

**INSTITUTIONAL PROJECT FOR  
INTERNATIONALIZATION  
UNISINOS**

Development of Innovation  
Ecosystems

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## 1. INTRODUCTION

The Institutional Internationalization Project (PII) of Unisinos, submitted to CAPES, within the scope of the International Institutional Program, Public Call 41-2017, was approved in August 2018. The PII seeks to consolidate the university's internationalization policy for the period between 2018-2021, which aims to concentrate efforts in three priority thematic areas, foreseen in its PDI: (a) Innovation and Entrepreneurship; (b) Microelectronics and; (c) Health and Technology.

These three areas were mobilized through the development of research, work missions and various interaction in the global scenario, for four themes: 1) IoT and Health, 2) Industry 4.0, 3) Ecosystems of innovation, and 4) Digital Transformation and Humanities. The integration between the three priority areas that will be mobilized by the themes gave rise to four research projects in international cooperation capable of promoting a wide and systemic synergy among the University's PPGs, connecting in an interdisciplinary and unprecedented way 70 teachers and more than 400 students of 5 graduate programs. As only Graduate Programs with a grade higher than 4 (by CAPES scale) could take advantage of the resources of this call, those that fit the proposal were the Graduate Programs in Business Administration, Applied Computing, Communication, Design, and Education. Unisinos internationalization project foresees that in the next four years the institution will become a national reference in the study of hospitals, intelligent factories, innovation ecosystems and impacts of digital transformation on social processes, as long as it does not neglect its vocation related to humanities and technology. This means that the Capes Print Notice presents an opportunity for Unisinos to strengthen its physical presence internationally in an interdisciplinary way by expanding the contact networks in partner universities on the strategic themes, also placing Unisinos among the global clusters of research and innovation so that it can consolidate its vision of becoming a world-class university.

The project also aims to provide society with qualified study results and technologies that are closely related to the interests of international policies, especially connecting the PRINT Unisinos actions with the UN sustainable development actions. Nationally, it intends to subsidize the decisions of public policies and governmental actions, such as industrial development policies, the national policy on Health Technology Management, the Brazilian Strategy for Digital -E-Digital Transformation, the Work Group for a National Strategy for Industry 4.0, among other strategic issues relating to the Ministries of Health, Education, Science, Technology, Innovation and Communication.

The approved grant includes resources for work assignments, scholarships and consumable materials in the total amount of up to R \$ 6,167,610.08 for the 4 (four) years of the project. The activities of

the first phase start in 2019 and end on 04/11/2020, when there will be a partial evaluation for the renewal of the project. If it is renewed, the project will continue until 04/11/2022.

## **2. MANAGEMENT GROUP**

In order to manage the Institutional Project of Internationalization granted by Capes, Unisinos invited a group of researchers that met the demands of the edict. All should be active teachers and mentors in postgraduate programs, with permanent employment relationship in the institution, academic leadership and international experience in the areas defined as priority, including at least one (1) foreign member linked to an institution abroad. The group is led by the Provost for Academic and International Affairs:

Prof. Dr. Alsones Balestrin, Provost of Academic and International Affairs

Profa. Dra. Dorotea Kersch, Director of Graduate Studies Office

Profa. Dra. Claudia Bitencourt, Business Administration Graduate Program

Prof. Dra. Maura Lopes, Education Graduate Program

Prof. Dra. Carlo Franzato, Design Graduate Program

Prof. Dr. Sandro Rigo, Applied Computing Graduate Program

Profa. Dra. Adriana Amaral, Communication Graduate Program

Prof. Dr. Leonel Rocha, Law Graduate Program

Profa. Dra. Gelsa Knijinik, Education Graduate Program

Prof. Dr. Emmanuel Raufflet, HEC Montreal

Prof. Dr. Flaviano Celaschi, University of Bologna

## **3. THEME: INNOVATION ECOSYSTEMS**

Innovation is developed in a complex, self-regulated and self-organized environment similar to a tropical forest (Hwang and Horowitz, 2012), where interaction and creative processes become key elements in understanding an innovative institutional context. The development of entrepreneurship and innovation ecosystems presupposes understanding that the way of creating business has changed all over the world and the culture of isolation must be replaced by the culture of interaction and interorganizational relations. Unisinos is already recognized in the national scenario for the research addressing the phenomenon of cooperation networks and has been constantly developing collaborative projects with the government of the State of Rio Grande do Sul. In addition, in April 2018 an "alliance for innovation in Porto Alegre" was signed, where the university will be the

protagonist of different actions for the development of the ecosystem where it operates. Unisinos has recently become involved in the undertaking of attracting one of the largest semiconductor production plants in Latin America to its technology park, having been recognized for transforming the ecosystem and becoming an entrepreneurial university case. It has been nominated for the Place Marketing Forum 2018 award, held annually in France, which rewards the best worldwide practices for the development and promotion of territories. Thus, this theme has major interdisciplinary relevance in the actions and research developed by different Graduate Programs at Unisinos. Also, attention to this theme is in line with other global actions for sustainable development as it aids the construction of resilient infrastructures, promotes inclusive and sustainable industrialization and fosters innovation, that is, it is closely related to UN sustainable development goals "9" – industry, innovation and infrastructure –, "11" – sustainable cities and communities –, and "15" – terrestrial life. This theme mobilizes the priority areas established by Unisinos in its internationalization plan as it focuses attention on understanding the different actors and the different creative processes existing in an ecosystem. Also, the development of research that mobilizes the theme "Innovation Ecosystems" will allow Unisinos to secure a position in the international landscape by interacting with major institutions of the global innovation clusters.

