

## RELATIONSHIP BETWEEN JOBS AND SOFT SKILLS IN THE TECHNOLOGY SECTOR: A CASE STUDY IN THE CITY OF FLORIANÓPOLIS

Eduardo Moreira da Costa, UFSC, Doctor, [educostainovacao@gmail.com](mailto:educostainovacao@gmail.com), 0000-0002-8606-4050.

Andreici Daiani Vedovatto, UFSC, Master Student, [andreici@unochapeco.edu.br](mailto:andreici@unochapeco.edu.br), 0000-0002-4684-0705.

Luciana Hervoso, UFSC, specialist, [lucianahervoso@gmail.com](mailto:lucianahervoso@gmail.com), 0000-0002-1475-7026.

Sergio Luiz Gargioni, UFSC, [sergio.gargioni@ufsc.br](mailto:sergio.gargioni@ufsc.br), Master, 0000-0001-8378-6990.

Jamile Sabatini Marques, UFSC, Doctor, [jamilesabatini@gmail.com](mailto:jamilesabatini@gmail.com), 0000-0003-3734-4459.

Rafael Rath, UNOCHAPECÓ, specialist, [rath@unochapeco.edu.br](mailto:rath@unochapeco.edu.br), 0000-0003-2252-7930.

Adriana Karam-Koleski, UFSC, Doctor, [adriana@opet.com.br](mailto:adriana@opet.com.br), 0000-0003-4413-1849.

### ABSTRACT

The Soft Skills theme has been presented and discussed by several academic and professional players: researchers, consultants, entrepreneurs and technicians in Human Resources. These are personal skills that go beyond technical competence, absolutely determining the performance of any organization. Understanding what they will be and how to develop these skills has been the challenge of the World Economic Forum (WEF), which periodically publishes reports mapping areas, professions and skills that will be trending in the coming years. So, this article seeks to answer which skills are requested in advertisements and job vacancies in the area of ICT in the region of Florianópolis? with a double objective: [i] Identify whether companies in the creative economy segment, specifically technology, in the city of Florianópolis / SC are looking for soft skills in their job advertisements; and in this way [ii] Understand whether they are aligned with the trends presented by the WEF. For this, it carried out a qualitative research, classified as descriptive with an exploratory stage of analysis of the vacancies published in the LinkedIn and ACATE platforms, making it possible to conclude the importance of soft skills for the profile of technology professionals. It was also evident the difficulty in identifying these skills, and consequently requesting them in advertisements. Apparently, a weakness in the Human Resources sector that does not find a clear definition of the organizational culture from which to extract the necessary skills.

**Keywords:** Soft Skills; LinkedIn; ACATE; Florianópolis; Human Resources.

## 1. INTRODUCTION

The knowledge economy and technological innovations have brought about transformations in all fields of human life. Among the fields of human life most affected by these changes is the work field. Information, data and statistics are frequently pointing out the number of jobs that will come and go and what skills and abilities will be essential for the professional of the future (World Economic Forum, 2020; Firjan, 2019).

The Fourth Industrial Revolution, with the use of robotics, Internet of Things (IoT), artificial intelligence and available technological tools, is creating demands for millions of new jobs, with opportunities for professional achievements and aspirations (CALANCA et al, 2019; Forum World Economic, 2020). According to a study commissioned by Dell Technologies at the Institute for the Future (2019), eighty-five percent of the jobs that will exist in 2030 will be new. This does not mean that the professions we know today will be extinguished, but they will certainly be transformed. We can especially understand that the human-machine partnership will be a vector for change and that accompany these processes and technological advances will be essential for the professionals of the future (VIDAL et al, 2020).

But what will be and how to develop the skills needed to fill vacancies that do not yet exist? This challenge has brought together professionals from different areas of knowledge and has been the subject of studies by several entities, among which is the World Economic Forum (WEF), that periodically maps areas, professions and skills that will be a trend in the work field. The 2020 report, *Jobs of Tomorrow Mapping Opportunity in the New Economy* (WORLD ECONOMIC FORUM, 2020), presents two clear inclinations: [i] the information and communication technologies (ICT) sector together with the creative industry will occupy a prominent position as economic matrices; and [ii] organizations will start to prioritize soft skills in their recruitment processes.

In line with economic trends, and seeking to understand the panorama of the Creative Industry in Brazil, the Federation of Industries of Rio de Janeiro (Firjan) published the study: *Mapping the Creative Industry in Brazil* (2019), in order to identify how this sector has behaved between 2015 and 2017. The remuneration of creatives is higher than the national average of the labor market, with the states of São Paulo and Rio de Janeiro as main centers, concentrating together 50% of the creative professionals in the country. In the South , the

highlight is Santa Catarina, occupying 3rd place with the participation of creatives above the national average.

The state of Santa Catarina has been promoting the development of technological hubs in all its macro-regions for some time, defining as its strategic objective to become the most innovative state in Latin America by 2030 (Santa Catarina State Secretariat for Sustainable Economic Development, 2017) . In the last four years, the number of technology companies in Santa Catarina has doubled, corresponding to a turnover of R\$ 15.8 billion (ACATE Observatory, 2019).

Florianópolis, a city with more than half a million inhabitants<sup>1</sup>, is known especially for its beaches and the tourism sector. However, it has been taking a leading role especially in the creative economy and technology segments and assigning important titles to the city, such as Creative City and South America's Silicon Valley (YIGITCANLAR et al, 2018; YIGITCANLAR, COSTA, SABATINI-MARQUES, 2018).

In view of this movement in Santa Catarina and the importance of attracting human capital that supports the strategic objectives of the state and its creative industry, this study has a double objective: [i] Identify whether companies in the creative economy segment, specifically technology, in the city of Florianópolis/SC look for soft skills in their job ads; and, in this way, [ii] understand whether the soft skills demanded are aligned with the trends presented by the World Economic Forum 2020.

## **2. THEORETICAL FOUNDATION**

### **2.1 Soft Skills**

One of the first mentions about the term soft skill was found in the US Army training manual in 1972, in the article by Paul G. Whitmore and John P. Fry (1972) entitled "What are social skills?". At the time, due to the difficulty in determining what social capacities were, the concept received the name "soft skill" in contrast to "hard skills", those skills that can be

---

<sup>1</sup> According to the panorama presented on the website of the Brazilian Institute of Geography and Statistics (IBGE) on 05/06/2020. Available in: <https://cidades.ibge.gov.br/brasil/sc/florianopolis/panorama>

defined, and in this way measured and recognized from the educational and professional experience.

