GATED COMMUNITY WITHOUT GATES: (how) is the Smart City Laguna neighborhood becoming a new driver of urban divisions?

LORENA BORGES DIAS
AUGUST, 2023

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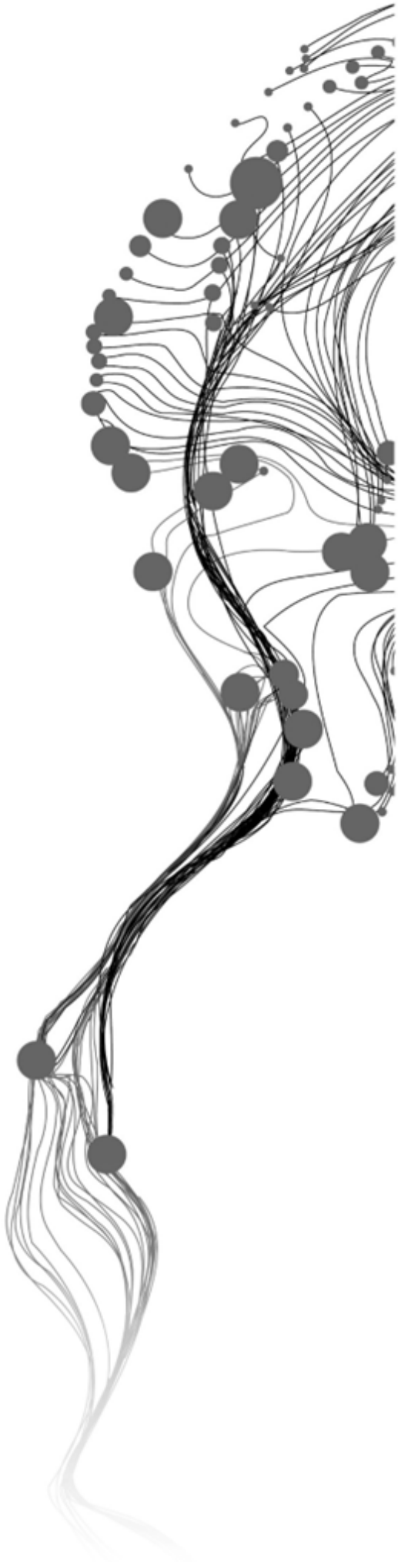

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Thesis submitted to the Faculty of Geo-Information Science and Earth Observation of the University of Twente in partial fulfillment of the requirements for the degree of Master of Science in Geo-information Science and Earth Observation.
Specialization: Urban Planning & Management

SUPERVISORS:
Dr. F. Meissner
Dr. Ir. R.E. Keeton

THESIS ASSESSMENT BOARD:
Dr. J.A. Martinez (Chair)
Dr. R.C. Rocco de Campos Pereira (External Examiner, TU Delft)

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This section will be my attempt to put into words the gratitude that fills my heart when I look back at this two-year process - moving to a foreign country at a time of global instability, leaving behind loved ones, and facing the challenges of the expat life. Somehow I made it, which I can only attribute to a higher power. And for that, I'm thankful.

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1. Introduction

Amongst all the possible ways to discuss urban development in the contemporary Brazilian context, this thesis is concerned with the process being marked by two discernible trends: decentralization and digitalization, and their relationship with the country's historical experience with gated communities (Roitman & Giglio, 2010) – topics to be further explored in subsection 2.1. Both decentralization and digitalization have given rise to the emergence of the smart city paradigm in the country while promoting smaller platform cities. Here, 'platform city' refers to urban developments often observed as high-investment projects for new neighborhoods exhibiting traits associated with smart city concepts and corporate-oriented urban forms (Murakami Wood, (forthcoming)). These trends also affect cities and neighborhoods at different scales, leading to shifts in urban life's socio and spatial dimensions and their relationship with the digital dimension that entered the equation (Murakami Wood & Mackinnon, 2019). However, there has been relatively little research into the characteristics of these new communities, which is why focussing on 'actually existing smart cities' (Shelton et al., 2015) – like the Smart City Laguna-SCL in Brazil – holds significant academic and practical value, particularly concerning the 'actually existing smart city' potential role as a driver of urban divisions.

In line with global trends such as the emptying of urban centers, the spatial consequences of remote work, and the migration to small and medium-sized cities (Nowaczyk et al., 2022), Brazil's urban landscape has witnessed a notable transformation in recent years, characterized by the decentralization of the population (Projeto MapBiomas, 2022a) in parallel with a slight increase in income and the purchasing of secondary homes (IBGE - Brazilian Institute of Geography and Statistics, 2023b). As indicated by the 2022 Census data, the vacant houses in Brazilian urban centers reflect the decentralization trend mentioned above, with an 87% increase in housing vacancy since 2010 (IBGE - Brazilian Institute of Geography and Statistics, 2023c). The Brazilian coastal cities have experienced a surge in seasonal-use houses, and the northeastern state of Ceará - where Smart City Laguna-SCL is located - exemplifies this trend, with a significant increase in vacant houses, highlighting the changing dynamics of urbanization and housing provision in the state. The information on vacant houses and decentralization is relevant for contextualizing SCL within Ceará and Brazil while connecting to the implementation company's mission regarding the global housing deficit (to be further explored in subsection 1.3.1). According to the Census 2022 data, the state of Ceará had a municipality ranked 10th nationally in terms of growth in the number of houses (an increase of 125.1% between 2010 and 2022); additionally, another municipality ranked 1st nationally in terms of the highest percentage of vacant houses (a vacancy rate of 29.1%) (IBGE - Brazilian Institute of Geography and Statistics, 2023a) – reinforcing the change in urban and housing dynamics in the state.

To briefly contextualize Smart City Laguna-SCL (see Figure 1)[1], the development is located on the fringes of a fragmented district (Croatá), part of the São Gonçalo do Amarante municipality. This municipality, in turn, is situated on the outskirts of the metropolitan area of Ceará's state capital, Fortaleza. Additionally, this municipality is home to Brazil's second-largest port, Porto do Pecém, and the delineation of the Transnordestina railroad also crosses the region (still to be finalized) – further exploration of the topic in subsection 1.2.

[1] Distances:
Smart City Laguna – Croatá: average of 2,6 km;
Smart City Laguna – São Gonçalo do Amarante: average of 25 km;
Smart City Laguna – Porto do Pecém: average of 51 km; and
Smart City Laguna – Fortaleza: average of 84km.

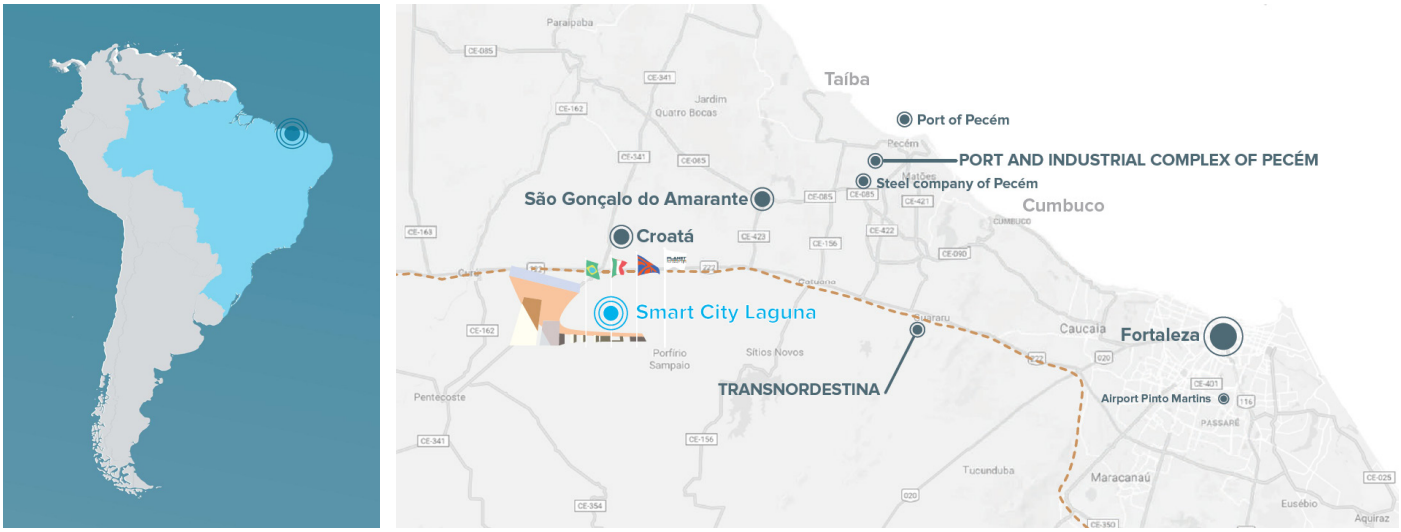


Figure 1 - Location of Smart City Laguna.
Source: (Instituto Planet Smart City, 2018b)

The development shows a familiar urban model with a greenfield divided into residential, commercial, corporate, and institutional blocks surrounding a manufactured lake (see Figure 2). The Italo-British development company, Planet Smart City, initiated this new urban development in 2015, and it positions itself in the housing and development market as a provider of affordable and technology-driven urban solutions (Instituto Planet Smart City, 2022a).

Figure 2 - Smart City Laguna's planned urban design
Source: (Instituto Planet Smart City & SG Desenvolvimento, 2016)

Going back to what was first introduced in this section, digitalization has gained prominence in integrating global processes within the urban context, a process also taking place in Brazil – as a form of technological innovation policy (Portugal et al., 2021). Digitalization policies focus on enhancing information and communication technologies (ICTs) accessibility, promoting online governance, and democratizing civic participation (Ash et al., 2018). And there's argumentation about the digital city concept aligning with these objectives, focusing on inclusion, efficient public service delivery, and technological advancements (Mariën & Prodnik, 2014; Nemer, 2016). Here, concerning this study, it is important to note that inclusion (and exclusion, for that matter) are complex since their different dimensions can coexist and change over time, and it's key to consider qualitative experiences when analyzing access to the digital dimension and its implications (Wyatt et al., 2000). With that, the emergence of smart or small platform cities - exemplified by SCL - represents an attempt to leverage digital technologies for urban development.