### **3.1. POSTGRADUATE PROGRAMS LINKED TO THIS THEME**

#### **Business Administration**

The Lines of Research of these Graduate Programs show their adherence to the theme. Two lines of research should be highlighted (1) strategies and (2) competitiveness and interorganizational relationships. The former looks at both the external and the internal environment of a company, focusing on market positioning, strategic choices and resource management. The main areas of knowledge addressed are (1) international business; (2) service strategy; (3) sustainability; (4) market, consumption and acquisition studies; (5) structuring and organization of resources and capacities. The latter investigates management in complex interaction systems between organizations that establish individual and collective competitive advantages in industrial and service sectors. The main areas of knowledge addressed are (1) interorganizational relations, (2) innovation (3) technological management and organizational competitiveness, from a perspective that dialogues with studies from related areas, such as Economics, Sociology and Psychology. Both lines approach the topic in question, but the latter focuses more specifically on studies in the area of entrepreneurship and innovation.

## Design

The Unisinos Graduate Program in Design focuses on strategic design. In this sense, projects, traditionally limited to the material attributes of artifacts, had their scope expanded. Interorganizational relationships and the innovation ecosystems within which the projects are located have become key analysis points for researchers, as Design cannot be understood out of a context. The relationship networks between organizations are treated as part of an ecosystem in which the elements are not dissociable. In this context, the creative processes characteristic of Design are a way forward for organizations, since projects in this area privilege creativity, interorganizational collaboration networks and the ecosystems surrounding them.

### 3.2. PARTNER COUNTRIES

Activities funded under this theme should be restricted to the following countries:

1. France
2. Spain
3. United Kingdom
4. Canada
5. Italy
6. Norway
7. United States
8. Germany

### 3.3. GOALS

OBJECTIVE	ACTIVITIES	INDICATOR	GOALS
Consolidate interdisciplinary research networks and promote the Unisinos S&T&I System	International Seminar	Number of participants	Current: 0 2nd year: 70 Final: 130
		Number of Scientific and Technological Articles Submitted	Current: 0 2nd year: 20 Final: 40
		Evaluation of participants	Current: - 2nd year: good Final: great
	Summer School	Number of participants	Current: 0 2nd year: - Final: 40
		Evaluation of participants	Current: - 2nd year: - Final: great
	Academy of Innovation	InovaNet	Current: 0 2nd year: 0 Final: 1

		Number of Members in the InovaNet Network (institutions)	Current: 0 2nd year: 5 Final: 10
		Level of Interaction among Members in the InovaNet Network	Current: - 2nd year: low Final: medium
		Joint Actions Developed by the Network	Current: 0 2nd year: 1 Final: 3
Making Unisinos a reference in matters involving interorganizational relationships and creative processes in innovation ecosystems	E-book	E-book	Current: 0 2nd year: 0 Final: 1
Generate knowledge about the process of creation and development of innovation ecosystems based on benchmarks, case studies and different practices in the context of partner countries	Ph.D. internships abroad	Number of students that did their Ph.D. exchange internship on the theme	Current: 2 2nd year: 6 Final: 14
	Develop joint articles of international relevance	Joint publications	Current: 12 2nd year: 14 Final: 16
		Impact Factor of Publications	Current: good 2nd year: great Final: great
	Increase the number of joint research projects	Joint Research Projects	Current: 7 2nd year: 12 Final: 14
	Double degree / joint supervision abroad	Number of joint supervisions/double degrees on the theme	Current: 1 2nd year: 1 Final: 2
	Conduct working missions	Number of missions carried out	Current: 0 2nd year: 10 Final: 20
	Postdoctoral internships abroad	Number of faculty members that did their postdoctoral internship on the theme	Current: 5 2nd year: 8 Final: 17

#### 4. FUNDABLE ACTIVITIES

##### 4.1. Work Missions

Work missions include travel aid for flight tickets, 7 days accommodation, and health & travel insurance. They may be carried out in the case of:

- Activities related to the execution of cooperation projects;
- Presentation of research results in congresses and international events of greater expression in the area of knowledge, with the possibility of technical visits in institutions to prospect for possible partnerships;
- Activities carried out by members of the Management Group or representatives indicated, aimed at enabling the internationalization actions of the Institutional Internationalization Project.