From the 90s on, the concept of skills developed as an input for research that sought to understand and qualify the real influence of these skills. In the study by the Stanford Research Institute and the Carnegie Mellon Foundation among the CEOs of the Fortune 500, it was found that 75% of long-term job success results from personal skills and only 25% from technical skills. (VERMA, 2009).

The importance of soft skills seems to find unanimity among researchers. Its definition is far from an outcome. “We universally recognize that soft skills are important, but when pressed to describe particular soft skills, the concept becomes murky.” (MATTESON et al, 2016, p. 01, our translation).

Recent studies (VIDAL et al, 2020; ORWIG, M. L, 2020; QIZI, KN U, 2020; CAGGIANO et al, 2020; CRAWFORD et al, 2020) have sought to discuss, conceptualize and prove the importance of these skills, affirming the need for its development in academia, including in the technology areas (VIDAL et al, 2020).

Technical knowledge and skills are insufficient for success in the IT career (VIDAL et al, 2020). According to Damien Joseph, Soon Ang, Roger H. Chang and Sandra Ann Slaughter (2010) the successful professionals who have a rapid evolution are those who unite technical and interpersonal experience. Practical intelligence (soft skill) is achieved especially in personal relationships in the professional sphere. The development of soft skills can quickly leverage the career of a beginner professional, even if he competes with more experienced colleagues in senior positions, as they are fit for the new job market scenario.

At the last annual meeting of the World Economic Forum (WEF), held in January 2020, in Davos, it was urgently discussed how to update the skills of future professionals by 2030. An imminent transformation of the labor market indicates that in the next two years 42% of the necessary skills will be modified after the fourth industrial revolution. In addition to education attached to technology, soft skills related to sales, education, assistance and human resources will be required in more than 133 million new jobs.

The meeting also listed the ten main skills for professionals in 2022, with only two aligned with the “hard skills” - Technology design and programming and Systems analysis and evaluation. The WEF forecast for the coming years is a significant change in job relations, from 71% (human) and 29% (machines and algorithms), according to a 2018 survey, to 38% (human) and 62% (machines and algorithms) in 2022.

## **2.2 Creative Economy and Technology**

The WEF points out in its reports the importance of the Creative Economy, and especially the Technology segment, as the drivers of the economy. Technological innovation has been transforming relationships and breaking down physical and geographical barriers. In this way, it opens up possibilities for new business and work relationships. The global lockdown, due to the Covid-19 pandemic, reinforced the importance of this new model. Companies like Twitter have already announced that they do not intend to return to the pre-quarantine format. The creative industry, previously considered a niche market, now plays an important role in the process of digitizing the economy.

Making new production processes feasible, seeking new markets and promoting efficiency, the Creative Economy renews the strategic capacity of companies. The conquest of more space implies the existence of more companies focused on innovation and the greater demand for creative workers, in addition to the increase of a secondary network of maintenance activities. (Firjan's Creative Industry Mapping, 2019, p. 10, free translation).

According to this study by Firjan, Creative Economy can be divided into 4 major creative areas: Consumption (Design, Architecture, Fashion and Advertising & Marketing), Media (Editorial and Audiovisual), Culture (Heritage and Arts, Music, Performing Arts and Expressions Cultural) and Technology (R&D, Biotechnology and ICT). This article analyzes the vacancies in Information Technology since this sector is in the Technology group, the second largest in the creative area (behind only Consumption), and accounts for 37.1% of all Brazilian creative workers. Two of the four creative segments that registered expansion in the period are within Technology, which drives their superior performance in relation to the labor market (Firjan's Creative Industry Mapping, 2019).

The technology sector in Santa Catarina has revenues of approximately R\$ 15.8 billion and represents 5.8% of the State's GDP. Florianópolis has the second highest rate of company per

inhabitant in the technology sector (of 4.9), second only to São Paulo (with 5.4 companies per thousand inhabitants) and is responsible for 51.2% of jobs in the Technology sector in the State of Santa Catarina. The expanding market brought an increase of 2,580 new jobs in the first half of 2019 alone (ACATE Observatory, 2019).

## **2.4 Florianópolis Ecosystem of Innovation**

Built over the last 60 years, the Florianópolis ecosystem is one of the most complete in Brazil. Having as propellant the Federal University of Santa Catarina (UFSC) with a focus on engineering, and later the inauguration of the post-graduate master and doctorate level, one of the first in Brazil (YIGITCANLAR et al, 2018; YIGITCANLAR, COSTA, SABATINI-MARQUES, 2018).

In the early 1980s, the LBDI (Brazilian Industrial Design Laboratory) was created as a result of the Brazilian Industrial Design Program conceived and implemented by CNPq, unprecedented in Brazil. For 15 years he developed relevant projects and created the conditions to start the first undergraduate course in Design at the State University of Santa Catarina - UDESC. Then, the CERTI Foundation (Reference Center for Innovative Technologies) was created, which conceives the first Technological Based Business Incubator (CELTA). In the same period, ACATE was created, a state entity that gathers high tech companies. At the beginning of the following decade, receiving strong support from the State Government, the ALFA Technological Park and FUNCITEC (State Fund for Science and Technology Support), now FAPESC, were created. Adding this local effort to the National Program SOFTEX 2000, developed by CNPq, establishes three centers in Santa Catarina, one in Florianópolis, administered today by ACATE. The Innovation Ecosystem starts to gain great momentum and many new startups were created (CERTI, 2020; FAPESC, 2020; CELTA, 2020; ACATE, 2020; CNPq, 2020; IEL, 2020; YIGITCANLAR et al, 2018; YIGITCANLAR, COSTA, SABATINI-MARQUES, 2018).

Later on, the Sapiens Parque mega project was established, company accelerators, venture capital funds, financing lines such as TECNOVA and INOVACRED by FINEP, Synapse of Innovation CERTI-FAPESC, Link Lab and many other instruments that allowed to consolidate once and for all what today is called the Florianopolis Innovation Ecosystem, an international standard, responsible for thousands of high-value jobs, consolidated companies,

a space for attracting outside entrepreneurs and the most relevant source of municipal tax collection (CERTI, 2020; FAPESC, 2020; CELTA, 2020; ACATE, 2020; CNPq, 2020; IEL, 2020; YIGITCANLAR et al, 2018; YIGITCANLAR, COSTA, SABATINI-MARQUES, 2018).

### **3. METHODOLOGICAL PROCEDURES**

This research fits into the qualitative method, the data and information collected received interpretive treatment only. Denzin and Lincoln (2005, p. 03, apud MERRIAM, 2009, p. 13) define that the qualitative method seeks to “understand or interpret phenomena in terms of the meanings that people bring to them”. It is classified as descriptive with an exploratory stage through bibliographic means (GIL, 2002; MARCONI; LAKATOS, 2009), as it is concerned with seeking scientific evidence regarding the concepts and understandings previously studied and presented about soft skills.