However, as Caldeira (1996) contextualizes it for the city of São Paulo (here assumed as a trendsetter for the rest of the country as per its sheer size and historical importance for the country), divisions in the Brazilian urban production have been occurring since the 1940s and dominated until de 1980s – or even longer (Guerra, 2012). As a result, even with the introduction – for the last 20 years (Mora et al., 2017) – of more contemporary urban development concepts, such as the smart city, the country still has the legacy of the gated community paradigm in its urban development and mindset. Gated communities here are characterized by enclosed urban spaces catering to socially homogeneous groups, contributing to social division and exclusion within urban environments (Caldeira, 2000; Villaça, 2011). These urban developments signify a form of defensive clustering, perpetuating social divisions, increasing distancing, and limiting interaction with diverse groups (Caldeira, 2005). The power of the gated community paradigm within Brazil raises questions about the inclusion and democratic values smart cities claim to have, as they can potentially reinforce social, spatial, and also digital inequalities (Brants & Frissen, 2003; Holston, 2008).

Therefore, the reason for this thesis to explore decentralization, digitalization, and gated communities in their relationship within the context of the 'platform city' of Smart City Laguna is to provide a backdrop. With that established, understand how the social, spatial, and digital dimensions relate in that same context – and the rest of this section lays out the relevance of doing so.

1.1. Problem statement

Even though smart cities have been researched for the last few decades, as briefly shown in the last section, most technical studies focus on how the technology-based approach influences optimization and efficiency (Kitchin, 2019). In the social sciences, critical studies focus on marginalized (Shamsuddin & Srinivasan, 2021) and vulnerable groups (Shamsuddin & Srinivasan, 2021) affected by the implementation of smart cities. However, little has been researched on the population that chooses to go and live in those differentiated communities and why they do so (Cardullo, 2021).

Smart City Laguna is an intriguing case study for understanding the dynamics among decentralization, digitalization, and gated communities. As a smart city project, SCL claims to integrate social inclusion, innovative spatial concepts, and digital technologies. However, questions remain about the relationship between those social, spatial, and digital dimensions and how they mutually influence each other.

Studying Smart City Laguna as a potential driver of urban division offers insights into the complex interplay between decentralization, digitalization, and gated communities. The case of SCL underscores the importance of critically assessing the impact of smart city initiatives on urban development, particularly their potential to exacerbate existing social inequalities and contribute to spatial division. As this study will show, this points to a broader understanding of contemporary urbanization trends and their implications for inclusive and equitable city development.

1.2. Thesis outline

Now, this subsection creates a break to provide the structure for the thesis so that the setting out of the problem to be addressed provides the reader with an overview. This thesis is split into five chapters: introduction; literature review and theoretical framework; research methods; analysis and findings; and discussion and conclusion. Chapter 1 introduces the research by presenting the problem statement; thesis outline; background; research objectives, and questions. Chapter 2 presents the literature review and conceptual framework underpinning the research. Chapter 3 describes the research methods; design and approach; sampling strategy and participant selection; data collection; data analysis; and notes on ethics. Chapter 4 presents the analysis and findings. Finally, Chapter 5 presents the discussion and conclusions for the thesis.

1.3. Background

This subsection will introduce the case study's background information from three perspectives: the implementing company: Planet Smart City; the location: São Gonçalo do Amarante; and the platform city itself: Smart City Laguna.

1.3.1. Implementing company: Planet Smart City

Originating in the global north, the Planet Group is a global urban development enterprise with different branches (see Figure 3) that declares to create innovative and sustainable smart cities worldwide. The enterprise organization chart refers to an English Holding Company that controls four sub-holdings: the English Housing Company; the English Services Company; the Italian Engineering Company; and the Brazilian Marketing Company. With an unclear connection with the ones just mentioned, a Brazilian Institute also oversees Smart City Laguna's public interest and management and seems to (also unclear) manage another three Brazilian companies (on development, construction, and manufacturing).

Figure 3 - Planet Group's organization chart
Source: (Instituto Planet Smart City, 2018b)

Established in 2015 by Italian real estate expert Giovanni Savio and physicist and entrepreneur Stefano Buono, the Brazilian branch (Instituto Planet Smart City, also called just as Planet Smart City) is headquartered in Fortaleza, with Susanna Marchionni as CEO. The Planet Group's global mission is to:

> *[…] create a smarter Planet by fostering communities that respect local cultures and support inclusivity and sustainability. [They] design, build, and consult on large-scale smart, affordable housing projects worldwide to tackle the global housing deficit and accelerate real estate innovation using a replicable, scalable model.*
>
> (Instituto Planet Smart City, 2022b, p. 'our mission')

With that, and connecting this thesis' themes, it is interesting to highlight Planet's aims towards providing affordable housing and impacting the global housing deficit through development and technology.

Approaching the company's operations in Brazil, Planet Smart City's most completed project (in terms of construction and development) is the Smart City Laguna – the case study for this thesis. SCL was a private investment of US$ 50 million (Forbes Daily, 2019) to establish a smart city for 25,000 (Instituto Planet Smart City, 2019) or 20,000 residents (Instituto Planet Smart City, 2020) in over 330 hectares of area. Additionally, the company is in the early stages of starting construction in two other locations across the northeast of Brazil, Smart City Aquiraz (in the Ceará state, same as SCL[2]) and Smart City Natal (in the Rio Grande do Norte state), both also near the state capitals cities (Fortaleza and Natal). Both developments are aligned with the company's goal of integrating smart technologies and urban innovation, providing the same familiar urban model with a greenfield divided into different blocks (see Figure 4).

Figure 4 - Smart City Aquiraz (above) and Smart City Natal (below)
Source: (Instituto Planet Smart City, 2021b, 2021c)

[2] Distances:
Smart City Laguna – Smart City Aquiraz: average of 123 km; and
Smart City Laguna – Smart City Natal: average of 590 km.

1.3.2. The location: São Gonçalo do Amarante

Now to approach the region itself: SGA, which 1999 became part of Fortaleza's[3] metropolitan area, has an interesting location within Ceará. With coastal access, the municipality hosts, as mentioned, Brazil's second largest port at Pécem (northeastern a district of SGA), and its proximity to international trade routes, including North America, Europe, and Africa, makes it very strategic. The municipality has witnessed a notable demographic shift over the years because of its coastal access and proximity to the state's capital. The population growth from 2010 onwards is 24,49%, having 64.11 inhabitants per km² and an average of 3.01 residents per home – primarily a rural municipality with fragmented urban areas (see Figure 5).

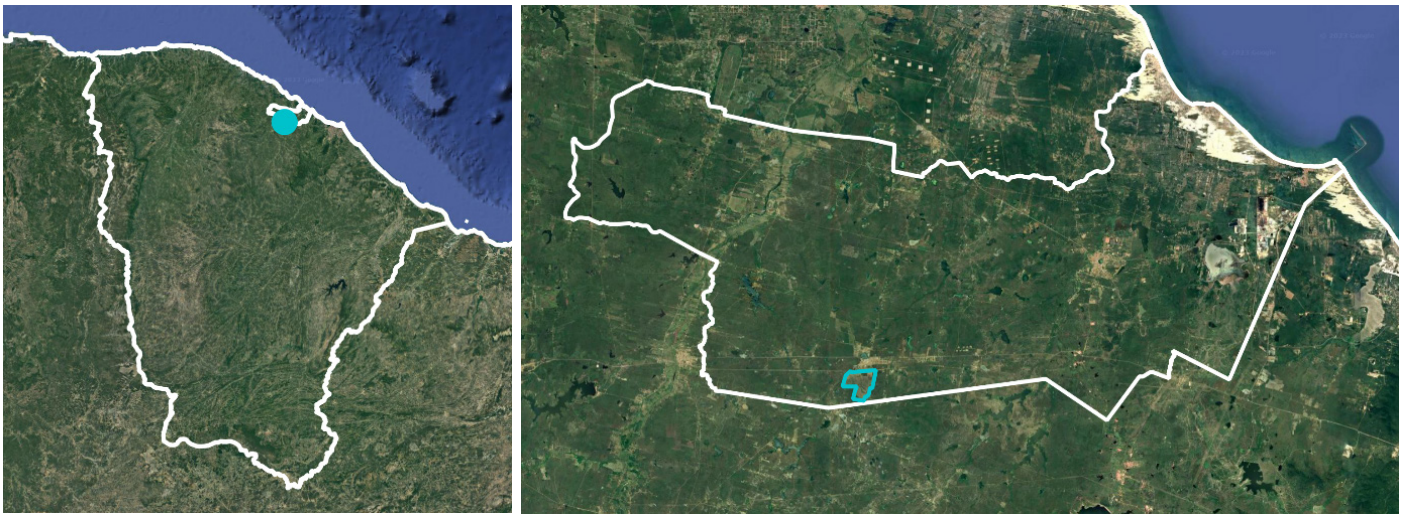


Figure 5 – Location of São Gonçalo do Amarante (in turquoise, Smart City Laguna)
Source: Google Earth Satellite Imagery (Maxar Technologies, 2023), with additions from the author.

Economically, São Gonçalo do Amarante experienced a transformation by establishing the Pecém Port Terminal and its associated industries, leading to a shift from traditional activities such as fishing and agriculture. The construction of the Pecém Port Terminal generated new opportunities, causing a shift from traditional livelihoods to diverse employment options in the port and related sectors (Instituto Planet Smart City, 2017a). The municipality's infrastructural connectivity is facilitated by a network of highways and a 22.5-kilometer railway that intersects the industrial complex, offering strategic access to the port facilities and industries (Instituto Planet Smart City, 2017a).