Average amount budgeted for a mission is R\$ 17,100.00.

The Management Group will be responsible for selecting the beneficiaries of non-project assignments, while the Project Coordinator will be able to select beneficiaries among the members of the project team. The same faculty member or researcher, with the exception of his or her coordinator, may not undertake more than one work assignment per year or consecutive years of project validity.

#### **4.2. Resources for project maintenance**

The resources for project maintenance will be managed by the project coordinator and may be used for: a) consumables, intended for the purchase of material necessary for the operation of the project; b) third-party service (legal entity): regarding payment of suppliers of material or service, by means of a detailed invoice; c) third-party service (individual): refers to payments by receipt to the person with no connection with the main or associated institution, the Public Administration or the Program, to perform a specific task that contributes to the achievement of the objectives of the project , provided that it is approved by Capes.

#### **4.3. Scholarships abroad**

##### **4.3.1. Ph.D. Internship**

In the form of a sandwich doctorate abroad, students regularly enrolled in doctoral courses in Brazil undertake part of the course in an institution abroad, returning and remaining in Brazil for finishing mandatory credits and thesis defense. In order to apply for the scholarship, the candidate must be in line with one of the Unisinos priority themes (it is suggested reading Unisinos internationalization plan, themes and research projects), be regularly enrolled in one of the participating Graduate Programs and wish to pursue his or her Ph.D. internship in one of the countries that are part of the project.

The selection calls will be published on this page and will meet the CAPES criteria and also the internal regulations of each Graduate Program. It is important to pay attention to the foreign language proficiency requirements established by CAPES.

The scholarship payment will be made directly by CAPES to the scholarship holder and will not include full payment of tuition and fees or bench fees to foreign partner institutions.

It is necessary for Unisinos to have a cooperation agreement, memorandum of understanding, agreement or legal instrument with the university of destination.

If Unisinos does not have an agreement with the foreign institution, it is possible to ask the Program Coordination to evaluate the possibility of a new partnership.

#### **4.3.2. Junior Visiting Professor**

Professors or researchers employed by UNISINOS, who have a doctorate degree of up to 10 (ten) years, are eligible, with reference to the last day for enrollment in the selection process.

Candidates must submit a document from the host university stating that the candidate has sufficient language proficiency for the proposed activities or some of the proficiency certificates required by the host university.

It is necessary that Unisinos have a cooperation agreement, memorandum of understanding, agreement or legal instrument with the university of destination.

If there is no agreement with the foreign institution, it is possible to ask the Program Coordination to evaluate the possibility of a new partnership. It is the responsibility of the beneficiary to prepare the accountability and technical mission report.

#### **4.3.3. Senior Visiting Professor**

Professors or researchers employed by UNISINOS, who have a doctorate degree for more than 10 (ten) years, are eligible, with reference to the last day for enrollment in the selection process.

Candidates must submit a document from the host university stating that the candidate has sufficient language proficiency for the proposed activities or some of the proficiency certificates required by the host university.

It is necessary that Unisinos have a cooperation agreement, memorandum of understanding, agreement or legal instrument with the university of destination.

If there is no agreement with the foreign institution, it is possible to ask the Program Coordination to evaluate the possibility of a new partnership. It is the responsibility of the beneficiary to prepare the accountability and technical mission report.

#### **4.3.4. Short courses or "summer / winter schools"**

Scholarship for training in short courses or "summer / winter schools" abroad, valid for up to 1 month, or aid for participation in distance courses (MOOCs etc), aimed at postgraduate students linked to a research project in international cooperation or technical staff of the institution.

#### **4.4. Scholarships in Brazil**

##### **4.4.1. Visiting Professor in Brazil**

This grant aims to attract renowned professors and residents abroad to teach courses, training, lectures or face-to-face seminars, with a minimum duration of 2 months and a maximum of 3 months, divided into up to 3 periods throughout the duration of the Institutional Project. Internationalization.

In the teaching activities carried out, a recording must be made for online transmission and subsequent availability, whenever possible.

Foreign candidates who are not native speakers of Portuguese or English must meet one of the following three requirements:

- Present a document issued by Unisinos stating that the interested party has sufficient linguistic proficiency for the proposed activities;
- Present, for Portuguese language, Celpe-Bras certificate; or
- Present, for the English language, TOEFL, IELTS or Cambridge Exams.

It is necessary that Unisinos have a cooperation agreement, memorandum of understanding, agreement or legal instrument with the university of origin.

If there is no agreement with the foreign institution, it is possible to ask the Program Coordination to evaluate the possibility of a new partnership. It is the responsibility of the beneficiary to prepare the accountability and technical mission report.

#### **5. PROJECT: DEVELOPMENT OF INNOVATION ECOSYSTEMS**

For each theme, Unisinos created a research project in international cooperation to encourage transdisciplinarity and contemplate the Graduate Programs involved with resources and scholarships.

