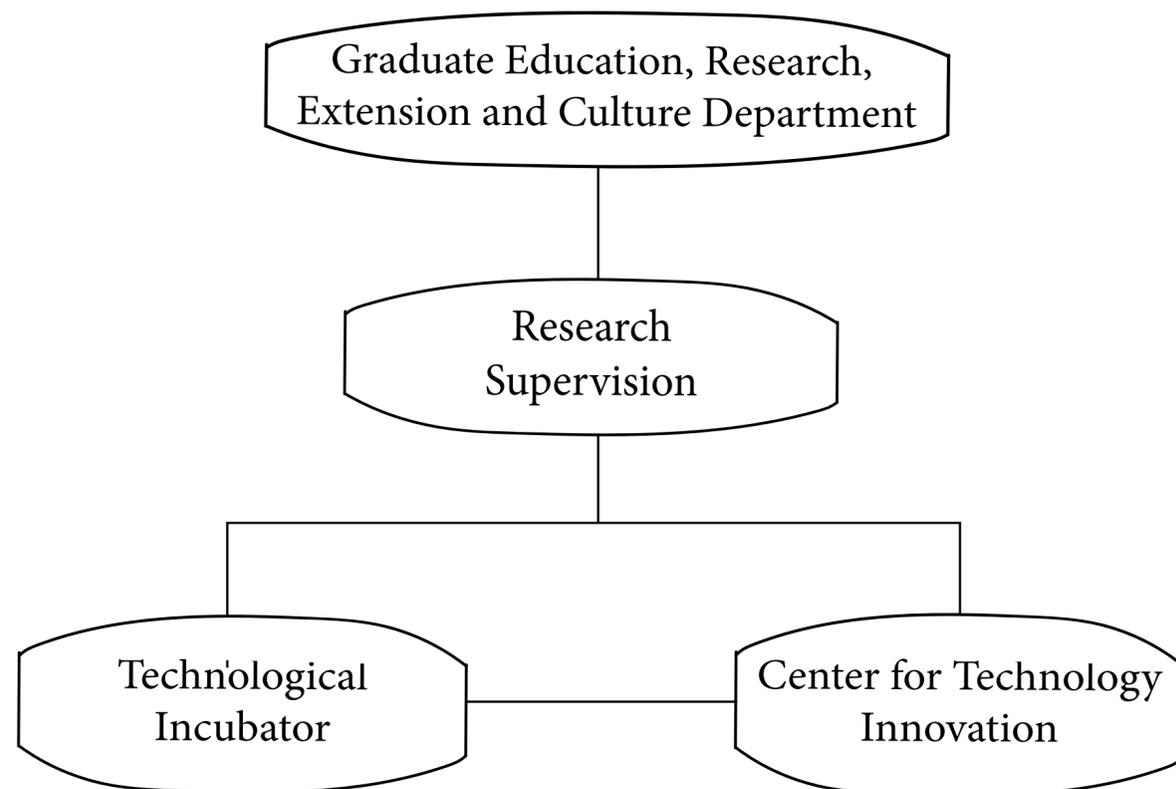
transversal disciplines in innovation; b) the incentive of offering training to the institution's faculty; c) the expansion of technology transfer; d) the improvement of communication between researchers and entrepreneurs; e) the strengthening of the NIT; f) providing support to projects; g) the promotion of a globalized education; and h) the incentive to students and professors in the study of foreign languages (UNIFEBE 2018a, [s.p.]).

At the same time it is considered an object of the Policy, the NIT also has the role of putting the Policy into practice, as determined by art. 12. In this perspective, the NIT emerges with the goal of encouraging the academic community to develop basic, applied and experimental research for the construction of new knowledge and the expansion of "technological frontiers", in addition to being a gathering space for researchers and the production sector (UNIFEBE 2018b, [s.p.]).

In practice, the NIT is linked to the Technological Incubator, which has operated in the institution since 2006. The arrangement formed by the NIT and the Incubator is responsible for driving innovation inside UNIFEBE, and operates out of an Innovation Lab as a team – formed by professors, assistants and interns – and a Coordinator. The management of the sector is performed, also, by a collegiate board, formed by the Innovation Committee and the Technological Incubator Management Committee, for example (Silva 2022, [s.p.]). As a whole, this structure is directly linked to the Research Supervision, which, in turn, integrates

the Graduate Education, Research, Outreach and Culture Department, according to the organization chart in Figure 1.

**Figure 1.** UNIFEFE NIT organizational chart



Source: by the authors (2022), based on Silva (2022, [s.p.]).

According to the Regulation, the competencies of the NIT are those defined in the Innovation Law. However, priorities are defined, according to Table 1, in line with the reality of the institution and the region where it is located.

**Table 1.** UNIFEFE NIT policy

- a) To implement or improve mechanisms to promote the culture of creativity, systematization of research activities, technological development and innovation among faculty researchers and scholars via the creation of environments and communities capable of uniting elements of innovation.
- b) To promote and monitor interactions, agreements or strategic alliances between UNIFEFE with companies, or other agents and institutions.
- c) To develop studies and strategies for the transfer of technologies and innovations generated by UNIFEFE.
- d) To manage technology transfer agreements originated at UNIFEFE, including contractual and economic issues.
- e) To evaluate the convenience of disclosing creations developed in the institution, susceptible to intellectual protection.
- f) To monitor the request process and the maintenance of the institution's intellectual property titles.
- g) To foster the acquisition of funds from external resources to finance research projects that are based on technological innovation.

Source: by the authors (2022), with a copy from art. 5 of the NIT Regulation (UNIFEFE, 2018b, [s.p.]).

Considering the size of UNIFEFE, its innovation and technology transfer activities are led by the NIT and the Incubator, but are also shared among the higher departments – Administration; Undergraduate and Graduate Education; Research, Outreach and Culture– and introduced into the academic routine so they can interact and communicate with teaching, scientific initiation and outreach practices. Some of the noteworthy initiatives developed are the offering of short courses, the monitoring of innovation and entrepreneurship projects carried out by

high school students, and the monitoring of undergraduate scientific initiation projects with the potential to result in innovations (Silva 2022, [s.p.]).

UNIFEBE is a community-based institution in the most essential sense of the term: it actively participates in processes that impact the life of the community, integrates committees, provides services and is attentive to local demands. Among its outstanding actions, in this sense, is its involvement in the movement for the approval of the Brusque Innovation Center. Today, UNIFEBE integrates the Committee for the Implementation of the Center – Chancellor Rosemari Glatz occupies the position of President –, whose Science and Technology Park is being built (Silva 2022, [s.p.]).

At UNIFEBE, most practical activities involving teaching are carried out in partnership with companies from Brusque and the surrounding region. This circumstance results in a large volume of agreements being signed between the institution and the production sector, and, since 2020, with the curricular crediting of outreach (the integration of its activities into program curricula), new opportunities for interaction are being configured (Silva 2022, [s.p.]).

The inclusion of outreach in the academic curriculum is considered, by UNIFEBE's management, a successful initiative in the transversal approach to innovation. In the first semester of 2022, innovation was one of the subjects chosen for the development of curricular crediting

projects. The outreach activities started with a cycle of lectures, which featured Fapesc President, Fábio Zabot Holthausen, and involved the creation and presentation of solutions by the students. Students from many programs, from Law to Engineering, had the opportunity to train their perspectives on how to innovate in their fields of study (Silva 2022, [s.p.]).

To foster innovation in the institution, another sphere of activity is the availability of laboratories and high-tech equipment for the research and development of companies, the generation of technology supply, and technology transfer. In this regard, the work done by research laboratories, among which the Center for Technology and Innovation in Manufacturing (NTIF) stands out.

The NTIF is the result of a partnership between UNIFEBE and Fapesc, institutions whose financial counterparts were fundamental in structuring the Center. Its main goal “[...] is to develop applied research, aimed at the improvement of products and processes, through the integration between University, Industry and State [...],” with research dedicated to local productive arrangements, especially the metal-mechanics industry (UNIFEBE 2022, [s.p.]). In addition to serving as a locus for the research conducted by the Production Engineering and Mechanical Engineering programs, the Center offers services to the production sector, such as geometric modeling and 3D printing, analysis of the chemical composition of materials, tensile and compression testing,

metallographic preparation and analysis, among others (UNIFEBE 2022, [s.p.]; Blödorn 2022, [s.p.]).

In 2015, UNIFEBE was the winner of the Santa Catarina Professor Caspar Erich Stemmer Innovation Award, represented by the researcher and coordinator of the NTIF, Professor Denis Boing, in the Innovation Protagonist category, for laboratory work. The award, conferred by Fapesc, served as encouragement to the advancement and improvement of its activities (Fapesc 2016, [s.p.]).

It is crucial to state that the role of Fapesc in fostering innovation in the institution goes beyond the agreement signed with the NTFI and the recognition achieved with the Innovation Award. The Foundation, through its notices, scholarships, human resource training activities and dissemination of knowledge, contributes to the role of UNIFEBE as a reference in its region of operation (Silva 2022, [s.p.]; Blödorn 2022, [s.p.]).

With its strong participation in favoring a culture of innovation, the NIT does not deal directly with the management of intellectual property produced at the university center. Since the focus of the institution is education, it does not have an expressive number of products and/or processes developed or under development, which explains the reduced demand for protection mechanisms. In cases where these are needed, however, the forwarding process is done by the Research Supervision with the aid of the legal office. UNIFEBE has, in all, three

patent applications at the National Institute of Industrial Property (INPI) (Silva 2022, [s.p.]).

In the perspective of following its process of consolidation and expansion, the next steps of the UNIFEBE NIT are to increasingly associate its activities with those of the Technological Incubator. This is expected to happen, as well, from the point of view of regulatory instruments, with an update of the NIT Regulation in the coming months.

## **Main legislation in effect**

Resolution no. 35/18/CONSUNI – Defines the Guidelines of the UNIFEBE Innovation Policy.

Resolution no. 36/18/CONSUNI – Approves the Regulation of the UNIFEBE NIT.

## **Contact**

Address: Rua Dorval Luz, 123, Bairro Santa Terezinha, Brusque, SC, 88352-400.

E-mail: [proppex@unifebe.edu.br](mailto:proppex@unifebe.edu.br)

Site: <https://www.unifebe.edu.br/site/incubadora/>

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**17.**

**CENTER FOR TECHNOLOGY  
INNOVATION (NIT) OF THE  
SENAI INSTITUTES OF  
INNOVATION AND  
TECHNOLOGY**

The National Service for Industrial Learning (SENAI/SC) is an entity that integrates the Federation of Industries of the State of Santa Catarina (FIESC), with a history of over 60 years in supporting the development of industries in the state.

In the 1940s – to fulfill the provision of the Federal Constitution of 1937 that passed the duty of creating learning schools on to industries and unions –, the National Industry Confederation (CNI) created SENAI (SENAI 2019, 14). In the southern region of Brazil, the introduction of the Service began in the city of Curitiba, with the institution of a branch office to serve the states of Paraná and Santa Catarina (FIESC 2020, 42).

The cities of Florianópolis, Joinville, Blumenau, Brusque, Tubarão and Criciúma hosted the first activities of SENAI in Santa Catarina. With the creation of the FIESC, in May 1950, and its affiliation to CNI six months later, installing SENAI units in the state was made possible, a circumstance that would come true in 1954. In 1963, SENAI's regional headquarters were inaugurated, together with FIESC's, in the Palácio da Indústria Building in Florianópolis (FIESC 2020, 63).