The study is limited to companies operating in the technology segment located or based in the city of Florianópolis. As for the industry, the companies observed are engaged in the supply of products and services in Information and Communication Technologies. As for the ads, the vacancies of Designer and Software Engineer or Systems Analyst were observed, both belonging to the Creative Economy and Technology industry - highlighted in the economic matrix of Florianópolis and in a global rise according to the World Economic Forum (2020) - and with greater degree of responsibility, technical knowledge and hierarchy, demanding a greater number of skills from candidates.

The choice of LinkedIn, a social business network founded in 2002 and launched in May 2003, was due to its relevance as the largest professional network in the world with more than 645 million users in 200 countries and territories (LinkedIn, 2020). Its digital platform offers the possibility of connecting job openings to professionals looking for new opportunities. The ACATE platform was selected for being the main representative of innovative entrepreneurship in Santa Catarina, with more than 1,200 associates in 13 innovation hubs in the state (ACATE, 2020).

The identified vacancies were analyzed, interpreted and grouped according to the set of soft skills recommended by WEF. For the planning of this study, the research protocol was

elaborated in the databases contemplating: research question; inclusion and exclusion criteria; search strategies and criteria for critical evaluation. To ensure consistency in the grouping, the researchers used a table containing the description of the soft skills.

**Table 1:** *Skills* and definitions

N°	SKILLS	SOURCE	DEFINITION	AUTHOR (YEAR)
1	Analytical thinking and innovation	WEF - Skills 2022	Analyze information and use logic to address work-related issues and problems. Creativity and alternative thinking to develop new ideas for and answers to work-related problems..	Future of Jobs 2018 Report WEF
2	Learning Strategies	WEF - Skills 2022	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Future of Jobs 2018 Report WEF
3	Creativity and originality	WEF - Skills 2022	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.	Future of Jobs 2018 Report WEF
4	Technology design and programming	WEF - Skills 2022	Writing computer programs for various purposes. Generating or adapting equipment and technology to serve user needs	Future of Jobs 2018 Report WEF
5	Critical thinking and analysis	WEF - Skills 2022	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Future of Jobs 2018 Report WEF
6	Complex problem-solving	WEF - Skills 2022	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Future of Jobs 2018 Report WEF
7	Leadership and social influence	WEF - Skills 2022	a willingness to lead, take charge, and offer opinions and direction, having an impact on others in the organization, and displaying energy and leadership.	Future of Jobs 2018 Report WEF
8	Emotional intelligence	WEF - Skills 2022	Being sensitive to others' needs and feelings Being pleasant with others on the job and displaying a good-natured, cooperative attitude. Preferring to work with others rather than alone, and being personally connected with others on the job.	Future of Jobs 2018 Report WEF
9	Reasoning, problem-solving and ideation	WEF - Skills 2022	Influence the application and manipulation of information in problem-solving. Influence the solution of problems involving mathematical relationships.	Future of Jobs 2018 Report WEF
10	Systems analysis and	WEF - Skills	Determining how a system should work and	Future of Jobs

	evaluation	2022	how changes in conditions, operations, and the environment will affect outcomes.	2018 Report WEF
11	People Management	WEF - Skills 2020	Motivating, developing, and directing people as they work, identifying the best people for the job.	Future of Jobs 2018 Report WEF
12	Coordinating with Others	WEF - Skills 2020	Adjusting actions in relation to others' actions.	Future of Jobs 2018 Report WEF
13	Decision making	WEF - Skills 2020	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Future of Jobs 2018 Report WEF
14	Service orientation	WEF - Skills 2020	Actively looking for ways to help people.	Future of Jobs 2018 Report WEF
15	Negociação	WEF - Skills 2020	Bringing others together and trying to reconcile differences.	Future of Jobs 2018 Report WEF
16	Cognitive Flexibility	WEF - Skills 2020	The ability to generate or use different sets of rules for combining or grouping things in different ways	Future of Jobs 2018 Report WEF
17	Quality Control	WEF - Skills 2015	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Future of Jobs 2018 Report WEF
18	Active Listening	WEF - Skills 2015	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times	Future of Jobs 2018 Report WEF
19	Passion	Sugestão nossa	Initiative, focus and intense satisfaction in being in contact with a certain subject having great emotional value. Feeling of accomplishment related to the activity and not to the financial.	The article proposes a definition based on popular understanding of the term
20	Communication	Sugestão nossa	Proficiency in spoken and written language, conversational skills and body language. Ability for appropriate discussion. Effective speech to market yourself and your ideas.	Bernd Schulz (Junho 2008) "The Importance of Soft Skills: Education beyond academic knowledge"

Source: Authors.

In addition to the set of data and information gathered from the vacancies offered by the 32 companies listed on the ACATE and LinkedIn website, interviews were conducted with some

directors and technicians specialized in HR management and consultants from specialized companies that provide services to these technology companies. Through these interviews and access to information, it was possible to understand the concepts and interpretations of the terms that describe the demands placed on the recruitment process, especially the component characterized as soft skill and its adherence to the company's culture and the type of function to be performed. Five experts were heard individually, adding up to an approximate total of five hours of telephone conversation. The service providers heard can be characterized as startups created by experienced professionals.

In summary, the data and information on which this study was based were obtained from the literature with regard to theoretical concepts, from the ACATE website, the LinkedIn platform and from the interviews. As for the information on the description of each vacancy advertised, it was analyzed, interpreted and grouped according to the set of soft skills recommended by WEF. Finally, this analysis was weighted by the knowledge coming from the entrepreneurs and consultants heard.

### 3.1 Data Collection

The keywords: “Systems Analyst” or “Software Engineer” were used to search the platforms, returning 22 vacancies on LinkedIn and 20 vacancies on the ACATE platform, totaling 42 vacancies in the Programming area. The same search was carried out with the keyword: “Designer”, returned 16 vacancies on LinkedIn and 7 vacancies on the ACATE platform, adding up to 23 vacancies in the Design area. A total of 65 vacancies were analyzed, shown in Table 2:

**Table 2** - Available positions on LinkedIn and ACATE Platforms

<b>Platforms</b>	<b>No. of Jobs for System Analyst and Software Engineer</b>	<b>No. of vacancies for Design</b>	<b>TOTAL</b>
LinkedIn	22	16	38
ACATE	20	7	27
<b>TOTAL</b>	<b>42</b>	<b>23</b>	<b>65</b>

Source: Authors. (searches performed on 04/2020).