**Name of the project:** Development of Innovation Ecosystems

**Programs:** Ph.D. in Business Administration

Ph.D. in Design

**Coordinators:** Dr. Daniel Puffal, Unisinos

Dr. Olivier Coussi, Université de Poitiers

**Start date:** 01/12/2018

**End date:** 31/07/2022

## **5.1. Description**

The central focus of the present proposal is the understanding of "Innovation Ecosystems" from an interdisciplinary perspective on the role played by different actors and their interactions in different contexts. The motivation to better understand the dynamics of cooperation, entrepreneurship and innovation within these environments is generated by the empirical evidence researchers linked to the project in previous studies, the growing interest of international research, the strategic importance of innovation ecosystems for development economic, social and scientific development of Brazil. This empirical and academic relevance of the subject in question is pointed out in the literature, highlighting strong evidence that the competitive movement, especially in knowledge-intensive industries, does not occur in environments with strong collaborative dynamics and institutional interbranding among several actors, government, universities, companies and other entities of organized civil society. Whether in North America, Europe, Asia or Latin America, large or small companies, especially in the context of high technology, basically choose two paths: to be physically installed in a regional innovation environment or to be physically or virtually connected in environments of world-class innovation, located in other countries. Given this scenario, it is posed as questions for the present research project: What are the main characteristics of the innovation ecosystems? How are collaborative practices structured and developed in these environments? What is the role of development of innovation ecosystems? What is the role of universities in the development of innovation ecosystems? What are the main differences or similarities in dynamics of collaboration between actors in these environments? How does cooperative governance occur in the ecosystems studied? To answer these questions, the interdisciplinary group of researchers will use theoretical lenses from two fields of knowledge, Management and Strategic Design, whose articulation can promote important synergies in the understanding of the processes of design, management, entrepreneurship and innovation.

## **5.2. Context**

This theme mobilizes the priority areas defined by Unisinos in its internationalization plan as it focuses attention on the understanding of the different actors and the most diverse processes an ecosystem. Also, the development of research that mobilizes the theme "innovation ecosystems" will allow Unisinos to position itself in the international scenario through interaction with important institutions belonging to the global innovation clusters. Unisinos is already recognized in the national scenario by the researches dedicated to the phenomenon of cooperation networks and has been

acting constantly in collaborative projects with the government of the State of Rio Grande do Sul. In addition, it signed in April 2018 an "alliance for innovation of Porto Alegre ", in which it aims to be protagonist of different actions for the development of the ecosystem where it is inserted. Recently, Unisinos has been involved in an entrepreneurial way in attracting one of the largest semiconductor production plants in Latin America to its technology park, being recognized for the transformation of the ecosystem and becoming an entrepreneurial university case. He was nominated for the "Place Marketing Forum" award in 2018, held in France, which recognizes annually the best practices for the development and promotion of territories around the world. Thus, this theme has a wide interdisciplinary emphasis on the actions and research developed by different PPGs in Unisinos. Also, attention to this theme communicates with other global actions for sustainable development as it potentiates the construction of resilient infrastructures, promotes inclusive and sustainable industrialization and fosters innovation, that is, it is closely linked to the "9" objective - industry, innovation and infrastructure, to the objective "11" - sustainable cities and communities and "15" - terrestrial life, of the UN sustainable development agenda.

### **5.3. Problem**

An analysis of different innovative regions throughout history demonstrates that there are common success factors such as relatively strong middle class, social equity, market and collaboration mechanisms, the active role of vocational training institutions, entrepreneurship, dynamic financing and technology base (JUCEVICIUS , 2007). The same author argues that the actual expression of these parameters differs in the various cultural-institutional contexts, but the ecosystem as a whole is exactly the same in all parameters, representing only different combinations of the listed factors.

Durst and Poutanen (2013) list different factors for the successful implementation of innovation ecosystems: governance, strategy, leadership, organizational culture, human resource management, strategic partnerships, entrepreneurship and technology. However, the authors emphasize that the governance dimension plays a central role, given the different actors and therefore the communication challenges that need to be addressed in this system. Innovation ecosystems belong to the category of complex adaptive systems, which means that every ecosystem of innovation is unique, historically evolved and embedded in the cultural and institutional fabric of the region (VALKOKARI, 2015; JUCEVICIUS et al., 2016).

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mechanisms, the active role of vocational training institutions, entrepreneurship, dynamic financing and technology base (JUCEVICIUS , 2007). The same author argues that the actual expression of these parameters differs in the various cultural-institutional contexts, but the ecosystem as a whole is exactly the same in all parameters, representing only different combinations of the listed factors.

While some innovation ecosystems, such as Silicon Valley, inspire managers and public policies around the world, their specific emergency pattern is almost impossible to replicate. This leads us to the understanding that an innovation ecosystem can be defined by its joint creation of value between interconnected and interdependent actors (GOMES et al., 2016). The relationships developed are not watertight, and may represent either cooperation, or competition among those involved. The dynamics of the roles and forms of actuation evolves according to the life cycle of the ecosystem, which follows a process of coevolution.