The following decades were marked by the expansion of the Service's coverage and its advances in achieving the goal of “[...] encouraging industrial innovation through education, consulting, applied research, and technical and technological services [...],” seeking to foster the

competitiveness of Santa Catarina's companies (SENAI/SC 2022b, [s.p.]).

Currently, SENAI/SC operates in five fields of action. In Professional Education, it offers high school education, industrial learning courses, technical courses, undergraduate and graduate education, outreach activities, and professional qualification. The courses offered, which can be customized according to the partner institution's needs, take place at SENAI schools, companies or via distance learning (SENAI/SC 2022b, [s.p.]).

Regarding Innovation, the second field of action, SENAI/SC focuses on research and development projects in partnership with industries. In its offering of Specialized Consultancy Services – its third field –, it performs activities in business management, production processes and work safety. On the other hand, it provides Specialized Services directed toward the implementation and improvement of production processes and the improvement of products, as well as Laboratory Services, with a network of 11 test laboratories available (SENAI/SC 2022b, [s.p.]).

To carry out these activities, SENAI/SC has 52 Professional Education units and one University Center – with a headquarters and four other campuses –, three Institutes for Innovation and seven Institutes for Technology. In 2021 alone, there was a total enrollment

of 18,495 students in industrial learning, improvement, professional qualification and technical courses. In the same period, its Institutes for Technology and Innovation performed 30.6 thousand hours of consultancy services and 306.5 thousand metrological tests, in addition to having mobilized almost R\$ 200 million in 55 innovation projects (FIESC 2022, 29).

With respect to the monitoring of innovation and technology projects, the Project Office – a sector that carries out the functions of the Center for Technology Innovation (NIT) – plays a key role. The next section presents how the NIT's responsibilities participate in the scope of the Office and describes the perspectives on the consolidation of the Center.

## **Getting to know the SENAI Institutes of Innovation and Technology NIT**

The fostering of innovation, in the context of SENAI/SC, is directly related to the activities of the SENAI Institutes of Innovation and Technology. In the context of the Institutes' network – which was created by the national SENAI between 2010 and 2011 to stimulate the protagonism of companies in the promotion of innovation –, Santa Catarina has received three Institutes of Innovation and seven Institutes of Technology that, within specific sectors, contribute to the S, T&I ecosystem.

The SENAI Institutes of Innovation offer support to the research and development of products and processes geared toward the needs of industry. They operate from the pre-competitive phase to the final stage of development, “[...] focusing on practical knowledge, applied research and the design of real solutions.” (SENAI/SC 2022a, [s.p.]). At SENAI/SC, the Institutes have the following specialties: a) Innovation in Laser Processing; b) Innovation in Manufacturing Systems; and c) Innovation in Embedded Systems.

As their main fields, the first two Institutes, based in Joinville, have, respectively, the manipulation of laser materials and the development of machining processes, mechatronic machines and products, and metallic materials. The Institute for Innovation in Embedded Systems, based in Florianópolis, focuses on the development of software, hardware and data science for the design of products involving Digital Transformation, the Internet of Things, Industry 4.0 and smart machines and equipment (SENAI/SC 2022a, [s.p.]).

Together, the three Institutes occupy an area of over 10 thousand square meters. Being accredited as Units of the Brazilian Company of Research and Industrial Innovation (EMBRAPII), as well as being registered with the National Agency of Petroleum (ANP) and the National System of Photonic Laboratories (SISFÓTON-MCTI) – in the case of the Manufacturing Systems and Laser Processing Institutes

–, the SENAI Institutes of Innovation process a great volume of demands (SENAI/SC 2022a, [s.p.]).

The SENAI Institutes of Technology, on the other hand, aim to “[...] aid small, medium, and large companies in staying technologically up-to-date and strengthening their presence in the national and international markets.” (SENAI 2022, [s.p.]). To accomplish this mission, they work for the provision of specialized metrology and consulting services, and in the research and development area. Their units are distributed as follows: a) Food and Beverages, in Chapecó; b) Textiles, Clothing and Design, in Blumenau; c) Environment, in Blumenau; d) Ceramics, in Criciúma; e) Energy Efficiency, in Jaraguá do Sul; e) Production Logistics, in Itajaí; and f) Automation and Information Technology and Communication, in Florianópolis (SENAI 2022, [s.p.]).

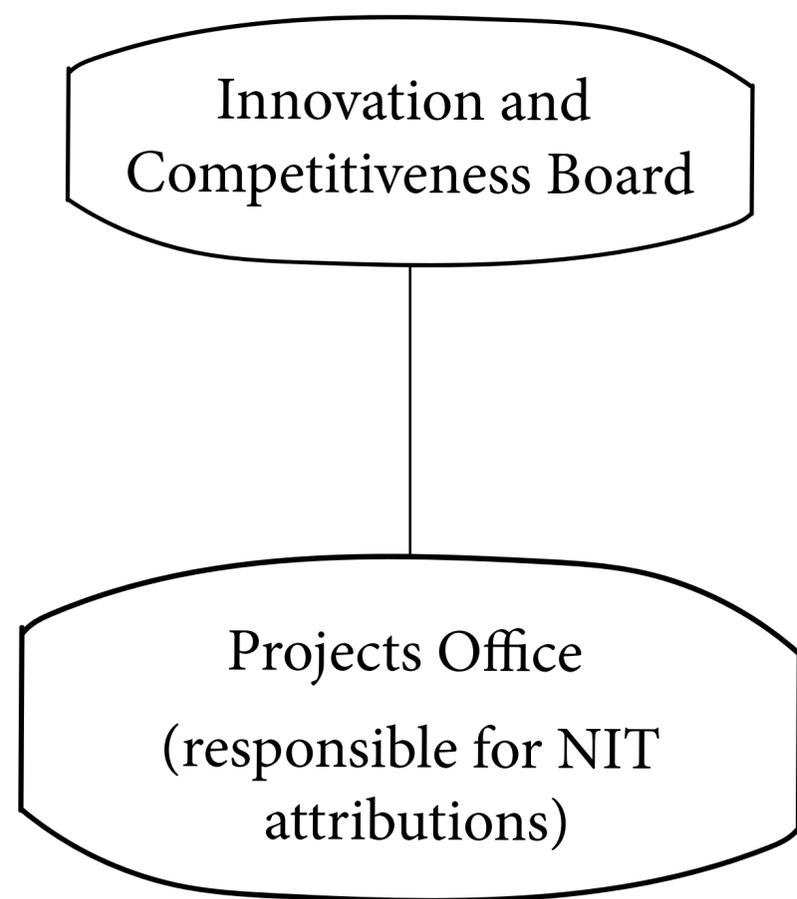
The beginning of the activities of the Institutes of Innovation and Technology represents both the diversification of the services offered by SENAI and the expansion of its sources of revenue. The provision hours of Technology and Innovation services increased from 158,164 man/hours in 2011 to 374,857 man/hours in 2017, a growth of 237%. In financial terms, in 2011, Education services accounted for 85% of SENAI/SC's revenue, and Technology and Innovation services, 15%. In 2017, these proportions changed to, respectively, 67% and 33%, which shows a 220% growth in the participation of Technology and

Innovation services in the total revenue during the evaluated period (Crippa 2019, 81).

These results show the efforts of SENAI/SC in promoting a technology and innovation-based industry in Santa Catarina. Since the implementation of the Institutes of Innovation and Technology, SENAI/SC has approved large projects, which receive subsidies from external sources, such as the SESI-SENAI Innovation Notice, Sebraetec, Sibrattec, Brasil Mais Produtivo Program, and EMBRAPAII, among others. In 2017 alone, 7.5 million *reais* of non-refundable resources were raised and invested in the industry through the Institutes' actions (Crippa 2019, 81-82).

The SENAI/SC NIT space of operations is delimited by the routines and workflows that are established in these environments. Currently, the Center is going through a phase of institutionalization, with the elaboration of a constitutive instrument that will define its format and management model. Although, currently, there is planning, discussion and deliberation about the paths the Center will follow inside SENAI/SC, in the institution, the functions attributed by law to NITs are already performed informally by the Projects Office, a sector linked to the Office of the President of Innovation and Competitiveness (Crippa 2022, [s.p.]).

**Figure 1.** The SENAI/SC Institute NIT organizational chart



Source: by the authors (2022), based on Crippa (2022, [s.p.]).

In 2017, the Projects Office was constituted with its own structure in the SENAI/SC organization chart. Since then, it has become responsible for managing the innovation projects developed in the Institutes. Its most important responsibilities are fundraising, the monitoring of the formalization, execution and accountability of the projects carried out, and the acquisition of equipment for the laboratories (Crippa 2022, [s.p.]).

In 2021, the innovation projects intermediated by the Office mobilized more than R\$ 198 million, including the funding sources and compensations of SENAI and the 73 benefited companies. Among its many successful endeavors are producing painting robots for oil rigs, created with the help and for the use of Petrobras; and the snake robot, designed for automotive assembly and developed in partnership with General Motors (FIESC 2022, 45).

The Office's team is located in the cities of Florianópolis and Joinville, and consists of 16 members. There are ten project managers and six employees working in administrative and financial support, one of whom serves as a reference for conducting matters related to the NIT. In the context of planning the Center's relocation, this employee is more directly involved with the analysis of organizational models in an attempt to define a format that is adequate to SENAI/SC (Crippa 2022, [s.p.]).

The member responsible for the NIT's activities also monitors its legal sector in the management of the institution's intellectual property. In general, SENAI/SC assigns the carrying out of procedures related to the protection of creations to the partner company. Exceptionally, the legal sector takes charge of them, under the monitoring of the NIT representative, who interfaces with the company. In all cases, these procedures are guided by the SENAI/SC Intellectual Property Policy (Crippa 2022, [s.p.]).

It must be pointed out that one of the main motivations for the restructuring of the NIT is precisely the strengthening of actions related to intellectual property. Preliminarily, and to support this process, strategies are being designed to train the Project Office team. The intention of these strategies is to prepare the group that will be in charge of the intended changes (Crippa 2022, [s.p.]).

The dissemination of the culture of innovation is another goal that has gained attention. Today, in the context of the Institutes of Innovation, information is disseminated organically through the interaction between researchers and support staff, as well as the exchange of experiences acquired in the different innovation projects carried out. The trend for the Institutes of Innovation is to maintain this approach, and to perform a more punctual and intensive work alongside the Institutes of Technology, where acculturation has not yet been as strongly consolidated (Crippa 2022, [s.p.]).

The mediation between ICT and the production sector, a typical function of NITs, is an important activity in the Project Office. This interaction results from: a) the spontaneous requests of the companies, which present their demands expecting to receive solutions by means of new processes or products; b) the access, by the companies, to sources of support that are linked to SENAI/SC, such as EMBRAPA; c) the search for the services provided by the Institutes, considering the accreditation

of many of their laboratories by government institutions and agencies; e) the contacts provided by the FIESC (Crippa 2022, [s.p.]).

In terms of inter-institutional relationships, SENAI/SC maintains a close relationship with the other FIESC entities – the Center of Industries of the State of Santa Catarina (CIESC), the Industry Social Service of Santa Catarina (SESI/SC) and the Euvaldo Lodi Institute of Santa Catarina (IEL/SC). With Fapesc, it has completed research projects and is developing others, establishing a productive dialogue with its leaders about the development of the innovation ecosystem in Santa Catarina (Crippa 2022, [s.p.]).