Finishing the definition of the studies, 17 vacancies were identified and excluded because they are duplicated in the search platforms, or because they are not linked to companies in the ICT segment, the focus area of this study.

The review and selection considered the vacancies that have the potential to contribute to the research question. As a form of selection, the publications of the 65 vacancies mapped by the research were read and the 48 with potential for information relevant to the objective of this study were selected.

After this exploratory phase, an analysis was carried out on the forty-eight publications of vacancies. Table 3 shows the vacancies selected for final analysis.

**Table 3:** Presentation of the 48 vacancies selected for this survey.

N.	COMPANY	VACANCIES	SOURCE	AREA
1	GeekHunter	Backend Software Engineer	LinkedIn	TIC
2	Storm Tecnologia	Software developer	LinkedIn	TIC
3	NDD - Desenvolvimento de Software	Software Engineer - Backend	LinkedIn	TIC
4	Hexagon Agriculture	Developer / C ++	LinkedIn	TIC
5	Arvus as	Developer / C++	LinkedIn	TIC
6	Softplan Limited	SOFTWARE DEVELOPER III	LinkedIn	TIC
7	DOT Digital	Super PHP Developer - Freelancer	LinkedIn	TIC
8	Recruta Simples Vagas	Onboard Software Developer	LinkedIn	TIC
9	Oemprego	Software Developer	LinkedIn	TIC
10	Geek Hunter Brasil	FULL-STACK JAVA PROGRAMMER	LinkedIn	TIC
11	UM curriculum.com.br	PHP Programmer	LinkedIn	TIC
12	BDR Group	Senior Front End Developer - React	LinkedIn	TIC
13	Hexagon agriculture	C++ Developer	LinkedIn	TIC
14	BDR Group	Senior Java Programmer	LinkedIn	TIC
15	Outplan	PHP Programmer	LinkedIn	TIC
16	mnztecnologia	PHP Programmer	LinkedIn	TIC
17	dankicode	PHP Programmer	LinkedIn	TIC
18	DOT Digital	Mobile Developer Analyst	ACATE	TIC
19	DOT Digital	FrontEnd Expert! Freelancer	ACATE	TIC
20	CreativeDrive Brazil	ReactJS Developer	ACATE	TIC
21	DOT Digital	The best Javascript - Freelancer	ACATE	TIC
22	CreativeDrive Brazil	Full Stack PHP Web Developer	ACATE	TIC
23	Certi	Software Developer	ACATE	TIC

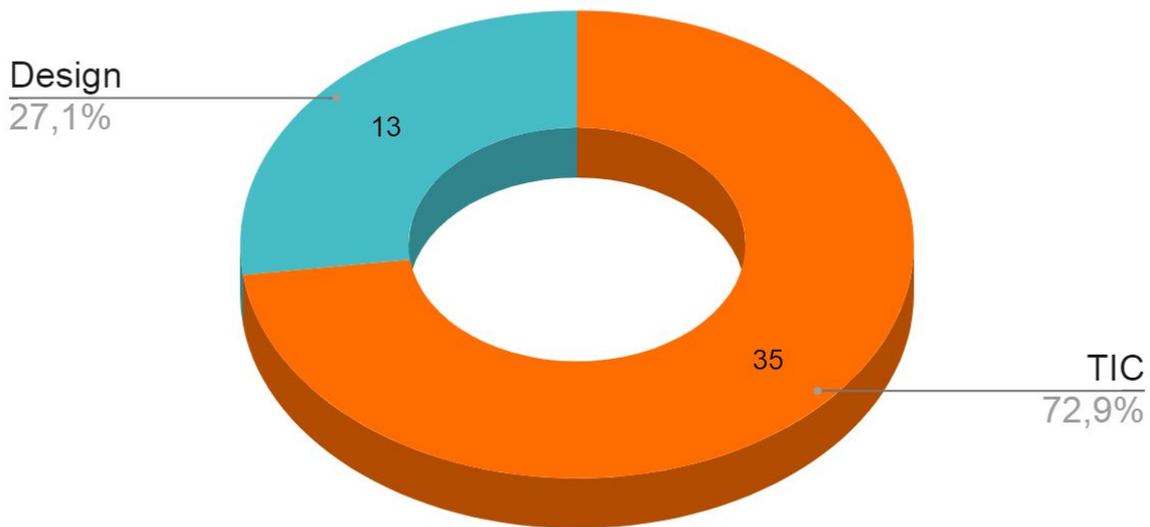
24	Certi	Software Developer Sênior	ACATE	TIC
25	Hoplon	Backend Web Developer	ACATE	TIC
26	Busque Seguros	Fullstack Developer	ACATE	TIC
27	Certi	Garantia de Qualidade de Software	ACATE	TIC
28	Anestech Innovation Rising	Full Stack - Pleno	ACATE	TIC
29	DOT Digital	PHP Developer Analyst	ACATE	TIC
30	AQTech Power Prognostic	Software developer	ACATE	TIC
31	Ilog Tecnologia	Backend Developer	ACATE	TIC
32	DOT Digital	Analyst developer JavaScript	ACATE	TIC
33	Digitro Tecnologia	Full Stack Developer - Systems Analyst	ACATE	TIC
34	Hoplon	Programmer Analyst	ACATE	TIC
35	Neoprospecta	Senior Front-End Developer	ACATE	TIC
36	Dot Digital	Designer	LinkedIn	DESIGN
37	DocPro	Designer	LinkedIn	DESIGN
38	Imagina Digital	Designer	LinkedIn	DESIGN
39	Coimex Trading	Web Designer	LinkedIn	DESIGN
40	Avanti Tecnologia & Marketing	Web Designer	LinkedIn	DESIGN
41	Delivery Much	Designer	LinkedIn	DESIGN
42	Navi.inf	Designer	LinkedIn	DESIGN
43	Proteina Digital	Designer	LinkedIn	DESIGN
44	Bdr - Talentos Corporativos	Designer	LinkedIn	DESIGN
45	DOT Digital	Instructional Designer Freela!	ACATE	DESIGN
46	CreativeDrive Brazil	SENIOR DESIGNER	ACATE	DESIGN
47	CreativeDrive Brazil	CREATIVE DIRECTOR	ACATE	DESIGN
48	CreativeDrive Brazil	ART DIRECTOR	ACATE	DESIGN

Source: Authors.

### 3.2 Data Mapping

This section aims to present the mapping for the 48 job openings published on the LinkedIn and ACATE platforms.

**Graph 1:** Distribution of vacancies with a focus on professions



Source: Authors.