Given this scenario, it is posed as questions for the present research project: What are the main characteristics of global eco-systems of innovation? How are collaborative practices structured and developed in these environments? What is the role of public policies in the development of innovation ecosystems? What is the role of universities in the development of innovation ecosystems? What are the main differences or similarities in the dynamics of collaboration between actors in these environments? What processes of imagination, creation and design help the process of collaboration and constitution of the ecosystemic plot? How does cooperative governance occur in the ecosystems studied? In summary, from a ecosystem, innovation can be understood as the articulation of several processes: imagination and creation, design and planning, organization and management, collaboration and cooperation, etc. The problem to be addressed through this project is the identification of the various contributions brought by these processes and, above all, the understanding of how they are articulated by developing innovative synergies.

#### **5.4. Relevance**

This project offers the opportunity to establish important long-term international partnerships with recognized institutions of excellence, stimulating learning, mobility and scientific production of teachers and students, thus ensuring the consolidation of interdisciplinary research networks and the promotion of the Ecosystem Unisinos de C & T & I. The development of interdisciplinary research in this area will allow Unisinos to become a reference in matters involving interorganizational relationships and creative processes in innovation ecosystems.

## **5.5. Input**

The implementation of the project requires several resources that will be offered by the partner institutions, such as internet access and databases, meeting and seminar rooms, as well as support and library services. Services and materials specific to consumption (translation and article review services, etc.) will be detailed in the budget section.

## **5.6. Theoretical-methodological discussion**

### **Ecosystems of Innovation**

Concern for innovation has given rise to wide-ranging discussions, mainly because of their importance in the development and competitiveness of companies, regions and nations. Over the last 100 years, the concept of innovation from Schumpeter to more modern studies has been linked to change, to the taking of opportunities, to new combinations of resources, and especially to science and technology. However, since the 1990s, there have been significant changes that seek to emphasize that innovation is not only an internal process in the company, but comes from an imbricated context of collaborative strategies with the most diverse actors in the institutional environment (MAURI, 1996, Vergánti, 2009, Del'era, Vergánti, 2010, Zurlo, 2010).

Authors such as Rothwell (1995) indicate that innovation is influenced by a variety of external relationships. Powell et al. (1996) point out that the locus of innovation is no longer an isolated company but, increasingly, the collaborative context in which it is embedded. For Powell and Grodal (2006) in the case of knowledge-intensive industries, individual firms no longer meet the necessary conditions to stay current, develop high R & D levels and market innovative products. Some industries, such as computers, semiconductors, telecommunications equipment, biotechnology, communication and entertainment systems have been adopting more open and collaborative models of innovation for some time.

For these segments, the focal point for innovation development is shifting from the centralized R & D department to a R & D area integrated with globally dispersed but virtually connected small businesses, universities, research centers, independent professionals, consultants and other professionals.

The need to access knowledge and other external resources to the company emphasized the relevance of the environment in which the company is inserted, denominated in the literature in diverse forms, from the classic view of innovation systems (Lundvall 1992, Nelson, 1993, Freeman, 1995) to more contemporary concepts, such as in the case of innovation ecosystems (Adner and

Kapoor, 2010, Frenkel and Maital, 2014, Adner and Kapoor, 2016 and DEN OUDEN, 2012). The use of the term "innovation ecosystems" has grown substantially in recent years and is used to explain innovative activities developed in collaboration with a wide variety of actors such as universities, business, public authorities, individual entrepreneurs and organized civil society.

Durst and Poutanen (2013) list different factors for the successful implementation of innovation ecosystems: governance, strategy, leadership, organizational culture, human resource management, partners, technology, and cooperation. Interdependence among ecosystem participants also raises the question of how ecosystems are coordinated and managed. Independent of governance mechanisms, it can be said that they are central to ecosystem health and stability, since they drive collective performance, allowing and facilitating the creation and sharing of value (Cusumano, Gawer, 2002, Autio, Thomas, 2014).

Frenkel and Maital (2014) point out that more and more researchers and policy makers recognize that innovations are generated by complex and dynamic ecosystems that include central actors such as government, industry and universities. The dynamics surrounding the relationships between these three actors was called the Triple Helix (Etzkowitz, 1998), in which the author argues that these interactions are the key to improving the conditions of innovation in a knowledge-based economy. The proposal is based on three propellers, where in one, industry acts as the locus of production; in the other, government acts as the source of contractual relations that guarantee the stability of exchanges and interactions, and, finally, the propeller of university represents the sources of new knowledge and technology, the principle that generates knowledge-based economies (Etzkowitz, 1998).