Expanding this approach with Fapesc and other actors of the ecosystem, including becoming part of the Santa Catarina Network of Innovation Centers, is one of SENAI/SC's aims (Crippa 2022, [s.p.]). The formalization of the NIT via the definition of its institutional role is, in this sense, a measure that will allow not only the organization of its internal workflows, but also greater visibility for the Center throughout the State.

## Contact

Address: Av. Luiz Boiteux Piazza, 574, Cachoeira do Bom Jesus, Florianópolis, SC, 88032-005.

E-mail: faleconosco@fiesc.com.br

Site: <https://sc.senai.br/pt-br/institutos-senai-de-inovacao>

<http://institutostecnologia.senai.br/>

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**18.**

**SUPERINTENDENCY OF INNOVATION  
(SINOVA) OF THE FEDERAL  
UNIVERSITY OF SANTA CATARINA  
(UFSC)**

The Federal University of Santa Catarina (UFSC) is a pioneering institution in education, research, outreach and innovation activities in the State. Its mission is

[...] to produce, systematize and socialize philosophic, scientific, artistic and technological knowledge, broadening and deepening the training of human beings for professional practice, critical thinking, national and international solidarity, in the perspective of building a fair and democratic society and defending quality of life. (UFSC 1978, [s.p.]).

By electing innovation and entrepreneurship as two of its guiding values, the university is at the forefront of the promotion and support of practices to face the great challenges of our time.

UFSC was created with the union of seven higher education schools located in Florianópolis – Law (1932), Economic Sciences (1943), Odontology (1946), Pharmacy and Biochemistry (1946), Philosophy (1952), Medicine (1957) and Social Services (1958) – and the creation of a School of Industrial Engineering. According to its formative act, Law 3.849, sanctioned by President Juscelino Kubitschek on December 18, 1960, the university was initially named University of Santa Catarina, having its name changed to Federal University of Santa Catarina in 1965 (UFSC 2020a, [s.p.]; Rodrigues 2010, 18).

Its organization in academic centers and departments dates back to 1969, with the university reform imposed by Decree no. 64.824. The

aspects arising from the reform, added to an increase in demand, raised concerns with the qualification of teachers. In this context, between the end of the 1960s and the 1980s, the first graduate programs were created. The first of them, the Graduate Program in Mechanical Engineering (master's degree), was created in 1969, followed by the Graduate Program in Production and Systems Engineering (master's degree), also established in 1969 (UFSC 2020b, 21).

In the 1970s and 1980s, UFSC's academic community actively participated in the mobilizations for the re-democratization of the country, with the formation of a powerful student movement. These decades were also the stage for strikes organized by the university's employees, which intensified in the 1990s, in the face of budget cuts, wage depreciation and the threat of the privatization of public universities. In the midst of adversity, UFSC not only resisted, but also demonstrated its strong innovative vocation: in 1995, it started offering improvement courses in the format of remote video classes. Its distance learning actions, the result of a partnership with the Open University of Brazil (UAB), contributed to the expansion of this modality of education in the country (UFSC 2020a, [s.p.]).

In the same period, there was an intense expansion of the offering of *stricto sensu* graduate programs, research and outreach projects, and the support for the creation of technology centers in the state of Santa Catarina. In this context, at the onset of the 21st century, UFSC began to

strengthen institutionally, with a renewed commitment to public, free and quality education. To celebrate the university's 40th anniversary, the first edition of the Teaching, Research and Outreach Week (Sepex) was held in November 2000, during which the robustness of its scientific production was demonstrated (UFSC 2020a, [s.p.]).

2007 marks the beginning of the Support Program for Restructuring and Expansion Plans (Reuni), a federal public policy responsible for major transformations at the university. Since then, the institution has offered more slots in higher education, expanded the number of in-person courses and improved the structure of existing ones. With resources from Reuni, UFSC was able to also reach smaller communities with the creation of the campuses of Araranguá, Joinville and Curitibanos in 2009, and Blumenau in 2014 (UFSC 2020b, 22).

According to the Institutional Development Plan (PDI 2020-2024), approximately 50 thousand people circulate daily at UFSC, including professors, administrative technicians, students and the external community. These include over 5,600 employees – faculty and administrative technicians specialized in education –, as well as 1,190 basic education students and around 29 thousand undergraduate students enrolled in 120 courses, of which 107 are in-person and 13 are distance learning. In terms of *stricto sensu* graduate education, 67 academic master's degrees, 22 professional master's degrees, 57

academic doctorates and one professional doctorate gather all together over 8 thousand students; while the *lato sensu* graduate programs, consisting of 13 specializations, amount to over 2 thousand students (UFSC 2020b, 26-28).

With a strong investigative tradition, UFSC has over 620 research groups, comprising professors, technicians and students, who currently develop approximately 2.7 thousand projects. In terms of outreach, it carried out, in 2018 alone, over 3.7 thousand activities, such as programs, courses and lectures, with direct repercussions in the community (UFSC 2020b, 29).

In addition to the core activities – teaching, research and outreach –, the university's actions unfold in transversal fields: Culture and Art; Sports, Health and Leisure; Internationalization; Interdisciplinarity; Social Inclusion and Diversity; Environmental Sustainability; and Technology, Innovation and Entrepreneurship. This last field, in particular, focuses on the integration of academic knowledge with the production sector and the strengthening of partnerships between universities and companies, the government and civil society organizations. Among the protagonists of this interface is the Superintendency of Innovation (SINOVA), a department that performs the functions of a Center for Technology Innovation (NIT) within UFSC, and which will be the subject of the next section.

## SINOVA: getting to know the UFSC NIT

UFSC's immediate relationship with the topics of innovation, intellectual property and technology transfer is not recent. In 1981, more than two decades before the Innovation Law determined the need for the implementation of NITs by public ISTs, UFSC already had an equivalent structure for the management of issues related to the protection of intellectual property and technology transfer at the university.

Linked to the Research and Graduate Studies Department (PRPPG), the NIT was established on June 15, 1981, by Ordinance no. 276/GR/1981. On the same date, by means of Ordinance no. 277/GR/1981, Chancellor Ernani Bayer appointed Professor Nelson Back to the position of General Coordinator of the NIT. Professor Nelson remained in the position until April 1982, being succeeded by Professor Edemar Soares Antonini, from the same Department, who was in charge of the general coordination of the NIT for the next fourteen years (UFSC 2008, 14).

The NIT operated, initially, out of the University Library building, and, later, next to the Department of Mechanical Engineering. In addition to the Coordinator, it also had an administration assistant and an intern in its team. The NIT team's responsibilities, guided by the objectives described in Table 1, involved offering guidance to the academic

community about industrial property and technology transfer, and participating directly in the application of patents and the monitoring of their processing with the National Institute of Industrial Property (INPI). The NIT also functioned, since its early years, as a space for continuing education, offering lectures for students and teachers, and training in the field of management of information systems (UFSC 2008, 14).

### Quadro 1. NIT/UFSC objectives (1981)

- a) To increase the degree of integration between research activities and the community in general and the production sector in particular, aiming at using the results of these activities for regional technological development.
- b) To approve the patenting of inventions, utility models, industrial models and industrial designs.
- c) To increase the efficiency of the procedures for absorbing and transferring technology to the regional production sector.
- d) To support and encourage UFSC researchers to detect technological demands and participate more effectively in the search for solutions to regional technological problems.

Source: by the authors (2022), with a copy of Ordinance no. 0276/GR/1981, art. 2 (UFSC 1981, [s.p.]).

Beyond the university walls, the NIT team has maintained relationships with companies seeking to promote the use of the technological potential developed in the institution. The team was also present at national events on issues related to its scope of action, such as

Fenasoft – the largest information technology fair in Brazil – in the 1990s (UFSC 2008, 14).

In 1993, UFSC's pioneering activities in intellectual property management led to the appointment, by the Ministry of Foreign Affairs, of professor Edemar Soares Antonini, the then-Coordinator of the NIT, to represent Brazil at the Seminar and Course on Intellectual Property held in Japan. For 30 days, Antonini exchanged experiences with participants from four other countries, and became familiar with several methodologies from governmental agencies for education; as well as the promotion of research, development and technological innovation of the production sector (UFSC 2008, 14).

The 2000s saw important changes in UFSC's position regarding the protection of its intangible assets and the fostering of research. The first of these happened in 2002, with Resolution no. 14/CUn/2002 of June 25. Considering the need to strengthen the scientific and technological practice of the university via basic and applied research, the Resolution established criteria for the participation of researchers in financial gains from the commercial use of protected intellectual creations. Furthermore, it created, in its 4th article, the Coordination for Intellectual Property Management (COGEPI) (UFSC 2002, [s.p.]).

COGEPI, which was linked to the PRPPG, had the competency to

[...] exercise and enforce the provisions of this Resolution, support technology transfer processes, internally or externally, and stimulate and promote the legal protection and economic exploitation of intellectual creations (UFSC 2002, [s.p.]).

The creation of COGEPI, replacing the NIT, was carried out under the leadership of professors Alvaro Toubes Prata and Cláudia Maria Oliveira Simões, who, initially, had the technical support of Federal Prosecutor Maristela Cechetto and economist Cláudio Moita Guedes, and, later, of the professor of the Graduate Program in Law (PPGD), Luiz Otávio Pimentel (UFSC 2008, 15).

Also in 2002, after submitting a project to CNPQ – which was approved –, the university was granted resources for the implementation of a Center for the Support of Intellectual Property. The Center's team, coordinated by Professor Alvaro Prata, was formed by professors Thereza Christina Monteiro de Lima, Cláudia Maria de Oliveira Simões, Luiz Otávio Pimentel and Renato Carlson, with technical support from Thamara da Costa Vianna França, Project Manager of the Foundation for Research Support and University Outreach (FAPEU) (UFSC 2008, 15).

In May 2004, the functions of the UFSC NIT started to be exercised by the Department of Intellectual Property Management (DEGEPI), linked to the PRPPG and under the coordination of Professor Luiz Otávio Pimentel, according to Ordinances no. 316 and 317/GR/2004.