The selection of São Gonçalo do Amarante as the site for Smart City Laguna was driven by many factors. Planet recognized the area's promising economic and industrial potential, underpinned by its logistical advantages. The decision was substantiated by an academic collaboration with the Polytechnic University of Turin and the Bocconi University of Milan in Italy (Instituto Planet Smart City, 2019). Through an analysis of the socioeconomic landscape, population dynamics, and the influence of the Pecém Port Industrial Complex, it was predicted that São Gonçalo do Amarante would experience significant population growth. The municipality's expansion over the past two decades, including a surge in industries and employment, signaled a favorable environment for the envisioned smart city (Instituto Planet Smart City, 2019). With that, the company saw the opportunity to provide housing in a rapidly developing region, thus laying the groundwork for the city's establishment (Instituto Planet Smart City, 2019). In connecting to this thesis's themes, this points towards inclusion in terms of employment opportunities.

It seems that a critical component of the decision-making process for the company was the potential economic valuation of the chosen site. Real estate value appreciation, especially in a developing city, usually hinges on strategic location, existing infrastructure, urban planning, sanitation, utilities, recreational amenities, connectivity, and security – as the company points out in its financial statements (Instituto Planet Smart City, 2020). According to Planet, Smart City Laguna's valuation trends showcased an increase of 154.5% for residential plots and 231.8% for commercial plots from August 2015 to April 2018 – see Figure 6 (Instituto Planet Smart City, 2018a). With

[3] According to the Census Data 2022, the city is now Brazil's fourth most populous city, and the city with the highest population density in the country (G1 CE, 2023).

that, Planet shows ambivalence in wanting to provide affordable housing and tackling the housing deficit while focusing on profit-driven figures.

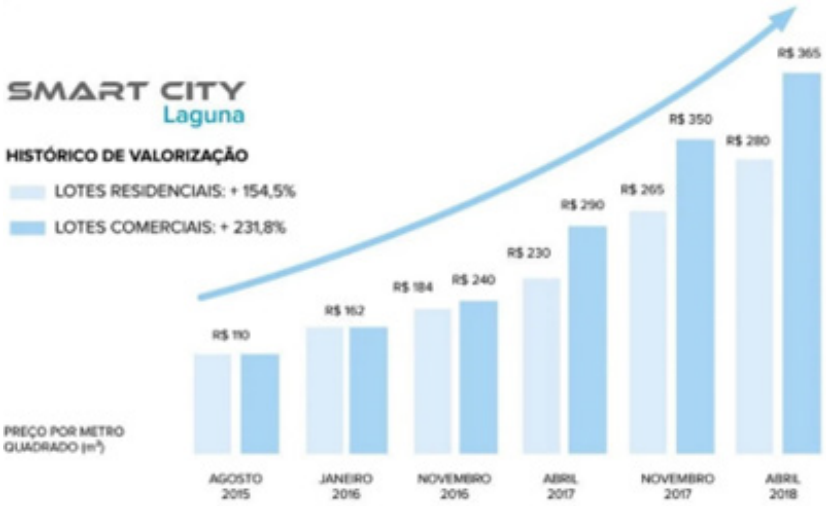


Figure 6 - SCL's history of appreciation (price per square meter)
Source: (Instituto Planet Smart City, 2018a)

Choosing SGA to implement Smart City Laguna exemplifies a strategic choice driven by geographical connectivity, economic potential, industrial growth, and demographic dynamics. According to the company, and backed by thorough academic analysis and collaborative research, the decision highlights the intersection of urban development, technology, and economic prosperity, setting the stage for the company's expectations for the development (Instituto Planet Smart City, 2019).

1.3.3. The platform city: Smart City Laguna

This subjection will be subdivided into SCL's spatial, socioeconomic, and digital aspects to connect this thesis' case study and the discussed themes (further explored in section 2).

Figure 7 - Smar City Laguna's 3D model and project
Source:(Instituto Planet Smart City, 2021a)

SPATIAL

Regarding the build-up area (see plan in Figure 7), the so-called "first inclusive smart city" (Instituto Planet Smart City, 2022a, p. 'landing page') is a neighborhood - or platform city - in the Croatá District (see the upper part of Figure 8) of São Gonçalo do Amarante (shown previously by Figure 5), as mentioned.

As mentioned before, in its 330-hectare development, SCL planned for 7,065 units. Their Brazilian website showed that in August 2018, the first stage of construction was delivered, with 2,700 plots sold (Instituto Planet Smart City, 2022a). Still, after COVID, there's little clarity on which phase of the project is done, and the number of buildings finished is much lower than what is said to have been sold.

Figure 8 - Location of Croatá and Smart City Laguna (in turquoise).
Source: Google Earth Satellite Imagery (Maxar Technologies, 2023), with digitalized additions from the author.

The spatial layout of SCL declares to have been planned with functional diversity and land use, and it is divided into eleven distinct neighborhoods (see Figure 9), each with its unique thematic identity[4] (Instituto Planet Smart City, 2018b). The land use is distributed as 78% residential, 15% commercial, and 7% industrial activities – which raises questions on what is meant by 'functional diversity'; additionally, the development claims to have 620,000 square meters of parks and a green belt encircling the urban limits (Instituto Planet Smart City, 2021a). Implementing the green belt indicates spatial distancing from the adjacent core area of Croatá situated to the north of the development site.

Figure 9 - Smar City Laguna's planned layout
Source: (Instituto Planet Smart City, 2018b)

[4] The theme for each quarter is: musicians, history, innovation, sculptors, writers, science, poets, spectacle, sports, painters, and flamingos. Most of them regarding important figures of Brazilian culture, to appeal to a sense of belonging and community building.

The build-up reality of the development in April/2023 (when the researcher visited the area) can be seen in Figure 10 and Figure 11. With 431 houses built (all sold, but not all occupied) and 86 houses under construction. The Instituto Planet Smart City owns and manages the buildings of the: Landscape Company, Civil Construction Company, and seven other buildings - one being the Innovation HUB and the other being administrative. Part of the HUB building is now being rented to a private pre-school. Additionally, there are three small commercial shops (a supermarket, a bakery, and a pizza place) - see Figure 10.

Figure 10 - Smar City Laguna's current drone image
Source: (Instituto Planet Smart City, 2022a)

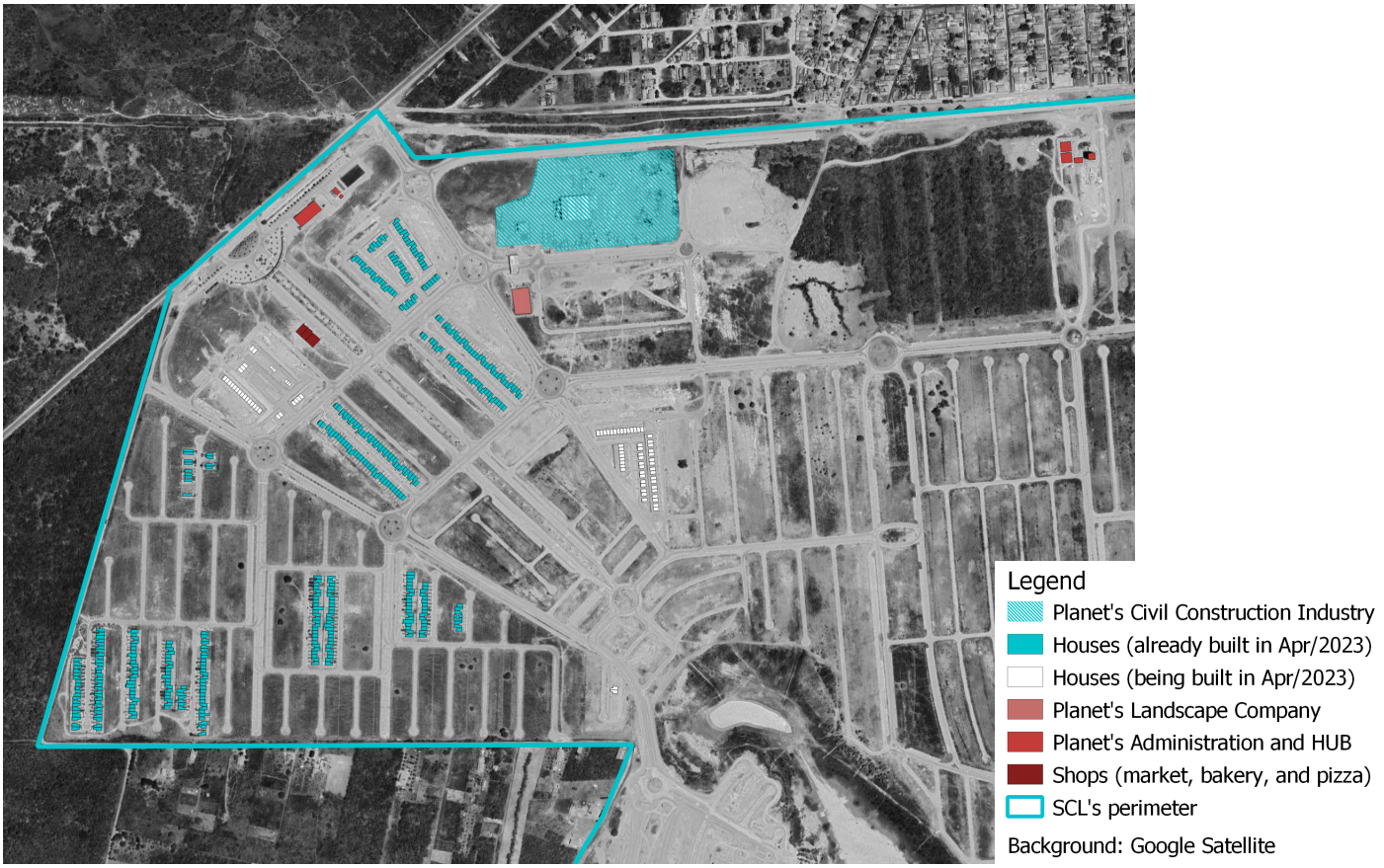
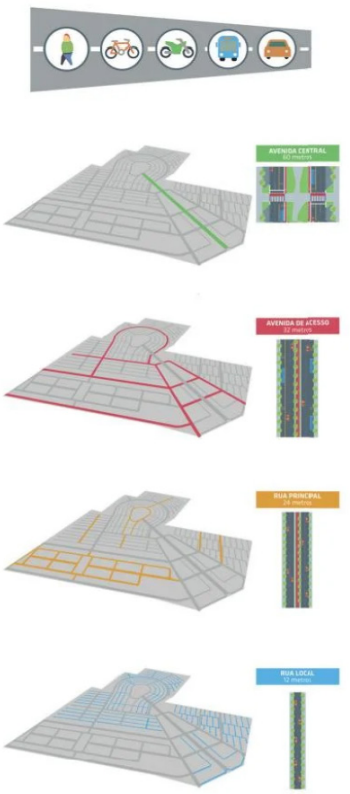


Figure 11 - Smar City Laguna's current build-up (April/2023)
Source: Google Earth Satellite Imagery (Maxar Technologies, 2023), with digitalized additions from the author.