Empirical studies have demonstrated how each of the actors in the government-industry triad can act as catalysts for processes in an innovation ecosystem. Schwartz and Bar-El (2015) argue that governments do not always adequately play this role, generating unsuccessful actions to achieve optimal economic growth at the expense of both the national economy and industry itself. In turn, Leon (2013) argues that innovation ecosystems can be orchestrated by universities, since they act as an inducer for the development and transfer of knowledge and disruptive technologies. MIT cases in Boston (Massachusetts, USA) or Stanford in Palo Alto (California, USA) are examples followed elsewhere in the world.

In this scenario, an organization is innovative at the moment that it manages to participate with protagonism of this procedural plot that is called "innovation ecosystem", aiming at sustainability

(MAURI, 2010; FRANZATO et al., 2015). In the scope of internationalization, nowadays aided by information and communication technologies, these ecosystems surpass the geographical limits, being able to multiply by their global connections. Thus, the environment becomes a factor whose influence on organizational structures determines some of the characteristics of organizations. The current understanding of innovation ecosystems is characterized by a focus on institutions such as companies, universities, investors, governments and their interactions.

Although there is a vast literature on dynamic ecosystem innovation, recent studies have not identified practices, processes, resources, and actions that become critical in this scenario. Therefore, despite the wide development of studies that involve an innovation ecosystem, some knowledge gaps have been identified, for which it is intended to contribute some contributions:

A) Studies on ecosystems do not present a consensus about how ecosystems are formed or how their evolution processes take place (ADNER, 2007; CARAYANNIS, 2018; DENOUDEN, 2012). In this sense, the evaluation of interorganizational networks, collaborative projects, focal companies and studies on the generation of value become fundamental. The ecosystemic epistemological perspective finds its roots in complex thinking. The approach addressed by this perspective especially emphasizes the relational and procedural issues of creative ecosystems, rather than focusing on the constituent elements, requiring a new disciplinary effort to deal with the complexity of the relationships that intersect between the elements and the processes that (Franzato et al., 2015, Freire, Del Gaudio, Franzato, 2016). Organizational strategies, including specifically design strategies, began to unfold in numerous relationships throughout the value chain. The interactivity of these relations - which allows a reciprocal influence among all the actors involved in the process of value production - makes the value chain metaphor (Porter, 1990) can be replaced by the value constellation metaphor (NORMANN, RAMÍREZ, 1993; Allee, 2002).

In this sense, the network organization does not describe the design process only structurally (project networks: the open and dynamic system of the actors and of the relations that intervene between them), but also procedurally (network design: the design practice of these relations) (FRANZATO, 2017).

B) Although there is a large literature that has studied the leading role of the university, the results set does not yet provide a clear understanding about the role of the university in the innovation generated by companies. In other words, recent studies have not identified the practices, processes,

resources and actions that become fundamental in this scenario of interaction with the company inserted in innovation ecosystems. Associated with this gap is the need to evaluate the importance of the University in the transformation of innovation ecosystems. Recent studies reveal universities as the main actor of interaction that comprises innovative dynamics in the innovation ecosystem. Countries such as the United States, South Korea, Israel and the major European economies present basic and applied science as a driver of entrepreneurship and innovation (Gherardini and Nucciotti, 2017). In these countries, universities are seen as catalysts for economic and social development in the regions, as they are considered to be natural incubators, generating new ideas and technologies, promoting the creation of new businesses and offering a variety of resources that contribute to creating a sustainable competitive advantage (URBANO, GUERRERO, 2013). As Yusof and Jain (2010) point out, an entrepreneurial university strategically adapts to the entrepreneurial mindset, practicing academic entrepreneurship at several levels. This entrepreneurial thinking influences the climate and the organizational work environment of the university, allowing and facilitating the activities of technology transfer (KIRBY, 2006; YUSOF; JAIN, 2010). Not only do business activities and development tend to contribute to organizational growth, profitability, and wealth creation at the university, they also impact the external environment and the economy as a whole, increasing productivity, improving practices, creating new industries, and reinforcing the competitiveness of its surroundings, building an institutional environment of innovation.

C) Minority efforts were identified for the understanding of actions to increase the competitiveness of knowledge-intensive companies, especially related to elements such as innovative capacity, entrepreneurship and interorganizational relations. Companies in emerging countries are considered to be latemovers in global competitiveness, presenting disadvantages in terms of resources and capabilities compared to those of developed countries (Child and Rodrigues, 2005; Keen and Wu, 2011). However, studies on these companies have demonstrated the increase of their importance and competitiveness supported by internal factors (Lamin and Dunlap, 2011). This dichotomy between the lack of resources and the importance of these resources for competitiveness makes studies about how companies in emerging countries acquire and develop resources and capacities to become relevant academically and managerially. In highly competitive and changing environments, such as in the knowledge-intensive industry, entrepreneurship, representing the ability to identify, create and internalize opportunities (Zahra, Abdelgawad and Tsang, 2011), coupled with innovative capacity, can contribute to competitiveness by favoring adaptation to