When analyzing the disposition of the 48 selected vacancies, it is noticed that the largest number of open opportunities is in the programming area (73%) more than twice the design area (27%). This result can be associated with the fact that the vacancies analyzed are exclusive to technology-based companies, which favors developers. It is also important to note that 54% of vacancies are on the LinkedIn platform and 46% on ACATE, 26 and 22 vacancies respectively.

As far as advertisers are concerned, technology companies (87.5%) stand out, with an emphasis on DOT Digital (8 vacancies), CreativeDrive Brazil (5 vacancies) and the Certi Foundation (3 vacancies) presenting the highest volume of publications. Note the absence of some of the main technology companies in Florianópolis, such as Softplan<sup>2</sup> and Resultados Digitais<sup>3</sup>.

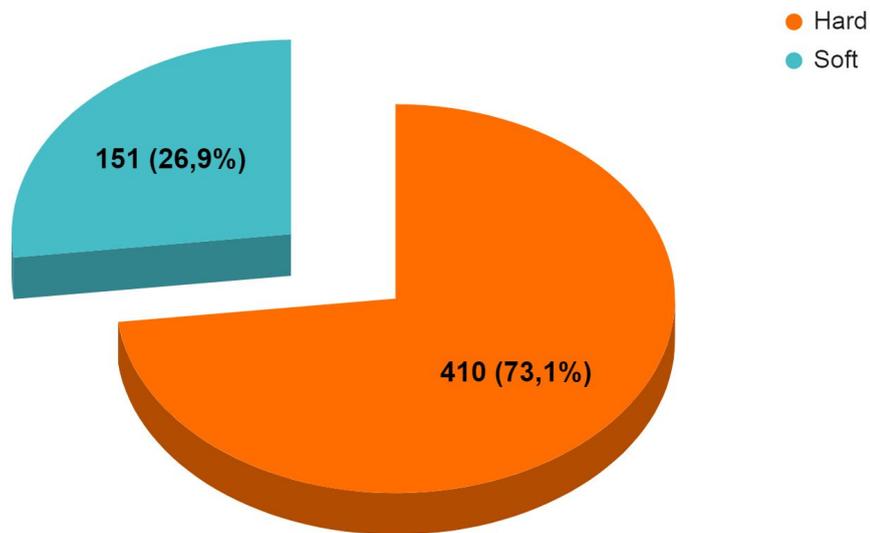
Both ventures use their own platforms as the main source of advertising, prospecting and selection, justifying their absence or timid participation in the results.

<sup>2</sup> Softplan is one of the largest software companies in the country, with around 1,900 employees.

<sup>3</sup> Company focused on solutions for digital marketing with RD Station Marketing as its main product that support the structuring and execution of solid marketing and sales strategies.

An essential point to be analyzed is the skill preferences required in the ads, answering our research question, and can be seen in Graph 2:

**Graph 2:** Distribution of skills according advertisers



Source: Authors.

Contemplating the graph above, it is possible to verify that of the 561 skills requested in the 48 job vacancies analyzed, the undeniable majority is directed to technical skills (73%), also called hard skills, leading to the understanding that soft skills, even pointed out as main skills of the professional of the future are still at a quantitative disadvantage in job vacancies, at least in the initial recruitment and selection phase.

Of the 48 vacancies analyzed, 100% requested technical skills, and 77.1% (37 advertisements) minimally requested a soft skill. Interestingly, 10 of the 11 vacancies without behavioral skills specifications were directed to the programming area.

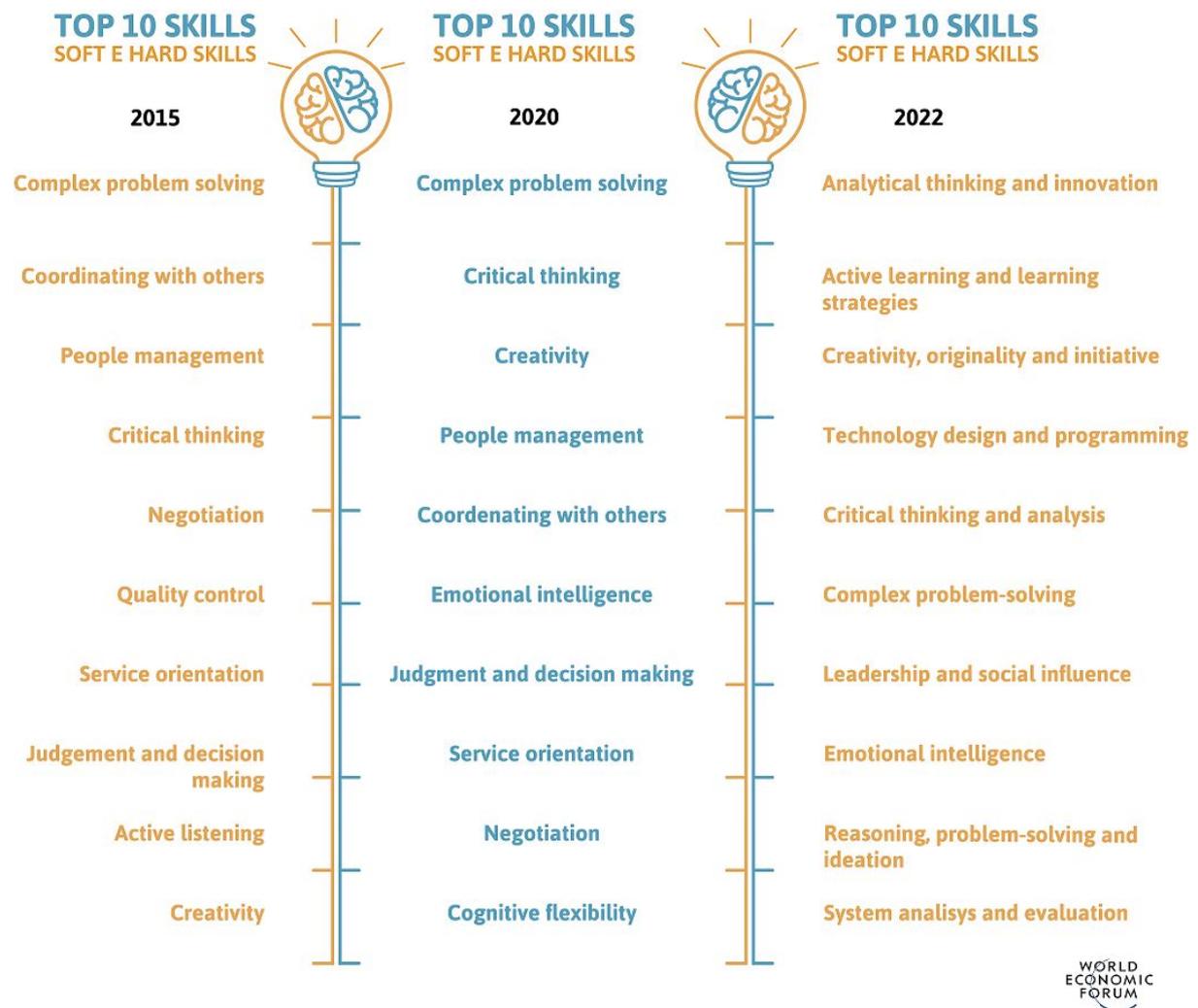
## 4. RESULTS

This section analyzes the 561 skills identified in the 48 job openings published on the LinkedIn and ACATE platforms, in order to identify the skills and abilities requested in the ads, and to classify considering the skills mapped by the WEF according to Table 1.