Still within the spatial aspects and regarding transportation, SCL claims to emphasize sustainable mobility solutions (Instituto Planet Smart City, 2017b). The city's hierarchical road (see Figure 12) prioritizes pedestrians, cyclists, and public transport, before cars (even though public transportation does not enter the development, and with that, residents need to go to the 'main entrance' to catch buses).

With that, the dispersed urbanization and large roads make the area feel less walkable than would be desirable – even more so if you consider the hot tropical weather the region is known for and the lack of tree shade the area provides (in April/2023 when the researcher visited the area). To overcome the mentioned mobility challenges, a common practice in the region is the 'mototáxi': an unregulated alternative of transportation in which passengers use a service similar to a taxi but a motorcycle instead of a car.

Usually, motorcycle owners use their assets to make extra money with that kind of activity (like Uber), but without formalizing the service or having an application providing infrastructure for the interactions between the individual providing the service and the user – spatial informalities for Lombard and Meth (2017)

Figure 12 - SCL's road hierarchy
Source: (Instituto Planet Smart City, 2017a)

Regarding the houses, Planet offers four distinct house models (see Table 1) that display a variation of BRL 42,000.00 between the lowest and highest prices and a range of 29.06 square meters in constructed area, spanning from the smallest to the largest typologies. However, the diversity in the provided amenities is notably limited, potentially indicating a certain homogenization of the groups relocating to the area, both architecturally and demographically, or a focus on providing financial accessibility to a demographic group that typically lacks housing opportunities.

House Type	Price (BRL)	Price (EUR)	Area (m^2)	Bedrooms	Bathrooms	Kitchen	Living area	Terrace	Utility area
Olímpia	172,000.00	31,705.50	81.98	2	1	1	1	1	1
Diana	145,000.00	26,728.47	62.53	2	2	1*		1	1
Daphne	130,000.00	23,963.46	54.00	2	1	1*		1	1
Flora	130,000.00	23,963.46	52.92	2	1	1	1	1	1

*Integration kitchen-living area.

Table 1 - SCL's house typologies
Source: (Instituto Planet Smart City, 2022a)

The company presents decorated houses (see Appendix 1), showcasing different layouts and interior design options to attract buyers. Nevertheless, during the researcher's site visit, large disparities were observed between the decorations and furnishings that the resident population can achieve. The structural elements of these houses are fabricated in the area, carried out by the Construction Company (referenced in Figure 3 and depicted in Figure 8). The adoption of precast concrete elements aims for a more streamlined assembly process and reduced labor costs. According to the company, this construction model resembles Italian civil engineering standards and is thus implemented in SCL (Instituto Planet Smart City, 2023). However, due to the region's humid tropical climate, environmental aspects, such as discomfort related to insulation, sun exposure, and ventilation, were raised by residents.

SOCIOECONOMIC

Regarding SCL's socioeconomic aspects and contextualizing Planet's claim (referenced in subsection 1.3.1) to housing affordability and tackling the global housing deficit, it is important to show how the company's business model fits into the Brazilian housing context.

The Brazilian Federal Government launched a social housing financing program in 2009 to allow Brazilian citizens access to housing (both in urban and rural areas) as a solution to the housing deficit issue in the country. The program caters to the low to middle-income population[5], defined as those with a maximum income of up to BRL 8,000.00 in urban areas (different criteria applies to rural areas) (G1, 2020). It's important to note that this income threshold does not account for social benefits like welfare or pensions. Beyond income brackets and other program participation requirements, the property to be financed must adhere to a maximum value ceiling (which varies depending on each city). In addition to favorable terms and lower interest rates, other program advantages include a grace period of up to 24 months before beginning mortgage payments (applicable to properties acquired during the initial construction phase) and insurance coverage for unemployment or health-related issues during the mortgage period (Ministério das Cidades, 2023).

Since its inception in 2009, the program has changed due to shifts in leadership. Initially known as "Minha Casa Minha Vida", it was renamed "Casa Verde Amarela" under a subsequent administration (also with different criteria) and just reverted back to "Minha Casa Minha Vida" in 2023 (see program differences in Table 2[6]). Nonetheless, for the context of this thesis, it is pertinent to highlight that families falling within either Group 1 or Groups 2 and 3 possess varying eligibility criteria for the program, influencing the accessibility of different types of housing within each bracket. Regarding the Institute Planet Smart partnership with the financing program, families within Group 1 cannot access homes in SCL, creating ambivalence regarding the mission of providing affordable housing and tackling the housing deficit while leaving out the tier most in need of access.

Brazilian Government Real Estate Financing Programs					
Minha Casa Minha Vida-MCMV[7]			Casa Verde Amarela-CVA[8]		
Range	Income (up to)	Income (up to)	Group	Income (up to)	Income (up to)
1	BRL 1,800.00	€ 331.80	-	-	-
1.5	BRL 2,600.00	€ 479.27	1	2,400.00	€ 442.58
2	BRL 4,000.00	€ 737.34	2	4,400.00	€ 811.40
3	BRL 7,000.00	€ 1,290.34	3	8,000.00	€ 1,475.28

Table 2 - Comparison of Brazilian Governmental Financing Programs (urban tier)
Source: (G1, 2020), with the author adding equivalent euro amounts (2023's average rate: 5.42).

DIGITAL

Regarding SCL's digital aspects, it is important to contextualize how Planet uses its website and proprietary application to engage with potential buyers and residents of SCL in the digital realm. After hearing either about the company or the development, the website is usually people's first chance to hear what the company has to offer in more depth, so its primary function is to engage people interested in the topics of smart cities and housing and give them a taste of what is possible. With that, there's a positive tone throughout the website's communication to impress the visitor and hopefully make them interested to know more - further exploring the topic in subsection 4.1.

On the other side of this is Planet's proprietary application. In referencing the definition of 'platform city' introduced in section 1, the platform offers the residents a chance to build a sense of belonging and community building through digital means (see a mockup in Figure 11 - Planet's proprietary application mockup and the application architecture in Appendix 2: Planet App's architecture). Planet offers the residents 'smart solutions' (see Table 3), and the Planet App is the main digital way residents interact with those solutions – though there's a question on how 'smart' the solutions are regarding smart city common practices (Kitchin, 2016).

[5] For reference, the minimum wage in 2023 is BRL 1,302.00 (€ 240.00).
[6] It is important to highlight that the last change in the program is not reflected in the table since it occurred very close to the researcher's visit to SCL (April/2023), meaning the residents were unaffected by the changes at the time of the interviews.
[7] From 2009 to 2017. Reinstated in 2023 (with different criteria).
[8] From 2018 to 2022.

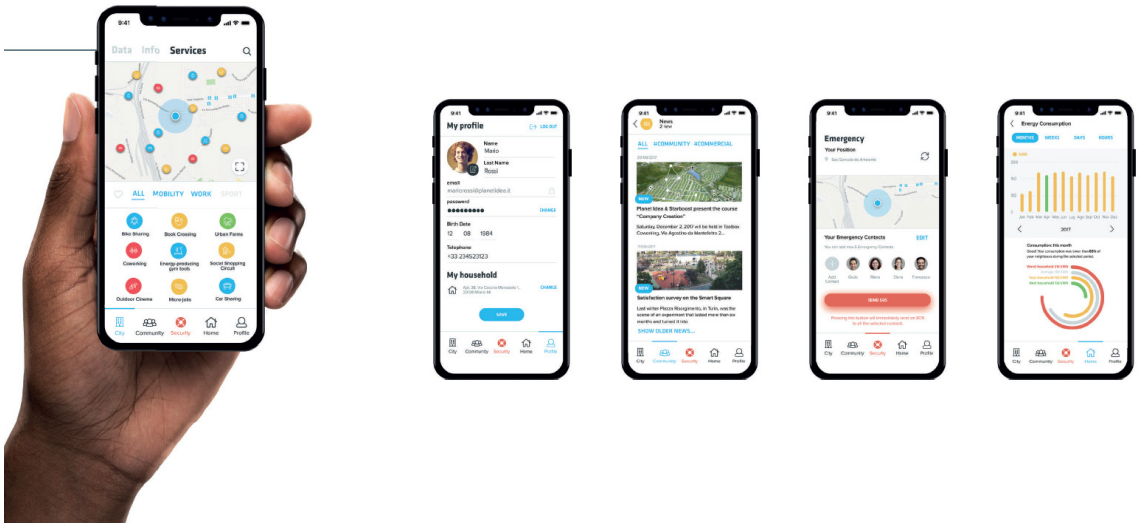


Figure 11 - Planet's proprietary application mockup
Source: (Instituto Planet Smart City, 2018b)

Smart solutions	Environment	- Smart street lighting - Urban gardens - Artificial lake - Drainage paving - Bicycle paths - Bicycle sharing - Planting trees in urban environments	- Community composting - Photovoltaic blocks - Green management - Smart irrigation for urban vegetable gardens - Selective collection islands - Crosswalks for pedestrians - Planting on construction sites
	Planning and architecture	- Innovation HUB - Cul-de-sac streets - Smart bank - Commercial hub - Playground - Fitness areas - Underground low-voltage electricity network	- Preservation of natural species - Planned roads - Functional mixed-use - Rational and sustainable - construction site - Sustainable construction site - Smart gym (kinetic energy) - Smart room
	Technology	- Planet App - Home automation* - Video surveillance system - Free Wi-Fi in institutional areas** - Community carpooling - Personal security device - Interactive information totem	- Air quality control system - Beacon - Charging island for electric vehicle - Short-term weather forecast (nowcasting) - Child tracker* - Smart home appliances*
	People	- Social manager - Children's cinema - Object library (construction tools) - Good practice guidelines - Library of books - Theory of fun - Leadership training - Smart nutrition	- Smart health space - Sewing studio - Shared kitchen - Football soccer field - Community space for fairs and social activities - Book exchange (shared library) - Public ideas board

[Company's annotations: *Optional solutions to be paid for by the resident. **The service will be available at the Innovation Hub and in institutional areas of the city to be defined according to the viability of the telephone operator.]