environmental changes (Breznik and Lahovnik, 2014) and the renewal and reconfiguration of organizational resources and capacities (Ambrosini and Bowman, 2009). But if internal processes influence competitiveness, interorganizational and ecosystem these processes (Eriksson, 2014). In emerging markets, interorganizational relationships are an important alternative for acquiring and developing resources (Luo and Tung, 2007, Un, Cuervo-Cazurra and Asakawa, 2010, Gammeltoft, Barnard, and Madhok, 2010). Particularly, institutional relationships (governments, universities, associations, etc.) in the country of origin can reduce the deficiencies of the competitive ecosystem and provide greater competitiveness for companies (Ramamurti, 2008; Mudambi, 2008). In internationalization, companies can overcome the scarcity of resources via international networks, taking advantage of network capacity to exploit market opportunities and to develop products and services (Cavusgil & Knight, 2003). Even under these considerations, some gaps persist: How do companies develop capabilities considering the ecosystems in which they are inserted? What is the difference between companies and ecosystems in emerging and developed countries? How can institutions and ecosystems in countries of origin influence organizational capacities and competitive behavior?

d) Another gap recognized in studies on ecosystem dynamics is related to social innovation and social impacts (Howaldt et al., 2016). For Westley and Antadze (2010) it is a complex process of insertion of new products, processes or programs that generate impact in the system in which social need has developed, involving institutional changes and social transformations through various interactions, contributing to social resilience general.

When they are successful, social innovations are durable and achieve broad impact, that is, scalability. Tidd and Bessant (2015) argue that social innovation has many definitions, emphasizing that value creation and social change stand out as the primary objective, and the applications can be the most diverse, as long as related to impacts in society, be focused on solutions to poverty, health, education, employment, community development, environment, among others. In this way, social innovations must take into account the creation of social value and, therefore, social transformation, with the objective of meeting social needs and improving human or environmental well-being. A perceived social innovation in this perspective can manifest itself at the level of interaction and social practice - a process-oriented approach - as well as presenting itself with results as tangible as a new product or technology. (CHOI; MAJUMDAR, 2015). Social transformation is understood as the result of social practice and social change brought about by social innovations, which is due to the great variety of daily creations that constitute stimuli and incentives to reflect on

and possibly change social practices. Only when such stimuli are absorbed, leading to changes in existing social practices, do they spread throughout society and build social cohesion through acts of replication, thus leading to social transformation. (HOWALDT, DOMANSKI, KALETKA, 2016). The search for innovative solutions that help reduce inequalities and other social problems (in developed and developing institutional environments) through interorganizational social innovation is one of the gaps identified in our review. To that end, it is expected that the understanding of the process of formulation and development of social innovations and of the relationships established by the various actors involved in this intervention can contribute to the social transformation of ecosystems. Especially in the last decade, social innovation has increasingly become a topic of debate for academics, organizations and communities.

e) In addition to social innovations, a relevant theme for innovation studies is related to innovation from a responsible logic and from the involvement of a significant set of ecosystem actors. Responsible innovation is defined in this proposal as a collective process involving researchers, innovators and society to think, discuss and act considering the acceptability, sustainability and social desirability of innovations (Stilgoe, Owen & Macnaghten, 2013). In other words, responsible innovation is concerned with the effects generated by innovation (impacts) and the involvement of different stakeholders throughout the process of innovation development.

f) The reviews elaborated by the group of researchers that are part of this research project also highlight gaps in studies about new technologies and how they affect the social relations and strategy of companies in innovation ecosystems. A leading example of technology related to this research gap relates to Blockchain. Blockchain is a distributed, networked database technology that stores transaction logs transparently, anonymously and securely (Swan, 2015). It is the technology that made the Bitcoin currency viable and has served as the basis for disruptive innovations in finance, business and society in general (Tapscott and Tapscott 2016), making it possible, for example, to eliminate intermediaries in the transaction process. As a technology on the rise, the blockchain is complex and its learning curve is still very steep. The first academic efforts have focused attention on the technological aspects of the phenomenon, especially in the construction of patterns that can guide the mass adoption of the blockchain (Yli-Huomo et al., 2016, Mei, Yang, 2018). From the point of view of business strategy, dedication to the study of the phenomenon is more recent (Iansiti, Lakhani, 2017), leaving open a wide avenue of research opportunities and issues to be solved. Among them, a central problem for the strategy is to deal with the disintermediation of the business. Much of the value capture occurs precisely by firms that approach agents and fill in

structural holes (Burt, 1995). Thus, new business models will have to be created to generate and capture value in a blockchain-driven economy. Within this context, the main gap in this issue is related to the need to understand and improve decentralized network business models without intermediaries.

### **Methodological Perspective**

The research will be carried out through multiple and interdisciplinary national and international case studies of different ecosystems in order to address the main gaps listed in the previous topic. The cases will be defined based on the innovative nature of their results and the practices adopted by the actors involved in the innovation ecosystem.