### 4.1 Analysis of Ads

After the classification phase of the 561 skills between hard and soft, the next step was to categorize the 151 soft skills identified considering the WEF mapping (2020) regarding the 10 essential skills for the professional of the future for 2022. Throughout the analysis process, verified the need to also add the skills provided by previous reports (2015 and 2020), contributing to an assertive classification process. In Image 1, it is possible to check the 10 essential skills for the professional of the future in the years 2015, 2020 and 2022.

**Image 1:** Essential skills for the professionals of the future (WEF)



Source: Authors

Considering the analyzes carried out by the WEF itself regarding the similarity or equivalence of skills from one year to the next, the corresponding skills were excluded, resulting in 18 different skills. It was observed by the researchers the need to include two new

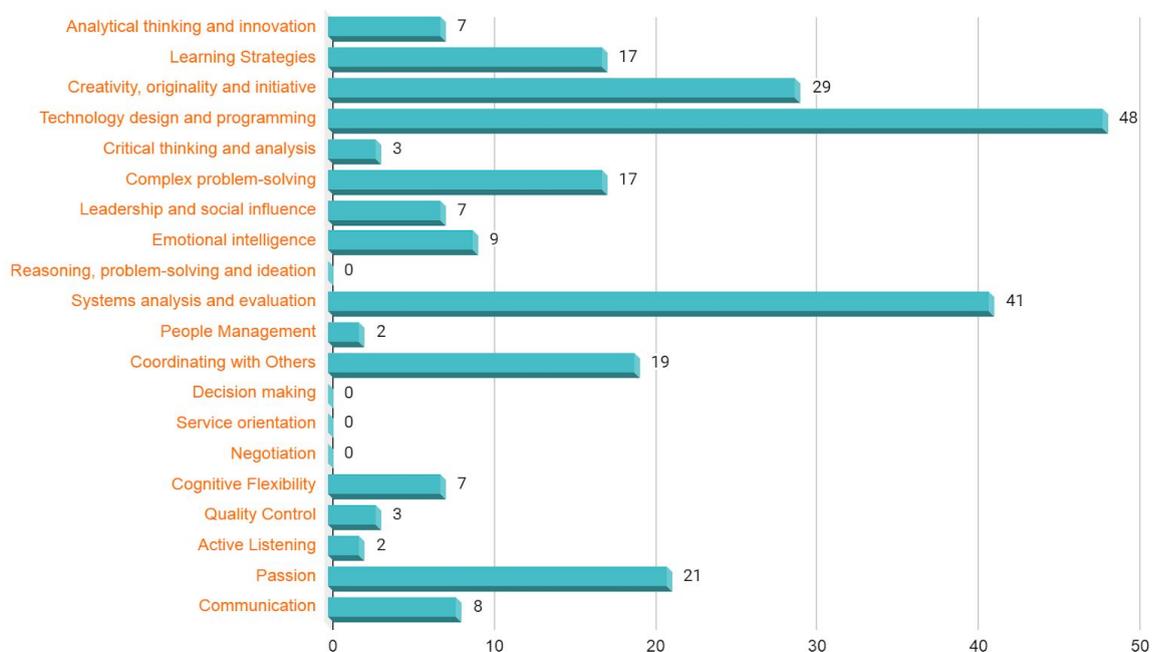
skills: Communication and Passion, identified during the analysis of vacancies and not mapped WEF, totaling 20 skills for the classification process that can be seen in Table 1.

At first, the 151 skills linked to soft skills were analyzed and categorized exclusively. Due to items “4. Technology Design and Programming”, and “10. Systems Analysis and Evaluation”, it was necessary to check if the 48 vacancies requested these technical skills (hard skills).

Considering that the vacancies dealt precisely with the technology sector linked to the positions of Systems Analyst; Software Engineer and Designer, it was possible to observe 48 technical skills linked to item 4; and 41 linked to item 10; adding 89 new skills to the pool, totaling 240 skills analyzed.

Following the mapping process, the researchers individually read each of the 240 skills and classified them according to the 20 categories, according to the concept and characteristics of each one. Graph 4 presents the results of the analysis.

**Graph 4: Skills results by category**



Source: Authors.

Analyzing the graph above, it is possible to observe that the hard skills, even corresponding to only 2 categories, represent 37.8% of the 240 skills evaluated, being precisely item “4.

Technology Design and Programming ”the main skill requested (20%), followed by also the hard skill“ 10. Systems Analysis and Evaluation ”(17.8%). We can associate this result with the fact that they contemplate precisely the technical core of the evaluated functions: Systems Analyst; Software Engineer and Designer.

Considering only soft skills, the 18 categories represent 62.2% of the skills evaluated, with emphasis on three: Creativity, Originality and Initiative (12.8%). We emphasize that the analysis made it possible to observe that the development vacancies sought especially for the quality "initiative", published in the ads as requirements: proactivity and / or initiative. The design vacancies, on the other hand, turned their focus to the item "creativity". In a vacancy ad, for example, it was published in requirements: productive creativity (Designer vacancy at Empresa Proteína Animal / LinkedIn 2020).

It is important to highlight that the skills “9. Reasoning, Problem Solving and Ideation ”; “13. Decision Making ”; “14. Service orientation ”; and “15. Negotiation ”were not requested in any of the 48 vacancies analyzed, leaving doubts as to the importance and prioritization of these skills, or, if they are verified at another time during the recruitment and selection process.

While 4 of the 18 skills, listed by the WEF, were not mentioned in the analyzed vacancies, the insertion of two became important, “19. Passion ”and“ 20. Communication ", together corresponded to 12.08% of the skills requested, with emphasis on" passion ", being mentioned 21 times. This skill deserves special emphasis, first because it is not mentioned in the main references used in this work, but also due to the unique attention given to this skill in the body of the ads, requested from the candidates: “Passionate attitude” (Designer position at CreativeDrive Brazil / ACATE 2020); “Love working with distance learning solutions” (Designer vacancy at DOT DigitalACATE 2020); “Passionate about what they do” (Software Developer Job at Storm Tecnologia / LinkedIn 2020), alluding especially to the feeling of accomplishment related to enchantment per se and not to professional or financial return.