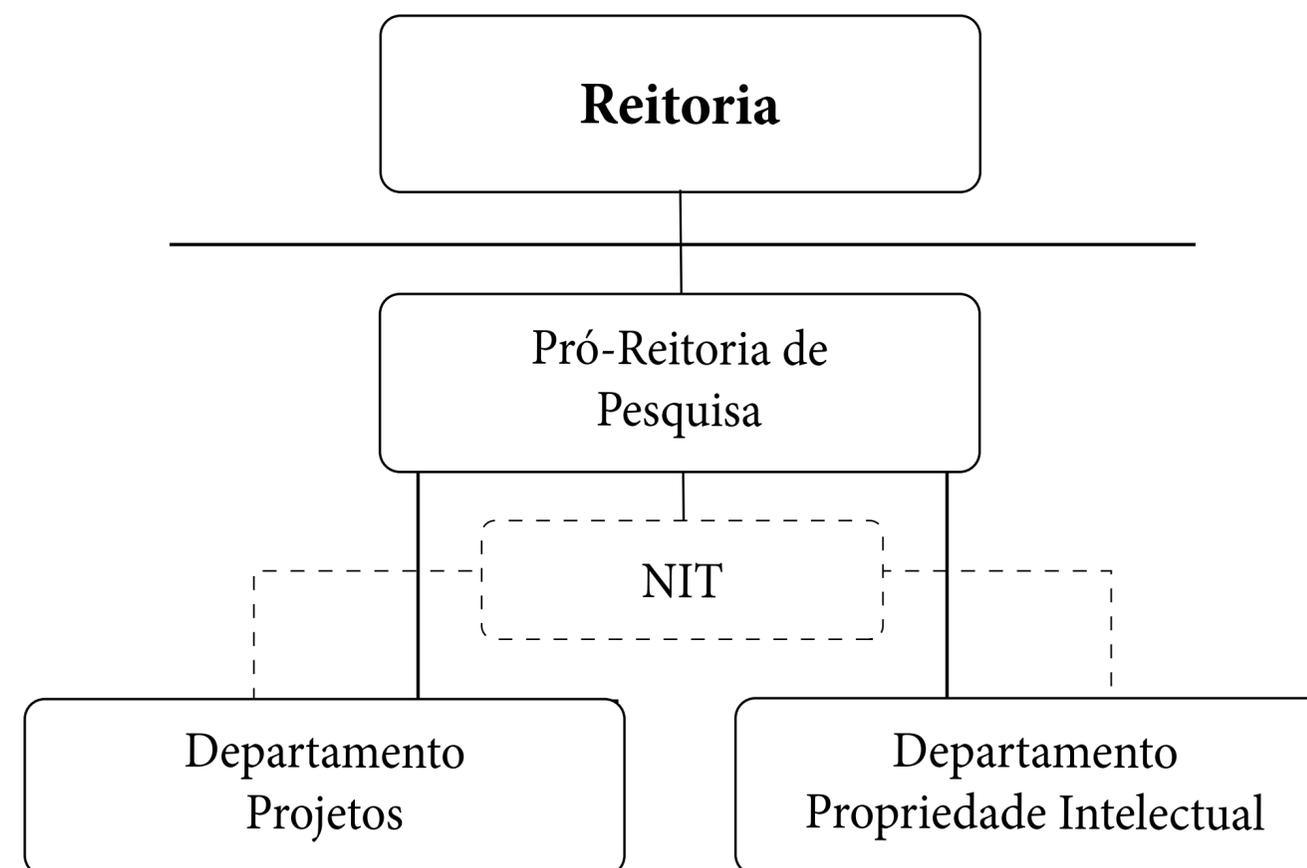
In the same year, with the split of the PRPPGD and the creation of the Research Department (PRPe), DEGEPI had its name changed to Department for Intellectual Property (DPI), and was connected to the newly created department, remaining under the direction of Professor Pimentel (UFSC 2008, 15).

The advent of the Innovation Law, a regulatory framework that made NITs compulsory in public ISTs, in December 2004, did not prompt immediate changes in the organizational structure of the UFSC NIT, which still had its competencies absorbed by the DPI. In 2007, however, under the administration of Chancellor Thereza Christina Monteiro de Lima, Ordinance no. 276/GR, the instrument that created the NIT in 1981, was revoked, and the NIT was renewed, in accordance with the Innovation Law (UFSC 2008, 15-16).

According to Ordinance no. 337/2007, which was responsible for revitalizing the NIT, the sector, subordinated to the PRPe, according to the organizational chart in Figure 1, was created to be

[...] an instrument to coordinate incentive measures for innovation and scientific and technological research for the production environment, activities related to the creation, adaptation, absorption and transfer of technology and intellectual property. (UFSC 2007a, [s.p.]).

**Figure 1.** NIT UFSC organizational chart (2007)



Source: UFSC (2008, 16).

It is interesting to see that, in this format, the NIT and DPI operated in an integrated way, but with parallel values, missions and visions, as shown in Table 2.

**Table 2.** NIT and DIT values, missions and visions (2007)

NIT
Values: ethics, commitment, responsibility, perseverance, competence, creativity, personal appreciation and teamwork.
Mission: to stimulate and strengthen UFSC interactions with public and private institutions in the carrying out of projects, creating and consolidating opportunities for S&T, research, R&D and R&DI activities, which will contribute to the country's economic and social development, as well as the transfer of academic research results to society.
Vision: benefits generated for UFSC and for society, self-sustainability, professionalization, socialization and protection of knowledge, partnerships with the production and government sectors.

DIT
Values: ethics, commitment, responsibility, perseverance, competence, creativity, personal appreciation and teamwork.
Mission: to raise awareness of, encourage and carry out the protection of UFSC's intellectual property, transforming the results of research, knowledge and information into wealth.
Vision: benefits from intellectual property expressed as intellectual capital and intangible assets in the UFSC patrimony.

Source: by the authors (2022), based on UFSC (2008, 17-18).

Its staff was comprised of Professor Luiz Otávio Pimentel – Director of the NIT/DIP –, a technical-administrative employee, an administrative assistant, an intern and, to meet demands on an exceptional basis, a legal advisor appointed by Ordinance no. 340/GR/2007 (UFSC 2008, 19).

Due to a great demand for consultations and the writing of legal opinions, in contrast with the reduced number of allocated employees, the NIT/DIP had the informal collaboration of the UFSC Research Group on Intellectual Property, Technology Transfer and Innovation in the execution of many activities. The scientific production of the Group also interfaced with the work done at the NIT/DIP, based on the study perspectives of the participants, students of the undergraduate and graduate programs in Law, Economics, Agronomy, and the Graduate Programs in Biotechnology and Knowledge Engineering and Management (UFSC 2008, 19).

NIT competences at that time, according to art. 2 of Ordinance no. 337/GR/2007, were those established in the subsections of art. 16 of the Innovation Law and, furthermore: a) the prospection of innovation projects, in the production environment, that could be executed in partnership with the university; b) the manifestation of opinions on entering into contracts and agreements involving innovation and scientific and technological research and containing clauses of intellectual property and secrecy; c) the disclosure of the results of innovation projects developed at the university; and d) the establishment of its own Internal Statute (UFSC 2007a, [s.p.]).

In addition to designing a new configuration for the NIT, in 2007, the Academic Administration also created the Innovation Committee, whose composition and activity guidelines were described in Ordinance

no. 338/GR/2007. The Innovation Committee, according to art. 1, was created with the aim of monitoring actions related to innovation and scientific and technological research, and also propose, to the University Council, project policies, intellectual property, secrecy, technology transfer and actions for promoting innovation at UFSC (UFSC 2007b, [s.p.]). With annual ordinary meetings, the first composition of the Committee involved representatives of the university and different entities – as shown in Table 3 –, with the NIT Director acting as Secretary.

**Table 3.** Composition of the Innovation Committee (2007)

- a) Vice Chancellor.
- b) Dean for Research, Graduate Studies and Budget, Administration and Finance.
- c) Three representatives of the University Units, indicated, by consensus, by their Directors.
- d) Two representatives of duly accredited Support Foundations, indicated, by consensus, by their Presidents.
- e) Three representatives of researchers with established knowledge, indicated by the Chancellor.
- f) One industry representative, indicated by the Federation of Industries of the State of Santa Catarina (FIESC).
- g) A representative from the Funding Authority for Studies and Projects (Finep).
- h) A representative from the Foundation for Support of Scientific and Technological Research of the State of Santa Catarina (Fapesc).
- i) Director of the Center for Technology Innovation.

Source: by the authors (2022), with a copy of Portaria no. 338/GR/2007, art. 2 (UFSC 2007b, [s.p.]).

In 2009, Professor Rozangela Curi Pedrosa, from the Department of Biochemistry, took over as Director of the NIT/DIT, now linked to the Research and Outreach Department (UFSC 2008, 16). This period coincided with the participation of the NIT in the development of the project sent to MCTI – and in the subsequent development of the PRONIT model –, of the implementation and structuring of the Santa Catarina arrangement of NITs, with funding from CNPq, Fapesc and the Funding Authority for Studies and Projects (Finep). PRONIT offered training to the team and allowed the qualification of NIT strategic planning. To this end, the NIT Management Application was developed, being adopted by the UFSC NIT in 2010 as a model for the registration and control of intellectual property in the institution (UFSC 2010, 14; UFSC 2011, 7; Paulokun 2019, 37).

With respect to the external relationships of the UFSC NIT and its networking, important movements can be seen throughout the 2000s. In 2003, the NIT helped in the organization of the 1st National Congress on Intellectual Property, an event held at UFSC with the presence of approximately 300 university students and entrepreneurs from the state of Santa Catarina, several Brazilian states and Mercosur countries. Three years later, the second edition of the Congress brought a decisive topic for the revitalization of the NIT – “[...] technology commercialization: technology transfer and

innovation for the development of countries [...]” – and hosted the meeting for the creation of the National Forum of Innovation and Technology Transfer Managers (FORTEC), on May 1, 2006 (UFSC 2008, 24-25).

At that moment, innovation and technology transfer managers from several Brazilian universities and research institutions elected the national and regional coordinating bodies of FORTEC. Professor Luiz Otávio Pimentel, representing UFSC, was elected member of the National Coordination (2006-2008), which was repeated in subsequent years. It is important to say that the NIT team was actively involved in the creation process of the FORTEC Statute, which was approved in June 2006 (UFSC 2008, 29; Cadori 2022, [s.p.]).

Another outreach activity carried out by the UFSC NIT, in that period, was the promotion of training courses in intellectual property and technology transfer. Resulting from a technical cooperation agreement between INPI, UFSC, Fapesc, Udesc, Epagri and IEL/SC, eight editions of the basic course were given, in the main industrial and commercial centers of Santa Catarina: Blumenau (FURB), Chapecó (Unochapecó), Criciúma (Unesc), Florianópolis (UFSC), Joaçaba (Unoesc), Joinville (Univille), Lages (Uniplac) and Tubarão (Unisul). The intermediate and advanced module editions of the course also

took place, both in Florianópolis, at UFSC, and Udesc (UFSC 2008, 27-28; Cadori 2022, [s.p.]).

Recalling successful cases in innovation that were mediated by the NIT in the 2000s, the invention of Chronos Passiflora Flavonoids, by professor João Batista Calixto from the Center of Biological Sciences, is worth mentioning. This product resulted from an R&D project developed by a partnership between UFSC and the company Natura Inovação e Tecnologia de Produtos Ltda., with funding from Finep and mediation from the Stemmer Foundation for Research, Development and Innovation (FEESC). The NIT mediated the negotiation of UFSC's participation in its commercial use, and the resulting commercialization of Natura's product in 2008 earned UFSC a share for the use of intellectual property for the first time (UFSC 2008, 23).

The 2010s were marked by new changes in the formal structure of the NIT. From the internal point of view, its team was gradually expanded and organized into sectors: Intellectual Property Division, Coordination for Legal Support, Coordination for Process Management, Coordination for Technology Transfer, in addition to the activities of the Innovation Committee, which, as of 2011, had representations by faculty members from all technological, social and legal fields of knowledge at the university (UFSC 2014, 1; UFSC 2011, [s.p.]).

In 2016, the DIT became the UFSC Innovation Agency (AGIUFSC), linked to the Research Department through Ordinance no. 541/2016/GR. AGIUFSC inherited DIT responsibilities and acquired new ones,

[...] such as identifying and encouraging, within the production environment, opportunities to carry out innovation projects that could be executed jointly with the University and stimulate the culture of entrepreneurship at UFSC. (UFSC 2022, [s.p.]).

Even before the establishment of the new internal legislation, the DIT had already incorporated a Coordination for Entrepreneurship into its organizational chart (UFSC 2015, 6).