Table 3 - SCL's smart solutions
Source: (Instituto Planet Smart City, 2021a)

[6] From 2009 to 2017. Reinstated in 2023 (with different criteria).
[7] From 2018 to 2022.

Adopting these solutions raises questions regarding digital access, internet connectivity, the cost of additional devices (Graham, 2002), digital literacy, privacy, and surveillance (Kitchin, 2016) – though that does not appear in the company's communications with residents.

While Smart City Laguna presents an ambitious narrative for a technologically advanced and sustainable urban community, challenges related to infrastructure execution, technology adoption, and affordability are a reality. Implementing information and communication technologies, such as the Planet App, requires careful consideration of real access and inclusion, amongst other concerns. Regulation, ongoing monitoring, and evaluation would be essential to ensure fairness. And many of the features that are supposed to be offered in their communication with buyers and residents are not available or not working, which leads to the question of how much of the promised service is being delivered to residents. There lies the relevance of understanding how the company's communication is done through digital means, and integrating those tools points towards the interplay of digital with social and spatial aspects in SCL.

1.4. Research objectives and questions

Given the background presented in section 1 and the topics to be further explored in section 2, the research objectives and questions (RQ) that guide this thesis are presented below:

Main Objective: To critically evaluate the concept of an inclusive 'platform city' based in Smart City Laguna.

Specific Objective I: To conceptualize inclusion and identify how Smart City Laguna aims to be inclusive.
- RQ 1: How is Smart City Laguna presented as inclusive?
- RQ 2: How inclusion applies to Smart City Laguna?
- RQ 3: How is inclusion experienced in Smart City Laguna's environment?

Specific Objective II: To identify (potentially) existing barriers to inclusion in Smart City Laguna.
- RQ 4: What are the socio-spatial barriers in Smart City Laguna?
- RQ 5: What are the socio-digital barriers in Smart City Laguna?
- RQ 6: How do socio-spatial and socio-digital barriers influence each other in Smart City Laguna?

2. Literature Review and Conceptual Framework

Given that this thesis is set against the background of contemporary Brazilian urban development, decentralization, digitalization, gated communities, smart and platform cities, and the dimensions of inclusion, different pieces of literature must be connected and brought together into the conversation. Examining each subsection below will frame where this thesis fits argument-wise, which will later be important for understanding the motivations of the case study's analysis.

2.1. Decentralization, digitalization, and gated communities in Brazil

Brazil's urban decentralization presents planning and development challenges. The country has seen tremendous growth in urbanized areas over the past decades (see Figure 124); in 1985, this was 1.2 million hectares; by 2021, this figure has more than tripled to 3.7 million hectares (Projeto MapBiomas, 2022b, p. 1). While there has been an expected movement toward bigger cities, there is also an increasing parallel movement toward small and mid-size cities, creating pressure points in their planning and development.

The population leaving behind the bigger Brazilian cities is trying to escape chaotic transit, air pollution, lack of space, and lack of contact with nature (Villaça, 1999); however, they still want to enjoy the infrastructure that they were once provided – quality services and amenities (Villaça, 2011).

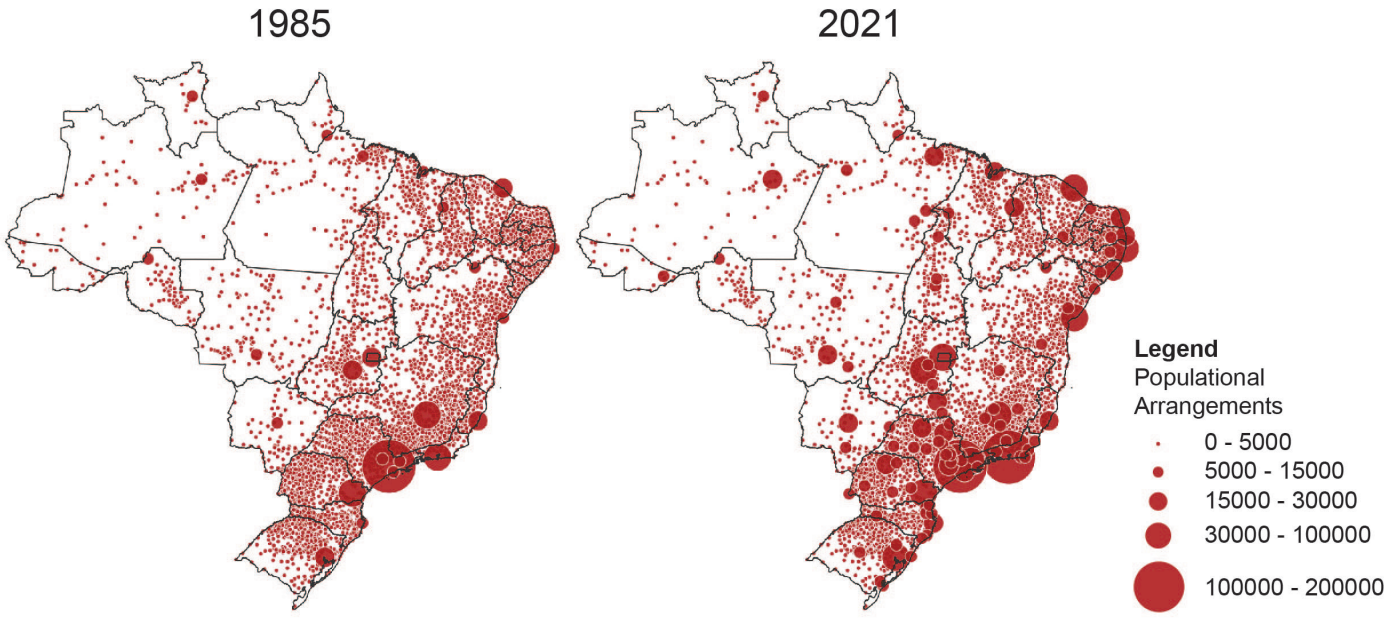


Figure 12 - Urbanized areas in Brazil (comparison between 1985 and 2021).
Source: (Projeto MapBiomas, 2022b, p. 1); translation by the author.

Throughout this process, the dispersed urban pattern of longer residential blocks, poorly connected to the network, with low densities and low land use diversity, were spatialized throughout the country (Reis Filho et al., 2007). At first, the dispersed pattern diversified the production of the urban space implemented by development companies - mostly aiming at a fast and lucrative reproduction, not necessarily aiming at walkability increase, better connectivity with the network, higher densities, or more diversity of land use in the spaces - and that very quickly (or maybe not quickly enough) became a source for more urban reflection and discussion amongst urban planners (Corrêa, 2004). In this scenario, private companies within urban development played a big role in understanding the demand for growth and answering it – many times planning and developing large portions, if not entire, cities – while establishing a type of dispersed occupation that has become part of the urbanization history of the country (Caldeira & Holston, 2005). Corrêa (2004, p. 12) lists the stakeholders that participate in the constant process of (re)making the Brazilian city as: "the owners of large industries; the landowners; the real estate developers; the State; and the excluded social groups." In this configuration, the state can regulate urban production, and excluded social groups should be able to fully enjoy their right to the city (Lefebvre, 2011). Although through different strategies (and with some conflict), the bulk of urbanization in the country was privatized, dictated by the interests and power of owners of large industries, landowners, and real estate developers (Corrêa, 2004).

According to Caldeira (1996, p. 303), "fortified enclaves are privatized, enclosed, and monitored spaces for residence, consumption, leisure, and work" that could then be translated into shopping centers, office complexes, low and high-rise apartment complexes, and of course, the gated single-family home communities. Fortified enclaves are island-type spaces that reject spatial and social relationships with their surroundings. In most cases, they are presented as highly flexible, fitting almost anywhere but maybe not relating to any local context (Augé, 1992). A strategy that (1) produces a sprawled type of urbanization; (2) contributes to the landscape's homogenization; and (3) establishes a scalable and reproducible business model (Caldeira & Holston, 2005). Most of the real-life examples that used that strategy ended up focusing on the urban residential function, in this case consisting of one or more big, private, and closed-off plots of land, with single-family homes, including shared-use equipment and amenities (such as squares, children's playgrounds, sports clubs, and courts, gyms, among others), and a few and far between local commerce and services to provide a more convenient urban experience to residents of those compounds (Caldeira, 1996).

The interplay between decentralization, digitalization, and gated communities shapes urban development. Decentralization processes can influence the distribution of digital resources and services, impacting the accessibility of technological advancements for different neighborhoods (Hick et al., 2008). Digitalization initiatives can exacerbate or alleviate spatial disparities, depending on their inclusivity and accessibility (M. Graham, 2019). Gated communities, as exclusive spaces within cities, reflect socio-spatial fragmentation and engage with digital technol-

ogies to enhance security and convenience (Neves & Steinberg, 2023). The potential convergence of digitalization and gated communities raises questions about surveillance, data privacy, and the implications of creating digitally connected yet socially isolated urban environments (S. Graham, 2002).

The last decades have witnessed the evolution of urban development in Brazil and beyond through the lenses of decentralization, digitalization, and gated communities. These trends offer challenges for urban planners, policymakers, and scholars. Navigating the complexities of decentralized governance, digital inclusion, and spatial fragmentation requires integrating these factors into urban policies and strategies, fostering more inclusive, equitable, and sustainable cities.