#### **4.2 Perspective of Information and Communication Technologies Companies**

The first point observed was the diversity of specifications of the requirements beyond the technical qualification. As it is not possible to research each employing company to make value judgments, we opted to hear the opinion of consultants Ivan Santos and Cristyano Von Dentz from PERFIL PSK, ([www.perfilpsk.com.br](http://www.perfilpsk.com.br)) specialized service providers with extensive experience in the region.

These indicated that the majority of their customers do not have a clear definition of their culture and the desired characteristics of the current or future employee. Also according to them, businessmen are increasingly aware of the importance of soft skills, but neither they nor the technical staff in charge of the Human Resources activity are able to make appropriate use of this knowledge, so they do not know exactly what to specify and how to interpret. This difficulty is frequent in numerous organizations (MATTESON et al, 2016).

The second point, complementary to the first, is the difficulty of matching the wide variety of descriptions that are generally incomplete and inaccurate with harmonic sets and of clear meaning. It is not possible to effectively manage qualifications described in different ways and with a wide range, not allowing to measure and compare.

The second company observed, already with a different size and business dynamics, with a culture shaped by the group of founders, who are now managers, has in its DNA values and requirements distinct from other companies, while also highlighting the increasingly intense value of soft skills.

The third point highlighted is that the selection process takes place in several stages. What is described here in this study is only the first stage of pre-selection where technical qualifications are decisive. The following steps include specific tests and individual interviews that can be more structured or less structured. Companies that have more developed systems in this sense are much more effective in the selection process.

## **5. FINAL REMARKS**

Solving complex problems through new technologies that respond to the demands of human society are some of the challenges inherent in the human-machine partnership (YIGITCANLAR et al, 2018; CALANCA et al, 2019). This new working relationship has

aroused the curiosity and interest of institutions, universities and researchers in understanding and pointing out the profile of the professional of the future, identifying the set of skills necessary to perform functions in jobs that do not yet exist. WEF assumed its leading role in this journey, periodically mapping and presenting the set of essential skills to these professionals, highlighting in each report the importance of behavioral skills (soft skills) unique to humans.

This reality is already perceived in the ICT sector, an area directly linked to technological innovations and human-machine cooperation; highlighted in the economic matrix of the city of Florianópolis, Brazil's technological center (YIGITCANLAR et al, 2018; YGITCANLAR, Tan; COSTA, Eduardo Moreira; SABATINI-MARQUES, 2018; Smart City Florianópolis Report, 2018).

Given this scenario and the new economy, this study had a double objective [i] To identify whether companies in the creative economy segment, specifically technology, in the city of Florianópolis / SC are looking for soft skills in their job advertisements; and in this way [ii] Understand whether they are aligned with the trends presented by WEF 2020.

Responding to the first objective, the survey found a greater volume of hard skills, with 73% of the 561 skills mapped. However, it was possible to identify that in 77.11% of the vacancies at least one soft skill, demonstrating the interest of recruiters in these skills.

It is noticeable the importance given to hard skills by the ICT companies in Florianópolis. Considering the WEF mapping, the most requested skills were “4. Technology Design and Programming ”and“ 10. Systems Analysis and Evaluation ”. Together, these two technical skills in the pool represent 37.8% of the 240 skills assessed, ranking first and second respectively.

Looking especially at behavioral skills, the soft skill highlighted is “3. Creativity, Originality and Initiative ”(12.8%), requested in 20 of the 48 vacancies analyzed. Secondly, the most requested soft skill is one of the contributions of this study, “19. Passion ”, which appears in 21 of the 48 vacancies analyzed, corresponding to 8.75% of the skills assessed, and defined by this study as“ Initiative, focus and intense satisfaction in being in contact with a certain

subject having great emotional value. Feeling of accomplishment related to enchantment per se and not to professional or financial return ”.

Regarding the objective information raised and treated and, equally, summarizing and interpreting the verbal manifestations of the five specialists heard, it can be concluded that soft skills have been gaining prominence and capital importance. In particular, companies that develop and market technology products evolve and become obsolete very quickly. It means that flexibility, ability to solve complex problems, always learn, lead teams and resilience to name a few, are indispensable predicates for the performance of any worker or manager.

Although it can be a force for expression, one of the leaders heard went so far as to state that the technical issue, hard skills, is almost dispensable, as this competence can be taught and developed internally more easily than the development of soft skills. All respondents stated that human development can and should be developed with support from the company and that it is always better to enhance the strengths than to try to develop the weaknesses.

Thus, the analysis of the interviews corroborates with the data found in the ads, pointing out the importance of soft skills for the profile of technology professionals. However, they also show the difficulty in identifying these skills, and consequently request in the ads. Apparently, a weakness in the Human Resources sector that does not find a well-defined company culture under which to extract the necessary skills.

As a continuation of this work, new research is suggested that list, conceptualize and point out ways to identify and measure soft skills in order to guide organizations and professionals of the future. As a limitation of the study is the absence of the main technology companies in Florianópolis, as they use their own platform, and the Pandemic scenario COVID-19, which may have presented changes in the vacancy and advertisement tables.

## **REFERÊNCIAS**

ACATE. Tech Report 2019: Panorama do Setor de Tecnologia Catarinense. Florianópolis, 2019. Disponível em: <[https://7293447a-5635-43a0-9adb-47f0f23fcca5.filesusr.com/ugd/873631\\_8893325e2f204ffc8e1c5b477c175f1e.pdf](https://7293447a-5635-43a0-9adb-47f0f23fcca5.filesusr.com/ugd/873631_8893325e2f204ffc8e1c5b477c175f1e.pdf)>. Acessado em: 06/05/2020.

\_\_\_\_\_. Sobre Nós. Disponível em: <<https://www.ACATE.com.br/institucional/>>. Acessado em: 06/05/2020.

CAGGIANO, Valeria et al. Towards Identifying the Soft Skills Needed in Curricula: Finnish and Italian Students' Self-Evaluations Indicate Differences between Groups. *Sustainability*, 12, 2020. DOI: <https://doi.org/10.3390/su12104031>

CALANCA, Federica et al. Responsible team players wanted: an analysis of soft skill requirements in job advertisements. *EPJ Data Science*. Vol. 8, 2019. <https://doi.org/10.1140/epjds/s13688-019-0190-z>

CRAWFORD, Alleah et al. Using a grounded theory approach to understand the process of teaching soft skills on the job so to apply it in the hospitality classroom. *Journal of Hospitality, Leisure, Sport & Tourism Education*. Vol. 26, Junho, 2020. DOI: <https://doi.org/10.1016/J.JHLSTE.2020.100239>

CELTA. Celta.org.br, 2020. Centro Empresarial para Laboração de Tecnologias Avançadas: O ambiente de incubação da Fundação CERTI. Disponível em: <[www.velta.org.br](http://www.velta.org.br)>. Acesso em: 26/05/2020.