Among other actions, the Coordination developed the project “Entrepreneurship Education at UFSC/Sebrae: implementation of activities to foster entrepreneurship and intellectual property”, which aimed to encourage entrepreneurship among university students. Among its activities, the following can be highlighted: the offering of courses on intellectual property, technology transfer, innovation and entrepreneurship; participation in the University Entrepreneur Challenge of the Brazilian Micro and Small Business Support Service (Sebrae); and the organization of the 3rd Inventor’s Fair.

With regard to the Inventor’s Fair, a traditional event in the NIT schedule, the first edition occurred in October 2009 and the second, in October 2010. The Fair was an opportunity for UFSC researchers,

other ISTs and independent inventors to show their work, which was evaluated by popular vote and a technical committee, and then awarded. In the three editions of the Fair, approximately 100 inventions were presented (UFSC 2010, 11; CADORI, 2022, [s.p.]).

In 2016, the Innovation Agency participated in the implementation process of the Graduate Program in Intellectual Property and Technology Transfer (PROFNIT), a professional master’s degree, at UFSC. PROFNIT, which is coordinated by FORTEC, is developed within a national network through focal points in associated institutions, with the aim of training professionals to work in the competencies of the Centers for Technology Innovation (NITs) and other environments that promote innovation. UFSC has integrated PROFNIT’s set of focal points since the first National Access Exam, and the NIT develops numerous cooperative activities with the Program, such as the offering of vacancies for the Professional Workshop course (Cadori 2022, [s.p.]).

The current structuring of the UFSC NIT dates back to 2016, when, under the administration of Chancellor Luis Carlos Cancellier de Olivo, Ordinance no. 970/2016/GR created the Superintendency of Innovation (SINOVA). At that time, Professor Claudio José Amante, from the Department of Dentistry, was appointed Secretary for Innovation (Ordinance no. 981/2016/GR). With this new configuration, the status

of the sector was raised from Department to Superintendency, which, in practice, placed it at the same hierarchical level as the Department, reporting directly to the Chancellor's Office (UFSC 2016a, [s.p.]; Paulokun 2019, 81). This change in positioning, with the growth of SINOVA's importance in the organizational chart of the university, reflected the management's desire to re-approach and reconnect UFSC with the innovation ecosystem of Santa Catarina.

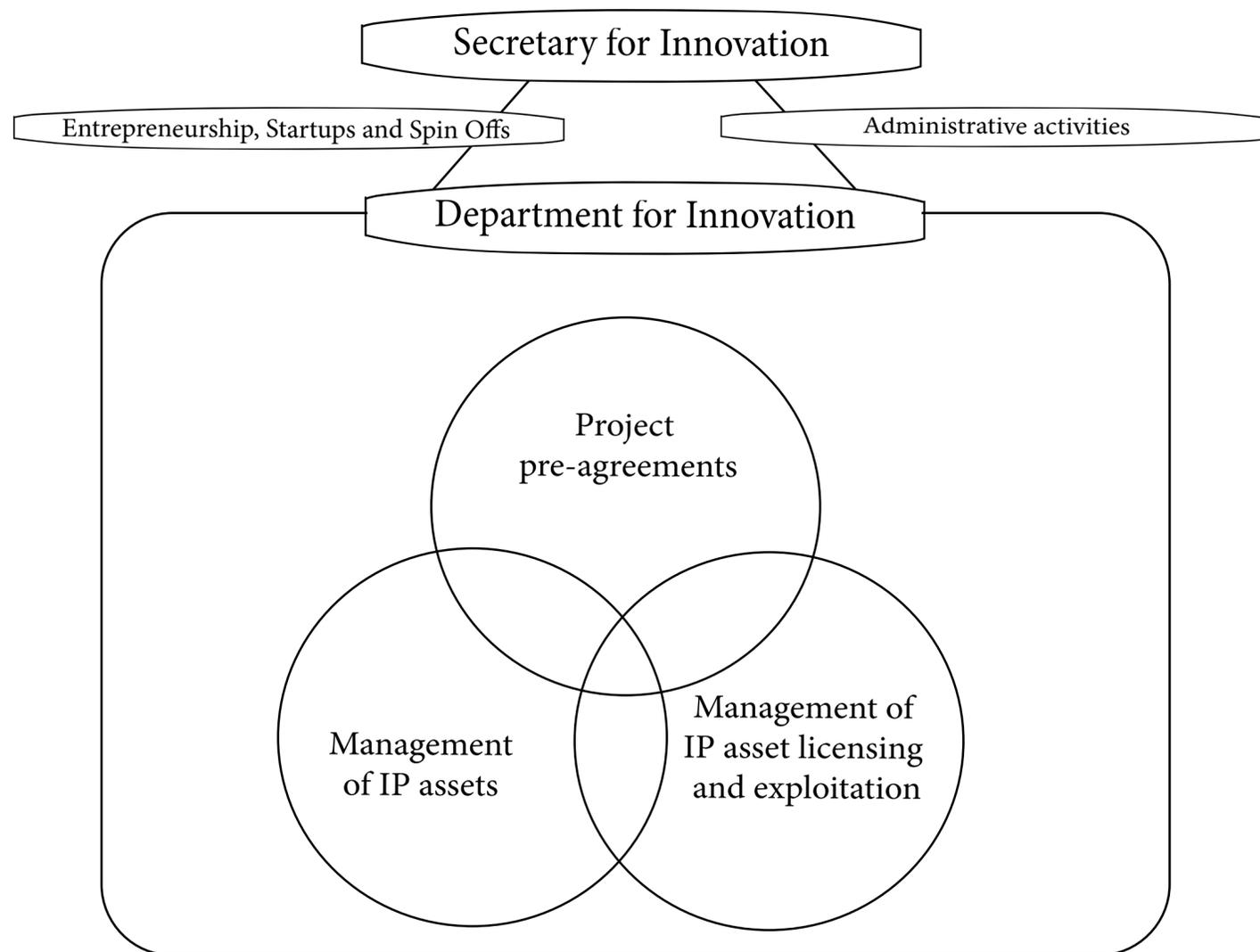
In the first years of its existence, SINOVA faced some trouble in structuring its team, a situation that mirrored the very complications faced by the university with the passing of Chancellor Cancellier in 2017. As of 2018, an internal structure was designed for the Superintendency, with seven fields of work – Administrative Support, Culture of Innovation, Intellectual Property, Communication, Business Ventures and Technology Transfer –, which answered to a Department for Innovation (Paulokun 2019, 86). In the same year, Professor Alexandre Moraes Ramos, from the Department of Administrative Sciences, became the Secretary of Innovation.

Since 2018, a gradual consolidation of SINOVA has been observed, with the preparation and execution of a strategic plan. Initially, its focus was directed toward the organization of operational activities, especially in relation to intellectual property management, technology transfer and contract management. In a second stage, activities to

promote the culture of entrepreneurship were added, while the next steps involve strengthening prospecting actions and promoting the internationalization of Superintendency activities. It is important to note that SINOVA's mission, vision and objectives are currently centered on the open innovation model and partnerships, seeing the latter as mechanisms to face the great challenges of contemporary society (see Chart 4) (Ramos 2021, [s.p.]).

Currently, its team consists of two managers – Professor Alexandre Moraes Ramos, still in the position of Secretary for Innovation, and a Director of Innovation –, eleven employees in administrative occupations, and undergraduate and graduate interns. Its internal organization chart maintains the Department for Innovation, which coordinates three cells: project pre-agreements, the management of the licensing and exploitation of intellectual property assets, and the management of intellectual property assets. The areas of entrepreneurship, startups and spin offs, and administrative activities are connected to the Secretary for Innovation, as shown in Figure 2 (UFSC 2022, [s.p.]).

**Figure 2.** SINOVA's internal organization chart (2022)



Source: by the authors (2022), based on UFSC (2022, [s.p.]).

**Table 4.** SINOVA mission, vision, and objectives (2021)

Mission: to promote innovation and entrepreneurship through partnerships and interactions with different actors, creating conditions for the philosophical, scientific, artistic and technological knowledge produced at the University to render benefits to society.

Vision: we believe that open innovation is the way to create new opportunities and propose solutions for the great challenges of society.

Objectives: to promote open Innovation and the culture of entrepreneurship; create synergy with different segments of society and the production sector; identify and create opportunities for cooperative projects; exercise the management of the UFSC EBT Incubator and the S&T Park to be implemented; act in an integrated and transversal way with UFSC education, research and outreach actions; manage questions related to the property and management of rights regarding intellectual creations and property; communicate with innovation ecosystems; promote policies aimed at the creation and promotion of startups and spin offs in the UFSC environment.

Source: by the authors (2022), based on UFSC (2022, [s.p.]).

Since 2016, SINOVA has operated in Shop 3, Building 2, of the Chancellor's Office, where in-person meetings are held. In addition to this format, its tools for remote assistance sessions – UFSC's institutional service portal and email –, the only channels available during the Covid-19 pandemic, are widely used (Cadori 2022, [s.p.]). SINOVA activities, however, as already mentioned, are not restricted to the operational level. The Superintendency is active in the

development of projects that reach the academic community and the external public.

In this direction, it has two main programs, Innovation Pathways and iSHIS: Intelligent, Innovative and Sustainable Human Startups, under which projects such as SINOVA Startup Mentoring, Academy UFSC, the Institutional Observatory and others are carried through, as described in the summary of Table 5. The initiatives of these two programs are crossed by permanent compliance activities, which were institutionalized by the Compliance: Risk Management project. Carried out in two cycles (2019 and 2020), the Compliance project focused on the identification, and subsequent reduction or elimination, of risks in work processes (Ramos 2021, [s.p.]).

Regarding the Innovation Pathways project, the role of SINOVA in the creation of the UFSC Institutional Policy of Innovation and Entrepreneurship is worth mentioning. The discussions for the construction of the Policy began in 2019 – in a work group designated for this purpose and led by Professor Luiz Otávio Pimentel –, continuing during 2020 and 2021 with public consultations, alignment meetings and appraisal by the Innovation Committee. After the approval of the Innovation and Entrepreneurship Policy by the University Council, which should occur in the coming months, SINOVA plans to work on the development of Policies of Intellectual Protection; of Intellectual

Property in graduate education; and of Secrecy and Confidentiality (Ramos 2021, [s.p.]).

SINOVA's advisory agency, the Innovation Committee, which was established in 2007, remains active – albeit with a renewed composition, in accordance with Ordinance no. 2806/2016/GR – and operating in the Moodle virtual environment. In addition to members of the university's top management, faculty representatives from all centers and campuses, students and the Federal Prosecutor's Office at UFSC, the Committee now has representatives from Sebrae, the Order of Attorneys of Santa Catarina (OAB/SC), the Federation of Industries of the State of Santa Catarina (FIESC) and INPI (UFSC 2016b, [s.p.]). This gathering of plural efforts and perspectives qualifies the advice provided to SINOVA in matters related to innovation, entrepreneurship, intellectual property protection, and technology valuation, transfer and use.