2.2. Smart City and Platform City: concepts and implications

In trying to overcome the societal inequalities reinforced by the gated community and amongst the discussions about a sustainable city and what that entails (Swyngedouw, 2016), and internet access and the use of technology in cities (Morozov & Bria, 2018) the smart city concept was brought to the forefront of the global urban debate in the last 20 or so years (Cocchia, 2014). The term, and the many attempts to define it, usually points to the increase in data collection, use, and the application of different analyses to plan cities (Shelton et al., 2015). The International Business Machines Corporation (IBM) proposed a city that could: capture data via sensors and integrated information (the 'instrumented' city), integrate that data into platforms (the 'interconnected' city); and offer the analytical tools to improve operational decision-making (the 'smart' city) (Harrison et al., 2010). And that made the concept gain traction worldwide and seemed like the solution to all the problems the gated community had created.

Nonetheless, the discussions about the concept are ongoing. They range from the belief that capturing, storing, using, and sharing data about the city would already create a smart environment (Hollands, 2008); to the critical stances towards IBM's definition, especially around the missing discussions about open innovation and user engagement, or in other words, having people as protagonists (Paskaleva, 2011); and the understanding that technology can empower citizens so long as technologies adapt to people's lives and demands rather than the other way around (Kitchin, 2014).

Or the even newer and more poignant for this thesis, the concept introduced in 'Platform City People' by David Murakami Wood (forthcoming), the 'platform city' is an urban development often observed as a platform-based high-investment project associated with corporate-oriented urban forms. It refers to a distinctive urban paradigm emerging within the context of the globalized age, characterized by the convergence of technology, surveillance, security, and urbanism through the utilization of the 'Internet of Things-IoT' in a given space. In contrast to the notion of the smart city, the concept introduces a narrower spatial scope where a digital-urban assemblage interconnect to objects and infrastructures through wireless networks and distributed sensor platforms (facilitating monitoring and managing). The 'platform city' offers insights into the evolving dynamics of urbanization, technological integration, and governance, reflecting the intertwined relationship between digital innovations, urban spaces, and social dynamics. And Murakami Wood (forthcoming) characterizes those communities' envisioned inhabitants, revealing an identity shaped by the discourse of the proposed cities and their policies. These inhabitants are attributed as being entrepreneurs; focusing on innovation and economic agency; possessing freedom and leadership qualities; indicating a degree of autonomy and influence; embodying the 'tech bro' archetype; emphasizing a technologically adept and entrepreneurial persona; being data-driven; highlighting reliance on data analytics for decision-making; representing frictionless and privacy; suggesting seamless urban experiences and controlled personal information; prioritizing safety and security; reflecting a controlled and protected urban environment; embodying a sense of colonization and property ownership; reflecting neoliberal capitalist values; embracing multiculturalism and design; emphasizing diversity and planned urban aesthetics; promoting sustainability; indicating environmentally conscious living; and lastly, invoking notions of being 'all watched over by machines of loving grace'. With that, the 'platform city people' concept encapsulates a constructed identity that emerges from the promotional narrative surrounding the 'platform city'.

In going back to the current context of global shortages and crises like housing, energy, socioeconomic, climate, health, and food crises, among others (Cardullo, 2021), the new and shiny opportunities arising from the increas-

ing advances in technology (Hind, 2022); in combination with the growing expectations of citizens for possibilities of urban change (Yönet & Yirmibeşoğlu, 2018); and the wave of technological fixes proposed by a range of proprietary applications (Morozov & Bria, 2018) provides fertile ground so that the narrative around smart cities becomes almost an all-encompassing planning and development strategy to answer all problems within cities.

> *What does it matter? Why should we care about this new architectural and urban design issue? It matters because the emerging civic structures and spatial arrangements of the digital era will profoundly affect our access to economic opportunities and public services, the character and content of public discourse, the forms of cultural activity, the enaction of power, and the experiences that give shape and texture to our daily routines. […] If we understand what is happening and can conceive and explore alternative futures, we can find opportunities to intervene, sometimes to resist, to organize, to legislate, to plan, and to design.*
>
> (Mitchell, 1996, p. 5)

Through the perspective offered by Mitchell above, we can ask to what extent stakeholders are involved in the process of city and urban-life making and their power in the process as a whole (Przeybilovicz et al., 2022) or whether all fall prey to the technological advancements, imagining that there is no control, accountability, or responsibility over the process (M. Graham, 2019), and how the decisions upon which strategies to use in and of themselves define experiences, perceptions, and overall construction of the world (Cardullo, 2021).

Understanding the Brazilian societal dynamics through the lenses of processes within cities can often point toward dominant groups trying to hide either inclusions or exclusions - and privileges - in the production of urban space (Corrêa, 2004). For example, the city center of older and bigger cities in the country, maybe understood as the 'true' center of the city. A high-income group occupies that imagined center. Once abandoned by high-income groups and appropriated by low-income groups, it becomes deprived and, therefore, a problem (Villaça, 2011).

> *The excluded social groups have as housing possibilities the densely occupied tenements located near the city center - old residences that in the past were inhabited by the elite and that are now degraded and subdivided -the house produced by the self-building system in peripheral lots, the housing developments produced by the State, as a rule also distant from the centre, and the slum.*
>
> (Corrêa, 2004, p. 29) – translation by the author.

In exploring further the Brazilian societal dynamics while having Corrêa's poignant and precise reading of it in mind, Holston (2008, p.82) expresses that "the combination of these political, civil, social, and spatial exclusions turned Brazil's universalizing national membership into a highly differentiated citizenship", therefore, connecting the building – through the years and processes - of political and civil national citizenship with the social and spatial development of the country. The political, civil, social, and spatial aspects directly link to what power exclusion exerts within society (reinforcing existing inequalities and division). According to his work in the country, Holston (1998) points to the emergence of inclusive and insurgent citizenship for low-income groups, and their (re)appropriation of the city resulted in the reactive movement of high-income groups leaving centers towards differentiated and exclusive communities. The focus of Corrêa and Holston is on the marginalized communities and the effects of their (re)gaining urban power; here, those analyses serve as a comparative conceptual framework to contrast with the 'other side of the coin' – to try and understand the effects of their reactive movements.

> *In the particular case of Brazilian cities, it is essential to articulate the role of urban segregation in producing social inequality and domination. That's because segregation (in general as well as in many of its 'official' expressions) is a form of social exclusion and domination that has a spatial dimension.*
>
> (Villaça, 2011, p. 41)

Based on Villaça's understanding above and its central role in constructing exclusion and domination of urban life, it is possible to conclude that inclusion – on the opposite side of the spectrum from exclusion – also has a spatial dimension.

The intertwining of social and spatial dimensions has traditionally been a focal point in comprehending urban societal divisions, exclusions, and inequalities. This connection has been extensively explored within urban studies,

particularly in analyzing urban divisions and inclusion (Villaça, 2011; Corrêa, 2004; Holston, 2008). However, the emergence of smart city concepts introduces a new layer of complexity by interlinking the digital dimension with urban life's social and spatial aspects. Critiques of smart city developments underscore the intricate relationship between data-driven technologies and the existing social and spatial fabric (Dalton et al., 2016). There is a need for an update to earlier debates on divisions and inclusion within urban development as the trajectory shifts toward novel urban paradigms such as the 'platform city'. By bridging the longstanding analysis of social and spatial dimensions with the contemporary digital realm, there is a chance for fresh insights into the multifaceted dynamics shaping modern urban environments.

2.3. Terminology's relationship

For the argument of this thesis, the terminologies of 'fortified enclaves', 'gated community', 'smart city', and 'platform city' were laid out above. It is important to show how they are interconnected through their roles and implications in shaping contemporary urban development.

'Fortified enclaves' here are understood as a broader scope of privatized and enclosed urban spaces characterized by their exclusionary nature, often taking the form of shopping centers, office complexes, and residential gated communities - these enclaves reflect socio-spatial distancing. With that, the 'gated community' is understood as a type of fortified enclave, specifically residential areas with physical barriers and controlled access, reflecting socio-spatial distancing. Both 'fortified enclaves' and 'gated communities' contribute to the landscape's homogenization, introducing social and spatial exclusion.

'Smart city', for this thesis, is the broader urban development trend in integrating digital technologies to optimize infrastructure, services, and governance through data collection, analysis, and decision-making. The concept emphasizes improving efficiency, sustainability, and quality of life through digital aspects. With that, the 'platform city' here is understood as a form of smart city, represented more specifically by a contained high-investment urban development that provides a platform (created and managed by a corporation) to integrate digitally offered services – these reflect socio-digital distancing. While smart cities emphasize data-driven optimization, platform cities encompass a narrower urban development perspective.

These terminologies interact within the broader context of urbanization and technological advancements. The 'fortified enclaves' and 'gated communities' reveal socio-spatial distancing; the 'smart city' can reveal socio-digital distancing; and the 'platform city' seems to combine socio-spatial and socio-digital distancing. Therefore, these terminologies collectively reflect the evolving dynamics of urban development, where social, spatial, and digital dimensions intertwine to shape contemporary urban landscapes.

2.4. Inclusion's socio-digital and socio-spatial dimensions

The intricate interplay between social, digital, and spatial dimensions of inclusion (and exclusion) within urban contexts is a recurring theme in contemporary discourse (Mariën & Prodnik, 2014). In response to the exclusions often associated with gated communities and similar spatial arrangements, inclusion has emerged as a counterpoint, highlighting the imperative of creating more equitable and accessible urban environments (Cass et al., 2003). This conceptual contrast raises pertinent questions about the potential of technologies to contribute to inclusion across these dimensions. To further explore this notion, it is essential to delineate what digital, social, and spatial inclusion entails. And according to Titchkosky (2011):

> *Processes of inclusion, and thus access, can arise only insofar as exclusion has already become an issue and is already perceivable. (p. 9)*
> *Access is not just a word that indicates a lack of inclusion; it is also a way of perceiving, talking, and acting. (p. 13)*
> *It is, however, not easy to face the crisis of identity [...] where we are positioned between what is (exclusion) and what ought to be (inclusion and more). (p.27)*
> *[...] understanding access as a complex form of perception that organizes socio-political relations between people in social space. (p. 9)*

Using Titchkosky's approach to inclusion (coming from social theory, cultural studies, and disability studies), the understanding of inclusion broadens to a process and a form of perception that can organize the relationship people have with physical and digital spaces.