CERTI. Certi.org.br, 2020. Centros de Referência em Tecnologias Inovadoras. Disponível em: <[www.certi.org.br](http://www.certi.org.br)>. Acessado em 26/05/2020.

CNPq. Cnpq.br, 2020. Conselho Nacional de Desenvolvimento Científico e Tecnológico do Ministério da Ciência, Tecnologia, Inovações e Comunicações. Disponível em: <[www.cnpq.br](http://www.cnpq.br)>. Acessado em 26/05/2020.

INSTITUTE FOR THE FUTURE. Future of Work: Forecasting emerging technologies' impact on work in the next era of human-machine partnerships, 2019. Disponível em: <[https://www.dellemc.com/pt-br/collaterals/unauth/industry-reports/solutions/realizing\\_2030\\_future\\_of\\_work\\_report\\_dell\\_technologies.pdf](https://www.dellemc.com/pt-br/collaterals/unauth/industry-reports/solutions/realizing_2030_future_of_work_report_dell_technologies.pdf)>. Acessado em: 11/05/2020.

FAPESC. Fapesc.sc.gov.br, 2020. Fundação de Amparo à Pesquisa e Inovação do Estado de Santa Catarina. Disponível em: <[www.fapesc.sc.gov.br](http://www.fapesc.sc.gov.br)>. Acessado em 26/05/2020.

FIRJAN. Mapeamento da Indústria Criativa, 2019. Disponível em: <<https://www.firjan.com.br/EconomiaCriativa/pages/default.aspx>>. Acessado em: 12/05/2020.

GIL, A. C. Como elaborar projetos de pesquisa. 4 ed. São Paulo: Atlas, 2002.

IEL. Iel-sc, 2020. Instituto Euvaldo Lodi de Santa Catarina Disponível em: <[www.iel-sc.org.br](http://www.iel-sc.org.br)>. Acessado em 26/05/2020.

JOSEPH, Damien; ANG, Soon; CHANG, Roger H. L.; and SLAUGHTER, Sandra A. Practical intelligence in IT: assessing soft skills of IT professionals. *Communications of the ACM*, 2010. p. 149–154. DOI: <https://doi.org/10.1145/1646353.1646391>.

QIZI, Karimova N.U. Soft Skills Development in Higher Education. *Universal Journal of Educational Research* Vol. 8, 2020. DOI: 10.13189/ujer.2020.080528

LinkedIn. LinkedIn Corporation, 2020. Sobre. Disponível em: <[https://about.Linkedin.com/pt-br?trk=homepage-basic\\_directory\\_aboutUrl](https://about.Linkedin.com/pt-br?trk=homepage-basic_directory_aboutUrl)>. Acessado em: 06/05/2020.

MARCONI, M. A.; LAKATOS, E. M. Fundamentos de metodologia científica. São Paulo: Atlas, 2009.

MATTESON, Miriam L. et al. "Soft Skills": A Phrase in Search of Meaning. Libraries and the Academy, Vol. 16, No. 1, 2016.

MERRIAM. S. B. Qualitative research and case study applications in education. San Francisco (CA): Jossey-Bass. 2009.

ORWIG, Marcy Leasum. Rethinking Soft Skills Through Front-Stage and Back-Stage Genres. Business and Professional Communication Quarterly. 83, no. 2, 2020. DOI: <https://doi.org/10.1177/2329490620905905>

SECRETARIA DE ESTADO DO DESENVOLVIMENTO ECONÔMICO SUSTENTÁVEL DE SANTA CATARINA. Guia de Desenvolvimento de Ecossistemas e Centros de Inovação: Livro I: Conceitos e Fundamentos. Florianópolis: SDS, 2017. Disponível em: <<http://www.sde.sc.gov.br/index.php/biblioteca/pastas-tematicas/inovacao/669--69/file>>. Acessado em 12/05/2020.

SCHULZ, Bernd. The Importance of Soft Skills: Education beyond academic knowledge. Journal of Language and Communication, 2008.

VERMA, Shalini. Soft Skills for the BPO Sector. Pearson: 2009.

VIDAL, Elizabeth et al. Desarrollando de habilidades blandas en etapas tempranas en la formación de Ingenieros de Software. Revista Ibérica de Sistemas e Tecnologias de Informação, 2020.

WHITMORE, Paul G. FRY, John P. What are Soft Skill?. In: CONARC Soft Skills Training Conference, 1972. Disponível em: [https://ia800600.us.archive.org/16/items/DTIC\\_ADA099612/DTIC\\_ADA099612.pdf](https://ia800600.us.archive.org/16/items/DTIC_ADA099612/DTIC_ADA099612.pdf). Último acesso em 05/05/2020.

WORLD ECONOMIC FORUM. The future of Jobs 2016. Disponível em [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf). Acessado em 17/05/2020

\_\_\_\_\_, 2018. The future of Jobs 2018. Disponível em [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs\\_2018.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf). Acessado em 17/05/2020

\_\_\_\_\_, 2019. Annual Report 2018-2019. Disponível em [http://www3.weforum.org/docs/WEF\\_Annual\\_Report\\_18-19.pdf](http://www3.weforum.org/docs/WEF_Annual_Report_18-19.pdf). Acessado em 17/05/2020

\_\_\_\_\_, 2020. Jobs of Tomorrow Mapping Opportunity in the New Economy. Disponível em: [http://www3.weforum.org/docs/WEF\\_Jobs\\_of\\_Tomorrow\\_2020.pdf](http://www3.weforum.org/docs/WEF_Jobs_of_Tomorrow_2020.pdf). Acessado em: 06/05/2020.

YIGITCANLAR, Tan et al. Towards Smart Florianópolis: What Does It Take to Transform a Tourist Island into an Innovation Capital?. *Energies*, Vol. 11, 2018. DOI: <https://doi.org/10.3390/en11123265>.

YIGITCANLAR, Tan; COSTA, Eduardo Moreira; SABATINI-MARQUES, Jamile (org). *Smart City Florianópolis: Jornada de Criação do Caminho de Inovação de uma Ilha Turística*. Senac/SC, 2018. ISBN: 978-85-67932-07-1.