**Table 5.** Main projects carried out by SINOVA (2018-2021)

<p>Innovation Pathways</p> <p>Set of activities aimed at integrating different innovation actors within the university and presenting solutions for the regional and national context. Among the projects included, the following stand out:</p> <p><i>SINOVA on Campuses:</i> visitation of members of the SINOVA team to UFSC campuses to carry out lectures and individualized assistance, with the purpose of educating about intellectual property, university-company relationships and innovation.</p> <p><i>SINOVA training on campuses:</i> project to support and encourage training actions for the university community. Courses on writing patents, seminars,</p>	<p>iSHIS: Intelligent, Innovative and Sustainable Human Startups program</p> <p>Set of initiatives aimed at promoting entrepreneurship and technological and social innovation in all UFSC campuses. Among the projects included, the following stand out:</p> <p><i>SINOVA Startup Mentoring:</i> offers mentoring to students' business ideas. In 2019, it earned SINOVA 2nd place in the Professor Caspar Erich Stemmer Innovation Award of Santa Catarina, in the innovative IST category.</p> <p><i>SINOVA Warm Up:</i> launched in 2021, this is a weekly mentoring cycle that aims to prepare teams for the SINOVA UFSC Startup Mentoring project.</p>
<p><i>SINOVA learning and institutional and inter-institutional relationship:</i> training project directed toward the SINOVA team.</p>	<p><i>Institutional Observatory Project:</i> involved actions for the structuring of a data-based intelligence environment within UFSC. The Observatory was launched in November 2021, and has over 300 indicators on 21 areas of the university.</p>

<p><i>Institutional Policy of Innovation and Entrepreneurship:</i> gathered efforts for the construction of the Innovation Policy proposal, which is currently undergoing institutional processing.</p>	<p><i>Academy UFSC:</i> developed in partnership with Sebrae, it seeks to disseminate the cultures of innovation and entrepreneurship in the academic community through the development of individual and group competencies.</p> <p><i>LINC Social:</i> focused on social entrepreneurship, it provides support to projects aligned with the UN's Sustainable Development Goals (SDGs), stimulating the creation of new ideas or supporting existing initiatives.</p> <p><i>Project Develop:</i> developed in a partnership with the LIPPE/UFSC Laboratory, it began its activities in July 2021, with the goal of transforming the patents produced at UFSC into solutions for the production environment, resulting in effective innovation measures.</p>
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Source: by the authors (2022), based on: UFSC (2020c, 2021a, 2021b), Ramos (2021) and Cadori (2022).

In the last decade, SINOVA has intermediated important negotiations pertaining to technology transfer and the protection of intellectual property produced at UFSC. Among them, the contract signed with YPY Sorvetes in 2019 can be highlighted, aiming to regulate the commercialization of Pro Vita, an ice cream that minimizes the effects

of chemotherapy in cancer patients, invented in partnership with UFSC researchers. Another successful case is the partnership established between the university and the Bioart company for the development of the first vegan sunscreen on the market (Ramos 2021, [s.p.]).

According to its 2021 Management Report (UFSC 2021b, 5), UFSC has 580 Intellectual Property applications filed/registered at INPI, comprising 294 Invention Patents, 16 Utility Model Patents, 204 Computer Program Registrations (CPR), 42 Brands and 24 Industrial Designs (ID). Furthermore, it has 12 Cultivars registered in the Ministry of Agriculture.

The consistency in its activities to disseminate a culture of innovation and entrepreneurship yields recognition and awards to SINOVA. In 2019, the Superintendency was one of the honored institutions in the Professor Caspar Erich Stemmer Innovation Award of Santa Catarina carried out by Fapesc, and received 2nd place in the Innovative IST category, for the SINOVA UFSC Startup Mentoring project. In 2021, once again, the SINOVA Startup Mentoring Project allowed UFSC to be among the 3 most entrepreneurial universities in Brazil, in the Startup Awards 2021 held by the Brazilian Startup Association and the Blanko Agency. In the same year, the Academy Project won 3rd place in the State stage of the Sebrae Entrepreneurial Education Award in Santa Catarina – higher education category (UFSC 2021b, 5).

**Figure 3.** SINOVA visual identity



Source: SINOVA archives (UFSC 2022).

In the search for effective communication with the community, SINOVA has been implementing strategies to become increasingly present in social media. Thus, it reports its achievements and gives information about available opportunities on its institutional page and profiles on LinkedIn, Facebook and Instagram, as well as produces and uploads content on its YouTube channel. SINOVA relationship spaces are also constructed beyond social media: the Superintendency values networking and is one of the founders of the Santa Catarina Network

of Innovation Centers, the NITSC Network, which is being constituted. The Secretary of Innovation, Professor Alexandre Ramos, is heading the Network Coordination, in the 2020-2022 management.

As with any organization that has so many decades behind it, the history of the UFSC NIT, today structured as SINOVA, did not follow a linear path. It navigated through different university administrations, found itself lacking in infrastructure and personnel a number of times, and was impacted by the transformations that took place in the university and in society in general. It remains, however, committed to the constant challenge of keeping its team qualified to act in competencies that require a high level of technical knowledge and involve risk-taking, as well as a search for efficiency, and creativity. Due to its protagonism, in this sense, it is, without a doubt, an important part of the Santa Catarina S, T&I ecosystem.

## Main legislation in effect

Resolution no. 14/CUn/2002 – Provides for the ownership and management of rights related to intellectual property within UFSC.

Ordinance no. 337/2007 – Creates the UFSC NIT.

Ordinance no. 970/2016/GR – Creates Sinova.

Ordinance no. 2806/2016/GR – Creates the Innovation Committee.

Ordinance no. 2225/2017/GR – Provides for the duties of the Secretary for Innovation.

## Contact

Address: Avenida Desembargador Vitor Lima, 222, Loja 03, Reitoria, Prédio 2.

Trindade – Florianópolis, SC, Brasil, CEP 88040-400

E-mail: [sinova@contato.ufsc.br](mailto:sinova@contato.ufsc.br)

Site: <https://sinova.ufsc.br>

Facebook: <https://pt-br.facebook.com/sinova.ufsc>

Instagram: [@sinova.ufsc](https://www.instagram.com/sinova.ufsc/) | <https://www.instagram.com/sinova.ufsc/>

LinkedIn: <https://br.linkedin.com/company/sinova-ufsc>

YouTube: <https://www.youtube.com/c/SINOVAUFSC>

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**19.**

**UNIINOVA CENTER FOR TECHNOLOGY  
INNOVATION OF THE UNIVERSITY  
OF VALE DO ITAJAÍ  
(UNIVALI)**

The University of Vale do Itajaí (Univali) is a community-based educational institution maintained by the University of Vale do Itajaí Foundation (Univali Foundation), and has been in operation for over fifty years. It is a pioneer in offering higher education in the municipality of Itajaí, where its Academic Administration is located, and is currently organized in a multi-campus structure, reaching several municipalities in the region.

The creation of Univali follows the movement undertaken in the 1960s for the dissemination of higher education in the country municipalities of Santa Catarina. This circumstance “[...] defines the genetic code of the Institution as a Community University.” (Univali 2022b, 24). The mobilization of local leaders and civil society culminated in the Project for the Creation of the Itajaí Society of Higher Education (SIES) in 1962, an entity that, two years later, was officialized as a private institution and later transformed into a public institution by Municipal Law no. 599/1964 (Univali 2022b, 25).

SIES was created with the purpose of implementing the Vale do Itajaí Schools of Social and Legal Sciences, and Vale do Itajaí Philosophy, Sciences and Languages. Its activities started effectively in 1965, with Law, Pedagogy, Literature, History and Geography programs. Four years later, SIES became the Municipal Authority for Education and Culture of the Town of Itajaí (AMECCI), whose constitutive nature changed again

in 1970 with the creation of the Teaching Foundation of the Vale do Itajaí Geo-educational Hub (Fepevi) (Univali 2022b, 25).

In addition to the Schools of Social and Legal Sciences, and Philosophy, Sciences and Languages, the Schools of Administrative, Economic and Accounting Sciences and the School of Nursing and Obstetrics were founded in the following years. The unification of the four institutions resulted, in 1986, in the creation of the Integrated Schools of the Coast of Santa Catarina (Filcat), which was recognized as a university on February 16, 1989, and received, with this milestone, the name Univali (Univali 2021a, [s.p.]).

The 1990s saw the expansion and consolidation of Univali as an environment that promotes education, research and outreach. Its number of undergraduate programs increased, new campuses were built, its *colégio de aplicação*<sup>1</sup> gained a second unit – the first had been inaugurated in 1978, in Itajaí –, and numerous outreach projects began to be developed. Between 1994 and 1995, the first two *stricto sensu* graduate programs offered by the university began their activities – the Master’s Degree in Legal Sciences and the Master’s Degree in Tourism and Hotel Management –, an event that increased academic production.

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1 See footnote on 47.

The 2000s brought Univali maturity, opportunities and many achievements. Among the university's key events are the beginning of its offering of undergraduate programs in the distance learning modality; the increase in its *lato sensu* and *stricto sensu* graduate programs; the expansion of its internationalization process; its accession to the Federal System of Higher Education; and the change in its academic and pedagogical structure, with the transformation of its Centers into Knowledge Schools (Univali 2022b, 24-25).

Currently, Univali is organized into six campuses – Itajaí, Balneário Camboriú, Balneário Piçarras, Centro Biguaçu, São José and Tijucas – and an educational unit for marine research – the Penha Unit. It offers approximately 100 undergraduate program options in the in-person and distance learning modalities – pertaining to the Schools of Education; Arts, Communication and Hospitality; Health Sciences; Social and Legal Sciences; Business; and Sea, Science and Technology –, in addition to 50 specialization courses in progress; twelve master's degrees and six doctorates (Univali 2022b, 29; Univali 2021b, [s.p.]).

The university has over 20 thousand students, from preschool to the graduate level, a faculty formed by 1263 teachers (74% of them with master's and doctorate degrees) and 1207 administrative employees, benefitting from the ample facilities that include classrooms, libraries, laboratories, etc. In terms of outreach, 10 institutional programs and 75 projects bring Univali closer to the community, while the more than

147 existing research groups generate “[...] scientific production and innovative products that place the University in a prominent position in international rankings.” (Univali 2021b, [s.p.]).

In the last four years, Univali directed efforts to reposition itself, internally and externally, around two fronts: innovation and connection. In this process, the Center for Technology Innovation (NIT) – as an agency directly involved with innovation, entrepreneurship, intellectual property and technology transfer within the university – took on a prominent role. The next section recalls the main moments of the historical development of the Univali NIT and presents the main actions in this new cycle.

## **Uniinova: getting to know the Univali NIT**

In the late 1990s, when innovation was hardly a thought in the daily life of universities, Univali was already discussing ways to integrate it into institutional projects and the regional context, understanding that it could be an opportunity to transform knowledge into wealth and to contribute to the socioeconomic development of the state (Uniinova 2021a, 5).

In 1999, the university was a pioneer in developing a proposal for the implementation of a business incubator in the municipality of Itajaí, an arrangement that ultimately was not carried out due to the

reluctance of those involved in investing in the project. Internally, however, the university continued mobilizing until, in 2004, with resources obtained from the State Fund for Science and Technology (FUNCITEC) and the Brazilian Micro and Small Business Support Service (Sebrae), it started the implementation, on the Itajaí campus, of the Pre-Incubator of Companies, which was inaugurated in 2006 (Uniinova 2021a, 6).

From these efforts to create the Pre-Incubator, the Univali Entrepreneur Movement (MEU) was developed in 2005. Linked to the Outreach Department, it had the purpose of connecting the Education Department and the university's Education Centers with businesspersons and entrepreneurship promotion agents (Uniinova 2021a, 6). MEU's activities were guided by three task forces: Pre-Incubator Management, Entrepreneurship Training, and Relationships. In each of these, microprocesses crossed fields such as technology transfer, event planning, technical training, and mediation between the public and private sectors, among others (Silva, Silva Jr., and Araújo 2005, 5565-5566).