Concerning the social dimension of inclusion, Rawal (2008, p. 171) affirms that social inclusion "[...] has not been defined in its own right. In literature conceptualizing exclusion, conceptions of inclusions are implicit and unproblematized. In fact, social inclusion is seen to be defined in relation to social exclusion.". In addition to Rawal's implying that many sources define social inclusion only concerning exclusion, it could be argued that exclusion and inclusion can occur simultaneously - meaning individuals and groups may be excluded while included in different domains or situations.

With the spatial dimension of inclusion, Benjamin and Lacis (1925) expanded the definition of "porosity" from a spatial description of the natural landscape on which the city was built to include its architectural form and public life. More recently, Wolfrum et al. (2008, p. 18-19) argued that "porosity" is valuable to urbanism because it acknowledges the relationship between physical and social realms to promote a spatial culture of inclusion, viewing the city as a force for tolerance – advocating for "openness, connectivity, and interpenetration".

With the addition of digital inclusion to this discussion, the concept has gained prominence in policy and research circles over time and expanded to encompass more than just access. Rather, digital inclusion is now viewed as a process that involves overcoming direct barriers to ICTs, such as access, motivation, support, and digital skills (Haché, 2011). This process enables individuals to reclaim control over their lives and increase their capacity to participate in different areas of life, such as employment, education, culture, politics, and more.

Therefore, to connect what was discussed above, the discourse on inclusion in urban contexts emphasizes the intricate interplay of social, digital, and spatial dimensions, addressing the need for equitable urban environments in response to exclusions seen in spatial and digital spaces. The understanding that inclusion is often defined in opposition to exclusion and that both can coexist points towards the ambivalence of the discourse itself. The integration of these dimensions reflects the complexity of fostering inclusive urban environments and the multifaceted approaches required to achieve such a goal.

2.5. Conceptual framework

> *A new emphasis on specifically urban spatial causality has emerged to explore the generative effects of urban agglomerations not just on everyday behavior but on such processes as technological innovation, artistic creativity, economic development, social change as well as environmental degradation, social polarization, widening income gaps, international politics, and, more specifically, the production of justice and injustice.*
>
> (Soja, 2009, p. 2)

Given the literature reviewed above and reflecting on Soja's examination of the different aspects that influence the spatial dimension of urban life, we can better understand the questions on inclusion to be embedded in questions surrounding ethics (see a broader view of the theoretical umbrella terms guiding this framework in Appendix 3: Conceptual framework (macro))Error! Reference source not found. (Ziosi et al., 2022). With that in mind, this thesis focuses on how inclusion plays out in the 'platform city' scenario. As discussed in subsection 2.4, inclusion

can be a very broad term and vary depending on the field of knowledge chosen to describe it; here, amongst seven possible divisions within the subject (Ziosi et al., 2022), the path will be to define inclusion given the created contextualization and trying to understand the debate around the consequences of the presence (or lack) of inclusion. All the analysis will focus on making parallels with this research's case study so that the connections and exemplifications are clearer.

Given the contextualization above, the main focus of the research will be to explore and understand how the socio-spatial and socio-digital dimensions of inclusion relate to and influence each other in the context of the Smart City Laguna (the case study of this research) – see Figure 13

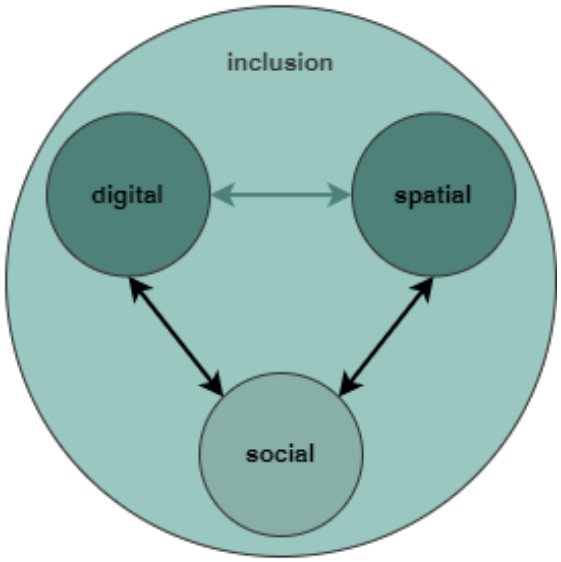


Figure 13 - Conceptual Frameworks (micro)
Source: Author's diagram

3. Research Methods

Given the background that this thesis is set against, there are many possibilities, approaches, and ways of researching the topic, which is why this chapter will describe the research methods; design and approach; sampling strategy and participant selection; data collection; data analysis; and the researcher's notes on ethics regarding the research. Examining those will frame this thesis' overall methodology, which will later be important for understanding the analysis.

3.1. Design and approach

The main focus of the research is the company's communication through its website, the residents' perceptions of how inclusion is promoted or dissolved within SCL, and the friction with exclusion. Methodologically, this thesis is a qualitative and exploratory study design chosen to describe and provide empirical evidence of a case and phenomenon.

In order to answer the research questions (from subsection 1.4), appropriate data sourcing is needed. Since one focus is the SCL claim to be the "first inclusive smart city" (mentioned in subsection 1.3.3), understanding how the Instituto Planet Smart City communicates about this inclusion is key. With that, one key source is their website – their main way of communicating with potential buyers. Another focus area is understanding the residents' perceptions about inclusion and how it is promoted or dissolved within SCL, and for that, one key source is the residents' opinions themselves – done through semi-structured interviews. After which, 'visual vignettes' (to be further explored in subsection 3.4) will combine text from the interviews' transcripts with images that represent

some aspect of the socio-spatial and socio-digital dimensions.

Since interviews are key to this thesis, as mentioned above, to create a balanced gathering of data regarding perspectives, the sampling strategy is explored further in the next subsection, 3.2.

3.2. Sampling strategy and criteria for participant selection

The objective of having a sampling strategy and criteria for participant selection was to gather qualitative data systematically and be more effective due to the limited time to conduct fieldwork (two weeks).

- Sampling strategies

The sample size was 10 to 30 respondents, depending on the availability of people to participate (considering the time the researcher had for fieldwork) and the maximum amount the researcher had to provide the participants with a token of appreciation. The sampling was a Non-Probability Sampling (Bryman, 2015), divided in:

  - o 'Convenience sampling' (p. 201): since the group was hard to access, with either very little or opaque information about it being available beforehand, the door-to-door approach allowed this somewhat 'invisible' community to be accessed based on the researcher's convenience, being more cost- and time-efficient (since the researcher defined on the spot who to approach and where to 'knock', and when to pivot); and

  - o 'Snowball sampling' (p. 202): after identifying and contacting the first gatekeeper and asking them to identify and lead to seeds, and so forth, until there was sufficient data – this approach enabled access to hard-to-reach respondents beforehand and showed local sensitivity since it depended on their availability.

Therefore, both sampling approaches started by asking initial respondents identified via door-to-door canvassing and other gatekeepers who facilitated contact with other neighborhood residents to identify suitable respondents. The sampling goal was to reach one person per household, gender parity (if possible), social demographic diversity (if possible), and age diversity (if possible). The reason for the categories is to investigate if there was diversity in a community that is supposed to be inclusive; therefore, investigating whether there is or not gender, social demographic, and age diversity could point to the specificities of how this community was created, and it is growing; and with that (combined with the researcher's knowledge of the broader societal dynamics of the case study), give insight on why that is.

In qualitative research, offering participants a token of appreciation is customary upon their participation in an interview. This practice serves a dual purpose – expressing gratitude and providing an incentive. The aim was to maintain a positive community relationship and conduct research ethically, particularly given the challenges of fieldwork, especially when undertaken solo and within a constrained time.

With that, a token of appreciation will be provided for those participating in the semi-structured interviews. The criteria for the token follow the following guidelines: monetary, though not through cash or bank transfer, but rather through a gift card or a voucher, or other option depending on local availability and convenience of use for the participants. Local context, the average hourly wage of workers, and the purchasing power were taken into account, and the pre-determined amount would be a total of EUR 300 (more or less EUR 10.00 per respondent, or BRL 50.00).

- Sampling criteria for participant selection

For the primary qualitative data collection and the choice of participants, for all those who the researcher came in contact with during the fieldwork period, the selection criteria were:

- residents of SCL;
- adults (18+);
- participated in the household's decision-making process to move to SCL (self-proclaimed); and
- the household is either a participant or a non-participant of a governmental real-estate funding program (for example, "Minha Casa Minha Vida" or "Minha Casa Verde Amarela").

As mentioned before, in addition to the criteria above, the researcher pursued to reach one person per household, respondents' gender parity (if possible), age diversity (if possible), and parity between households that get governmental real-estate funding and those that don't (if possible).

3.3. Data collection

The objective of having a sampling strategy and criteria for participant selection was to collect qualitative data systematically and be more effective due to the limited time (two weeks) to conduct fieldwork. The following explains further how the data collection process took place.

PRIMARY DATA COLLECTION

- Individual interviews

The researcher opted for semi-structured interviews (Bryman, 2015). The semi-structured interviews with residents were conducted in person (individually, depending on the participant's availability, and they were audio recorded). The semi-structured approach guided the researcher with a step-by-step of the whole process (see Appendix 4: Data collection step-by-step (semi-structured interviews)). The interviews with residents were pivotal in understanding what SCL is and how it is experienced (to be further explored in subsection 4.3). For the semi-structured interviews, an information sheet and the consent form were necessary to ensure that the participants were aware of the research, their participation, and potential risks (see Appendix 5: Fieldwork: information sheet and consent form).

- Researcher's observations

The researcher's observation of the interviewees was to support the researcher's understanding of the perceptions being provided by the residents' answers, therefore enriching the researcher's understanding of the topic and allowing for deeper connections to be made between the resident's perceptions and the researcher's observations. In the fieldwork, the researcher did photo-taking and note-taking, but carefully not to expose individuals – avoiding any identifiable characteristics, just personal impressions or notes for later remembrance.