Data collection will be through in-depth interviews and questionnaires. Other sources of data, such as document analysis and participant observation may bring relevant evidence to the research. The data will be systematized by means of transcription of the data, preparation of field notes and analysis through content analysis software NVivo, Atlas.ti and / or Tosmana, as well as the support of quantitative analysis software when collections are related.

Finally, the main empirical evidence of the research will be pointed out. The empirical-conceptual reflections outlined will be directed towards shedding light on the central research questions already presented above.

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## 5.8. Results

### General Goal

Understanding the dynamics of innovation ecosystems from the role played by different actors such as institutions, companies, universities, investors, governments and their interactions in different contexts.

### Specif Goals

- a) identify the most effective practices, processes, tools and resources in promoting these environments;
- b) understand the process of development of innovation ecosystems;
- c) assess the importance of the university in the transformation of innovation ecosystems;

- d) understand efforts to increase the competitiveness of knowledge-intensive enterprises in these scenarios;
- e) analyze market variables (eg, company value proposition, customer decision making, exchanges and relationships) in the context of innovation;
- f) understand the different initiatives of social innovation and the impacts generated from the mobilization of different actors or in interorganizational projects for social innovation in ecosystems;
- g) understand innovation from a sustainable logic;
- h) analyze how new technologies affect the social relations and strategy of companies in innovation ecosystems;
- i) understand the process of infrastructure of ecosystem relations;
- j) Analyze the networks of collaboration, design and innovation that articulate the ecosystems of innovation;
- k) to evaluate the decision-making process in the complexity of the ecosystem relations
- l) evaluate the design process and its contribution to the research in innovation ecosystems
- m) to evaluate the process of design and management of enterprises inserted in innovation ecosystems

### 5.9. Impacts Expected

1. Identification and development of new innovation processes and innovative business models, as well as the identification of practices, tools and methodologies for the development of Innovation Ecosystems.
2. Improvement of the technical quality of teachers and students - to positively impact the context of national ecosystems. Stimulate future projects, publications and joint work.
3. Popularize and expand and conceptual understanding of innovation ecosystems.

### 5.10. Proposed Products

Training / qualification of Faculty Researchers (postdoctoral)	8
Submission of articles for high impact journals and conferences	5
Receiving Visiting Professors	9
International Seminar / Workshop	2
Summer School	1
Training of doctoral students with international experience ("sandwich" period)	15

### 5.11. Partner Universities

1. University of Stavanger Evangelische
2. Hochschule Freiburg;
3. Evangelische Hochschule Darmstadt;
4. Evangelische Hochschule Ludwigsburg;
5. Friedrich-Alexander Universität Erlangen-Nürnberg;
6. Hochschule Mittweida;
7. Hochschule Ostwestfalen-Lippe;
8. Katholische Universität Eichstätt;
9. Pforzheim University of Applied Sciences;
10. Technische Universität Braunschweig - Institut für Regelungstechnik;
11. Universität Bayreuth;
12. Universität Siegen;
13. University of Applied Sciences Landshut;
14. King 's College- Western University;
15. Université de Montreal – HEC Montréal
16. Université Laval;
17. University of Manitoba – Asper School of Business
18. Vancouver Film School Canadá
19. Universidade Alcalá;
20. Universidad de Córdoba - Faculdade de Ciências Econômicas e Empresariais
21. Universidad de Deusto;
22. Universidad de Murcia;
23. Universidad de Salamanca;
24. Universidad de Santiago de Compostela;
25. Universidad de Sevilla;
26. Universidad de Valladolid;
27. Universidad de Vigo;
28. Universidad de Zaragoza;
29. Universidad Loyola Andalucía;
30. Universidad Nacional de Educación a Distancia;
31. Universidad Pontificia Comillas;
32. Universidad Ramón Llull - Institut Quimic de Sarria;
33. Universidad Ramón Llull - La Salle;
34. Universidad Ramón Llull - Pere Tarres;
35. Universitat Autònoma de Barcelona;
36. Universitat Jaume I de Castelló;
37. Universitat Politecnica de Valencia;
38. Florida International University;
39. Fordham University;
40. Georgia Tech Institute of Technology;
41. Le Moyne College;
42. Marquette University;
43. Santa Clara University;
44. The University of North Carolina - Chapel Hill;
45. University of California Berkeley;
46. University of Missouri;
47. University of Nebraska Lincoln;
48. University of South Florida;
49. University of Wisconsin-Milwaukee;
50. Politecnico di Milano
51. Università degli Studi di Firenze;
52. Università degli Studi di Padova;
53. Università degli Studi di Genova;
54. Université de Poitiers
55. Université Lumière Lyon 2

### 4. OTHER INFORMATION

Information regarding the operation of the project can be clarified through the documents available at <http://www.capes.gov.br/cooperacaointernacional/multinacional/programa-institucional-de-internacionalizacao-capes-print>