In the following years, as the external environment became more favorable to the promotion of innovative entrepreneurship, Univali, through MEU, followed these developments, leading initiatives and being recognized for its work (Uniinova 2021a, 9-10), as shown in Table 1.

**Table 1.** Actions coordinated through MEU (2007-2010)

- a) Incorporation of the Social Incubator, focused on Solidarity Economy (2008).
- b) Participation in the implementation project of the Itajaí Technology Park (2008).
- c) Creation of the Univali Intellectual Property Resolution (2008).
- d) Hosting of two editions of the Univali Entrepreneurship Symposium (2009 and 2010).
- e) Raising of funds from Sebrae for specific projects and the implementation of the Reference Center for Entrepreneurship Support (CERNE) (2010).
- f) Participation in the Santa Catarina Network of Entities to Promote Technological Enterprises (RECEPET).
- g) Participation in the Project for the Establishment and Development of an Arrangement of Technological Innovation Centers in Santa Catarina (PRONIT) (2009-2011).
- h) Obtaining the following awards: Santander Award for Entrepreneurship Program at Babson College – Marcelo Novaes (Marithimus incubator) (2009); Santander Award for Outstanding Entrepreneurship – Univali, with several projects awarded (2010); Santander Award for the Entrepreneurship Program at Babson College – Prof. Ovidio Felipe Jr (2010).

Source: by the authors (2022), with information from Uniinova (2021a, 9-10).

In addition to the projects mentioned above, one of the results of MEU activities was the creation of the Univali Center for Technology Innovation (Uniinova) in 2009. Many of the competencies assigned by law to NITs, such as establishing relationships with the production sector and disseminating a culture of innovation – which, until then, were performed informally by MEU or the Pre-Incubator – began, from this point on, to be planned by the NIT (Uniinova 2021a, 9).

This new positioning was influenced, to some extent, by Univali's participation in the Project for the Establishment and Development of an Arrangement of Technological Innovation Centers in Santa Catarina (PRONIT), which started to be executed in 2009. PRONIT trained professors, researchers and technical professionals active in the area of innovation in topics such as project development, NIT management, intellectual property and technology transfer, which led to the improvement of the projects and planning carried out by the Univali NIT.

Although it was created in 2009, the Univali NIT was only formalized in 2014, when the university instituted its Research, Development & Innovation (RD&I) Policy. The RD&I Policy, conveyed through Resolution no. 149/CONSUN/2014, "[...] establishes the guidelines for innovation, intellectual property, technology transfer, service provisions and relationships with society in aspects related to the promotion of innovation [...]" being the most important legislation at Univali in effect on the subject (Univali 2014, [s.p.]).

The second article of this instrument established the NIT, named Uniinova, a sector linked to the Planning and Institutional Development Department. Its initial structure had an Institutional Officer – in charge of coordination activities, such as meetings, demand management and representation of Uniinova, both inside and outside the university –, an Administrative Support Team and a Representative of the Incubated

Businesses (art. 29 and 31). Uniinova's actions, in turn, were organized around three main fields: innovation and intellectual property, entrepreneurship, relationships with society (Univali 2014, [s.p.]).

The aims institutionally defined for Uniinova and that, eight years later, still guide its work, are described in art. 27, reproduced in Table 2.

**Table 2.** Uniinova aims

- a) To support actions that encourage scientific and technological innovation in the production environment, with the goal of contributing to the technological independence and the cultural, economic and social development of the country.
- b) To request the intellectual property rights of the creations developed at Univali.
- c) To disclose Univali technology innovation activities in the academic and scientific environments.
- d) To support actions that seek the integration of Univali with other sectors of society for the generation and transfer of technology.
- e) To seek partnerships with the Centers for Technology Innovation of other institutions.
- f) To raise funds with development agencies.
- g) To encourage entrepreneurship aiming at the generation of innovative processes, products and services for society.

Source: by the authors (2022), with a copy from art. 27 of Resolution no. 149/CONSUN/2014 (Univali 2014, [s.p.]).

Uniinova's operation, in the first years of its institutionalization, faced the challenge of taking place at a time when there was very little backing for innovation by the public sector, with few calls for proposals

launched in this respect. There was also the difficulty of raising the awareness of university managers to the need of allocating resources for the maintenance of the NIT before other priorities that, in the short term, demanded their attention (Tomio 2022, [s.p.]).

The great turning point in the positioning and importance given to Uniinova within the institution happened in 2018, with the start of the Connect & Innovate Management Plan (2018-2022). The Plan, still in progress,

[...] aims to develop an innovative and first-rate Community University, with education connected to new educational trends, outreach and impactful scientific research, offering solutions to transform society. (Univali 2022b, 32).

In this perspective, it proposes changes in institutional processes, always with the purpose of strengthening the role of the institution as a generator of innovation. To support these changes, a Management for Innovation was created, which was linked to the Academic Administration, a sector immediately above Uniinova in the university organization chart (Tomio 2022, [s.p.]).

This new institutional moment promoted the activities carried out by the NIT, which had its strategic planning based on the Connect & Innovate Plan and underwent a reformulation of its team – with the

addition of a Coordinator, Professor Janaina Lorenzi Tomio – and of its organizational structure.

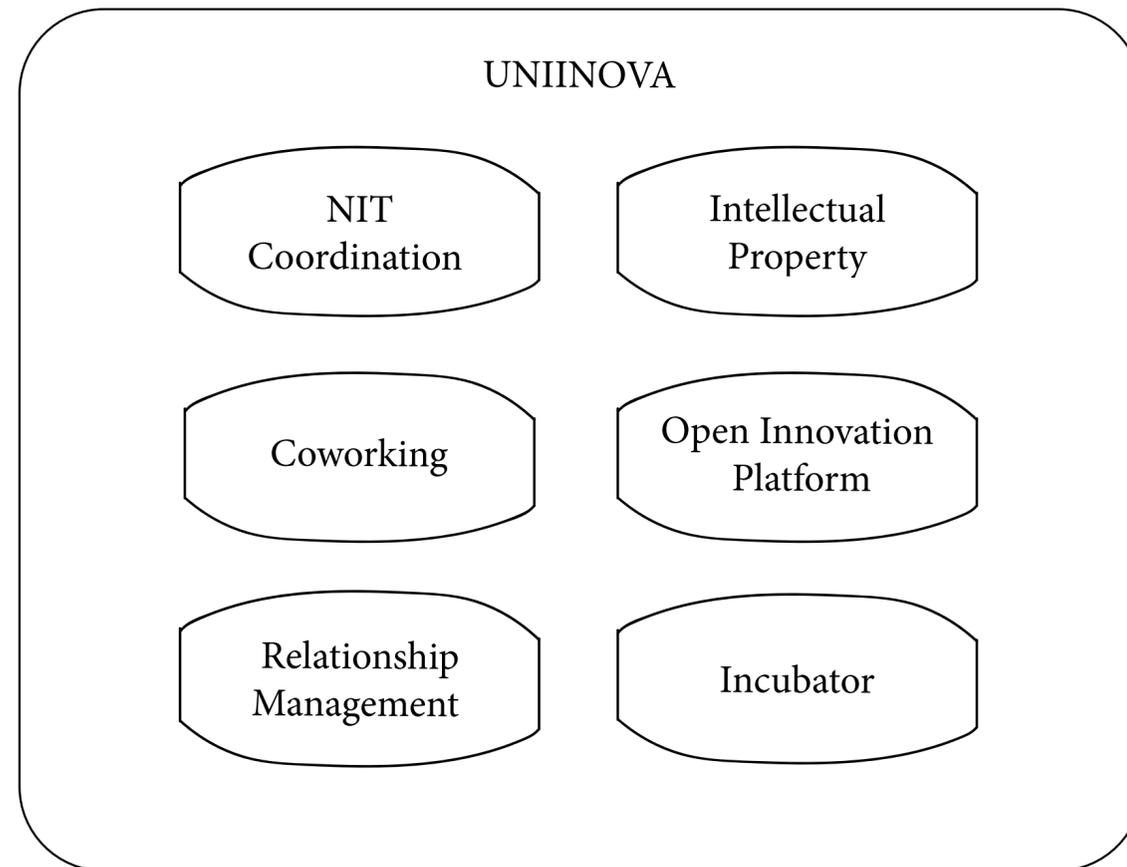
In the scope of Connect & Innovate, five strategic objectives and projects were assigned to Uniinova: a) to “implement disruptive technological and pedagogical models,” through the structuring of an Innovation Hub; b) to “develop strategic alliances” via partnerships with innovation centers and schools; c) to “promote academic experimentation,” fostering entrepreneurship; d) to “expand operating revenues” based on the creation of mechanisms that transform research results into high value-added products; e) to “maximize resources for CAPEX” by raising funds from alternative sources (Uniinova 2021a, 13).

Since 2018, Uniinova’s focus has been, therefore, to generate connections – with the production sector, public agents, fostering institutions, etc. – capable of facilitating innovative entrepreneurship. To do so, it has developed a broad groundwork directed toward building a culture of innovation in the academic community (Tomio 2022, [s.p.]).

Compared to the spheres of action defined when Uniinova was formalized in 2014, its competencies have certainly expanded. Until the beginning of 2022, it was organized around six spheres: Innovation Coordination; Intellectual Property; Coworking; Open Innovation

Platform; Relationship Management; and the Technology and Business Incubator (Tomio 2022, [s.p.]).

**Figure 1.** Uniinova spheres of action, 2018-2021



Source: by the authors (2022), based on Uniinova (2021a, 28).

The Innovation Coordination guides Uniinova actions, both in regard to internal processes and in relationships with partners. Among its main responsibilities are the creation of Uniinova Strategic Planning; the

development of partnerships with national and international innovation networks; the organization of a database for the facilitation and optimization of workflows; and coordinating areas within Uniinova. The Coordination is also tasked with representing Uniinova in committees, inter-institutional projects, and cooperation networks, among others (Uniinova 2021a, 28; Tomio 2022, [s.p.]).

Uniinova, by means of its Innovation Coordinator, participates in the Implementation Committee of the Itajaí Center for Innovation, the PoloTech movement, the Economic Development Plans of Itajaí and Balneário Camboriú, the movement for the creation of the Santa Catarina Network for Technology and Knowledge Transfer and Innovation (RECATTI), and the Santa Catarina Network of Innovation Centers – the latter is currently being development under Fapesc Public Notice no. 14/2019. Additionally, Uniinova integrated the team responsible for the elaboration of the project of the Univali Center for Applied Intelligence (NIA), an observatory to be implemented in the Itajaí Center for Innovation (Univali 2021c, [s.p.]; Uniinova 2021a, 29).

The Uniinova Intellectual Property sphere manages “[...] the process of transforming the innovation promoted within the academic space into products and processes protected by exclusivity and amenable to commercialization.” (Uniinova 2021a, 23). It concentrates tasks such as: a) updating the Innovation Policy; b) the control of internal flows of intellectual property – viability analysis, validation of technology

and documents, etc. – and monitoring their registration – performed by a service provider company; c) the maintenance of the university's Innovation Portfolio; d) the development of a system to assess the innovation potential of academic work; e) the production of didactic material on intellectual property in different formats – Uniinova Cast podcast, video lessons, eBooks, among others (Uniinova 2021a, 23-24; Tomio 2022, [s.p.]).

In 2020, Univali obtained its first patent registration at the National Institute of Industrial Property (INPI). The protected product is a phyto-therapeutic medication, with analgesic, anti-inflammatory and antipyretic properties, developed by researchers from the Graduate Program in Pharmaceutical Sciences (master's/doctorate degrees) (Univali 2020, [s.p.]).

The Coworking space, another sphere of Uniinova, is an environment aligned to the principles of Sharing and Collaborative Economy. With the Coworking space, the university intends to favor partnerships, bringing entrepreneurs closer to the academic environment; increase the productivity of incubated businesses, startups and companies that make use of the service; and to provide an independent environment with more freedom, so that connections and knowledge exchanges take place. The structure has recreational and socializing spaces, where workshops and other networking events can happen (Uniinova 2021a, 36-38).

Uniinova's fourth sphere comprises the management, in Univali, of the OpenInnovationPlatformoftheSantaCatarinaAssociationofEducational Foundations (Acafe), the ON Platform. The Platform aims to diagnose the state of innovation and its potentials in the Acafe network, as well as to integrate the institutions that compose it. Uniinova coordinates these activities within Univali, keeping the Platform updated to facilitate connections between the various actors of the ecosystem and partner universities (Uniinova 2021a, 25-26; Tomio 2022, [s.p.]).

Finally, the fifth sphere of Uniinova's work, Relationship Management, is “[...] responsible for promoting the relationship and networking among all actors of the innovation ecosystem, fostering partnerships, competitions, events and training [...]” to promote innovation in the academic community and beyond (Uniinova 2021a, 26). In this regard, some of the activities developed are creating and maintaining partnerships and connections with the market, holding the Univali Innovation Award, and carrying out awareness actions (Uniinova 2021a, 26-29).

The Univali Innovation Award, which has occurred annually since 2018, recognizes and values innovative solutions created by undergraduate and graduate students, alumni and professors for problems in the local production sector. Cash awards, consultancies for the structuring of startups and scholarships are given to its winners (Uniinova 2021a, 29).

On the other hand, the aforementioned awareness actions correspond to a schedule of events and training activities, which reach students in basic, undergraduate and graduate education, teachers and professors, researchers, alumni, the private sector, governmental organizations and the community in general. Table 3 outlines the main actions carried out in the last four years, according to their purpose and target audience.

**Table 3.** Awareness-raising actions, 2018-2021

Objective/target audience	Action
Open Mind	Imagination Festival: held annually, focused on developing imagination and creativity.
Connection	Innovation Boost Week: focuses on the exchange of experiences and networking, with the presentation of success cases by representatives of outstanding startups in southern Brazil.  Empreenight: aims at networking entrepreneurs from the region, in addition to providing technical improvement via lectures.
Soft and Hard Skills	Uniinova Skills: seeks to build and improve the socio-emotional, mental and social skills, as well as the technical and qualification skills, of participants, who are, mainly, those incubated in the Univali Technology Incubator.

For professors and researchers	Science Day: brings together leaders of Univali's research groups and professors of undergraduate programs to strengthen the implementation of education through research, innovation and the construction of a connected curriculum.  Empreenday: a symposium that aims to discuss the relationship between entrepreneurship, innovation and education, gathering professors from all Knowledge Schools at Univali.
General public	International Entrepreneurship and Innovation Week: an integration event between the internal and external community, with an emphasis on entrepreneurial education, innovation systems and sustainable development practices.  Acceleration Meetup: a space for the presentation of good practices in the support of startups and in incubation and acceleration programs.  <i>#vamojunto</i> : held jointly with Sebrae and local entrepreneurs; in 2019, the event offered a cycle of lectures and training to enhance activities in entrepreneurship and innovation.
Organized in partnership	Global Legal Hackathon: held in partnership with the School of Law, with the goal of developing solutions to improve access to justice using technology.

Source: by the authors (2022), based on Uniinova (2021a, 29-35).

In addition to these events, the Relationship Management sector manages the positioning of Uniinova in social networks. In Uniinova's

official profiles, records of its activities are shared and topics related to innovation, entrepreneurship and intellectual property are disseminated in a scientific manner (Tomio 2022, [s.p.]).

Until 2021, Relationship Management also accumulated the function of raising funds from external sources, both to foster the organization of events, as well as for actions in research and innovation. With the change in the university's management, from 2022 on, Project Development and Fundraising became one of the spheres of Uniinova, and not only a responsibility linked to Relationship Management (Tomio 2022, [s.p.]).

The changes, however, did not stop there: with the creation of a Coordination for Entrepreneurship at the university, the competencies related to this topic are being transferred from Uniinova to the new sector. The first major transformation, effective in 2022, was the unbinding of the Technological and Entrepreneurial Incubator (ITE), which, until now, operated at Uniinova. The Univali ITE, now linked to the Coordination for Entrepreneurship, has Core 1, Core 2 and Core 3 certifications – the last two having been achieved in 2022 – conferred by the National Association of Entities for Promoting Innovative Enterprises (ANPROTEC), and operates with hybrid and virtual incubation programs (Tomio 2022, [s.p.]).

Uniinova is expected to become increasingly seen as an Innovation Hub. In this condition, it assumes the role of “[...] connecting the different

parts of the innovation ecosystem and assembling a big puzzle [...]” serving as a meeting space “[...] between the university, entrepreneurs, startups, companies and investors, as well as fostering institutions and public and private service providers, focused on initiating new business ideas.” (Uniinova 2021a, 38). Uniinova is currently conducted by its Coordination, three professors who assist in the activities according to their specialties – in intellectual property, event organization and strategic planning –, an analyst and an intern (Tomio 2022, [s.p.]).

**Figure 2.** Uniinova visual identity



Source: Uniinova archives (2021a).

Uniinova's activities are positively impacted by the support received from Fapesc through projects approved in public notices for proposals. The already-mentioned Public Notice no. 14/2019, the most recent supporting notice for NITs, was fundamental to boost Uniinova activities, with an increase also in human resources via the hiring of interns (Tomio 2022, [s.p.]).

Throughout its history, the Univali NIT, Uniinova, has received public recognition through several awards. It won first place in the Products and Service category in the 2nd ACIBALC Innovation Award. The project Disruptive Futures – a Program for the Generation of Social Creatives and Bio Innovators, developed by Uniinova, won first place in the Products and Service category, and second place in the Social Innovation category, in the 3rd Edition of the Regional Innovation Award (Uniinova 2021b, [s.p.]). This project – developed in partnership with Sebrae, the City Hall of Balneário Camboriú, the Industrial Commercial Association of Balneário Camboriú (Acibalca) and Credifoz – also won first place in the Innovation Award of Santa Catarina, 2021 Edition, in the Innovative Professor category (Univali 2022a, [s.p.]).

As already mentioned, Uniinova is going through a transition, with the redefinition of its organizational structure and planning in the framework of new university management. For the future, Uniinova's perspectiveistocontinuestrengtheningtherelationshipsbetweenthe university, the production sector and the public sphere, legitimizing its activity as an important player and contributing, in an ascending way, to the activation of the regional innovation ecosystem.

## Main legislation in effect

Resolution no. 149/CONSUN/2014 – Univali Institutional Policy of Research, Development and Innovation.

## Contact

Address: Rua Uruguai, 458, Centro, Itajaí, SC, 88302-901. Bloco C1, Sala 204.

E-mail: [uniinova@univali.br](mailto:uniinova@univali.br)

Site: <https://www.univali.br/institucional/vrppgi/coordenacao-de-inovacao-da-univali/nucleo-de-inovacao-tecnologica>

Instagram: @uniinova | <https://www.instagram.com/uniinova/>

Facebook: <https://pt-br.facebook.com/uniinova/>

LinkedIn: <https://www.linkedin.com/company/uniinova/>

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Argos Editora da Unochapecó  
Site: [www.unochapeco.edu.br](http://www.unochapeco.edu.br)

Title: Fapesc and its 25-year journey: memories, stories and perspectives of the Centers for Technology Innovation in the State of Santa Catarina

Authors: Cristiani Fontanela, Tuana Paula Lavall and Andréa de Almeida Leite Marocco

Collection: Temáticas, n. 6

Coordinator: Rosane Natalina Meneghetti

Editorial assistant: Caroline Kirschner

Commercial assistant: Daniela Manfroi

Text editor: Carlos Pace Dori

Publicity: Bárbara Luísa Zamberlan

Sales and distribution: Daniela Manfroi

Cover and graphic design: Foundation for Support of Scientific and Technological Research of the State of Santa Catarina (FAPESC)

Layout: Caroline Kirschner

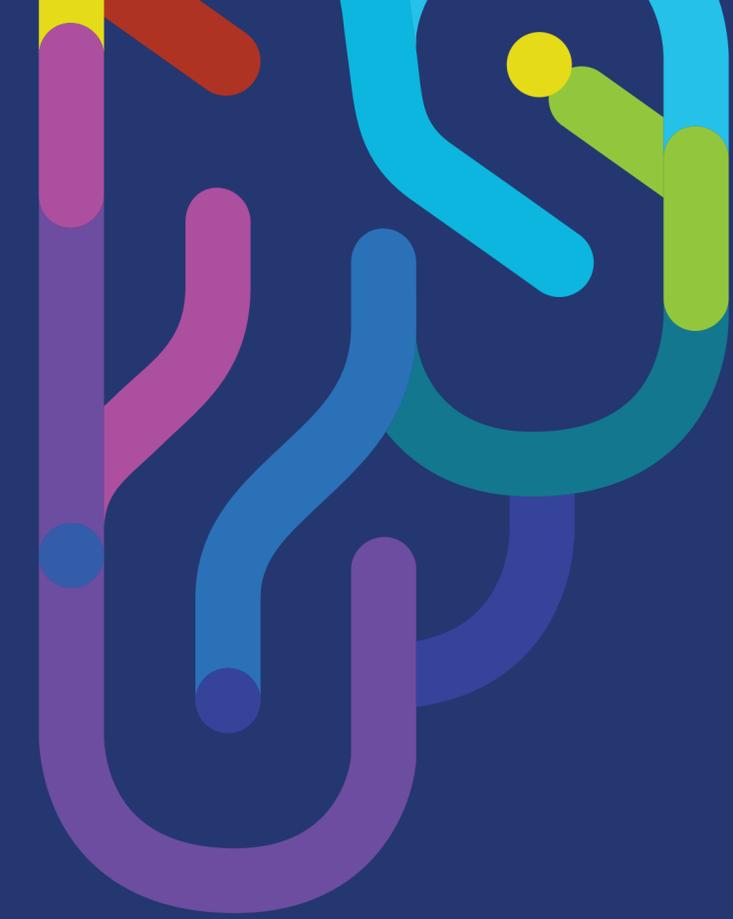
Proofreading: Carlos Pace Dori

Textual Assessoria (Noili Demaman ME)

Translation and proofreading: Marco Polo Laufer, Marcos Lampert Varnieri e Rosalia Angelita Neumann Garcia



Servidão Anjo da Guarda, 295-D  
Bairro Efapi – Chapecó - SC  
89809-900 – Caixa postal: 1141  
Fone: (49) 3321-8218  
E-mail: [argos@unochapeco.edu.br](mailto:argos@unochapeco.edu.br)  
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 +55 (48) 3665 4800