SECONDARY DATA COLLECTION

- Use of existing data sets

The existing data sets used are publicly available information such as Google satellite imagery, shapefiles from the Brazilian Institute of Geography and Statistics-IBGE, shapefiles from Open Street Maps, and the Instituto Planet Smart City's website (the sections that are freely accessible).

- Geographical information (GIS)[9]
  - Brazilian Institute of Geography and Statistics-IBGE
    >The researcher used IBGE's official website to find relevant shapefiles for a bet ter understanding of the area geographically (national, regional, and local);
  - Open Street Maps-OSM
    >The researcher used OSM's free and open geographic database (maintained by volunteers) to check for different types of data (narrower scope) that could be interesting for this thesis (such as SCL's internal roads system).
  - Author's digitalization from Google Sattelite Imagery
    >Since the SCL is relatively new and not as well known, the researcher had to digigalize some information in Google's satellite imagery (such as the houses already built) to complement the information from the other sources.

[9] Important to note that location data from the transcripts was based only on the participants mentioning their last place of residence and their current place of work. References to that information were generalized to show insights about the spatial scope of where people are coming from and going to, but not individually, to minimize the chance of identification of participants.

- Website screenshots
  - Even though the website isn't a data set per se, it is existing content and not because of this thesis (which is why it is framed here as secondary data collection). Since the company's website is its primary way of communicating with potential buyers, the strategy here was to take screenshots of the whole website (all the sections and full pages of content – both images and text) to have an overview of everything they are communicating publicly in terms of inclusion, to understand what is the overarching theme, what topics are repeated the most and how is the communication done.

3.4. Data processing and analysis

Systematic data collection aims to simplify data processing and analysis (as much as possible when dealing with qualitative data). The following explains further how the data processing and analysis took place.

The methods chosen for processing the semi-structured interviews were the transcription of the audio files into the text used online platform Amberscript[10] for a first run through the information, after which the researcher detailed the transcriptions based on personal knowledge of local accents and vocabulary used. After this, the thematic coding and analysis of the content of the interviews were carried out via thematic analysis (Maguire & Delahunt, 2017) using the software Atlas.ti[11]. The methods chosen for processing the geographical information were using the QGIS[12] software. In the case of the publicly available and downloaded shapefiles loading into the software, in the case of the digitalized data, the researcher used a base map with Google's Satellite Imagery to draw upon, using it as a guide. The methods chosen for processing the website screenshots were the simplest tool for capturing screenshots on computers (here, Microsoft's Snipping Tool[13]). After this, the thematic coding and analysis of the content of the screenshots were carried out via thematic analysis (Maguire & Delahunt, 2017) using the software Atlas.ti. The thematic analysis was done in two ways: first, the most reoccurring themes coded within the software, and later, a thematic coding based on the themes discussed in this thesis (see Table 4).

INCLUSION	EXCLUSION
Social engagement	Social distancing
Spatial engagement	Spatial distancing
Digital engagement	Digital distancing
Engagement of sense of belonging	Distancing of sense of belonging

Table 4 – Thematic coding (website and semi-structured interviews).
Source: Author.

The method chosen for analyzing and presenting the combination of the thematic analysis of the interviews and the satellite geographical information was to produce 'visual vignettes'. Here, "as a format, Visual Vignettes combine the genre of the vignette – widely used across the qualitative social sciences to succinctly capture a telling moment – with that of the photo essay." (Gugganig & Douglas-Jones, 2021, p. 215). The idea is to connect recurring coded themes, using a representative quote, with a satellite image that conveys what is being experienced and expressed.

3.5. Note on ethics

Ethical consideration in qualitative research (not exclusively) is an ongoing process and responsibility for researchers, constantly having to reassess potential ethical dilemmas across the research's life cycle. And confidentiality,

[10] A cloud-based speech-to-text service that offers transcription of recorded audio. The use of such a tool was recognized as safe, in terms of data privacy, by UT-ITC's data steward.
[11] A computer-assisted qualitative data analysis software.
[12] A free and open-source cross-platform desktop geographic information system application supports viewing, editing, printing, and analyzing geospatial data.
[13] A screenshot utility tool - can take still screenshots of rectangular areas, a free-form area, or the entire screen.

privacy, and research integrity are extremely important while dealing with humans (in the case of this thesis, in the direct form of semi-structured interviews). It is important to note that after going through a thorough ethical evaluation process (post proposal and before the fieldwork), ITC's Geo-Information Sciences Ethical Committee approved the researcher's submitted documentation with positive advice.

The risks identified regarding confidentiality related to dealing with sensitive data, individual privacy, location privacy, and group privacy, and mitigation strategies were implemented to mitigate those risks. Specifically, to ensure confidentiality, only the researcher had access to the complete and raw data (consent forms and interview recordings). The access was done through password-protected folders in the researcher's computer, hard drive, and cloud drive (linked to the researcher's institutional email address)[14]. The research supervisors had access to the data already anonymized, processed, and analyzed (for reviewing and checking the researcher's work). In more specific terms, the ethical risks associated with this thesis were:

- The collected personal data and background information potential to identify natural persons.
    - Mitigation strategies:

        - The name appeared only in the consent form; after the signature and the interview, the consent form was stored in a password-protected folder in the researcher's computer, hard drive, and institutional cloud storage. The same happened to the personal phone numbers collected (in case follow-ups were necessary), after which an Excel file with the information was stored in a password-protected folder in the researcher's computer, hard drive, and institutional cloud storage. The interview transcripts were anonymized through aliases to humanize the participants while providing confidentiality and privacy.

        - Age, gender, and participation in governmental real estate funding programs appeared in the interviews. References to age, gender, and participation in funding programs were done only in a generalized manner to provide insight into the profile of the group that participated in the research and mitigate potential participant re-identification.

        - Location data was based only on the participants mentioning their last place of residence and their current place of work. References to that information were generalized to show insights about the spatial scope of where people are coming from and going to, but not individually, to mitigate the potential re-identification of participants.

Personal data handling involved, as mentioned, utilizing password-protected and encrypted folders stored in institutional (UT's) OneDrive, following ITC's research data steward's recommendation, enhancing security compared to personal cloud storage. According to ITC/UT's data policy, the data will be archived post-project, with a detailed data management plan specifying organization (see Appendix 6), collection methods, and utilization, ensuring future usability while safeguarding confidentiality through password protection and controlled access.

4. Analysis and Findings

Given all the building-up to here, this section presents the analysis and findings for this thesis, which will combine what we discussed up to here and what was found. Going back to subsection 1.4, to link the research objectives and questions to the following subsections, we have:

Subsection 4.1 focus on research question 1: "How is Smart City Laguna presented as inclusive?" with the themat-

[14] The use of such a tool was recognized as safe, in terms of data privacy, by UT-ITC's data steward.

ic analysis of the website screenshots. Subsection 4.2 will focus on research question 2: "How inclusion applies to Smart City Laguna?" bringing back what was discussed in the literature review (section 2) and how it applies to the SCL case study. Subsection 4.3 focus on research question 3: "How is inclusion experienced in Smart City Laguna's environment?" with the thematic analysis of the semi-structured interviews. Subsection 4.4 focus on research question 4 and 5: "What are the socio-spatial barriers in Smart City Laguna?" and "What are the socio-digital barriers in Smart City Laguna?" with the visual vignettes combining the semi-structured interviews with satellite imagery. And lastly, subsection 4.5 focus on research question 6: "How do socio-spatial and socio-digital barriers influence each other in Smart City Laguna?" also with the visual vignettes combining the semi-structured interviews with satellite imagery, focusing on the mutual influence of the dimensions.

4.1. Smart City Laguna as inclusive

On November 17th, 2022, the website's content was screenshot from top to bottom - all sections and each section's full content – generating 53 full screenshots (see the website's architecture in Figure 14). The processing and analysis methods described in subsection 3.4, thematic coding and analysis (Maguire & Delahunt, 2017), were carried out via thematic analysis using the software Atlas.ti – on the text and images used to communicate the company's narrative to potential buyers. There were two types of coding: one based on thematic repetitions and so based on the text itself, through Atlats.ti's AI coding tool, patterns of repetition started to surface, and one based on Table 4 – Thematic coding (website and semi-structured interviews)., presented earlier (in subsection 3.4), where the themes of this thesis were applied to the content to check how it would respond.

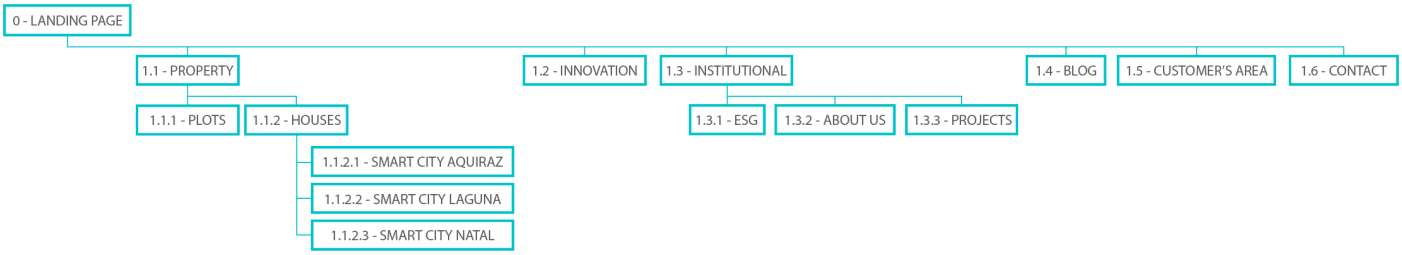


Figure 14 - Planet Website's architecture
Source: Author based on Instituto Planet Smart City's Brazilian website (2022a)

Figure 15 - Planet Website's architecture
Source: Author based on Instituto Planet Smart City's Brazilian website (2022a)

In the Atlas.ti AI thematic repetitions coding, using only the text in the screenshots, the patterns shown appeared in Figure 15 - Thematic repetition (top coded). Showing as the following list: technology (8), quality of life (4), community (4), housing transformation (4), superficiality (4), excessive advertising (4), exaggeration (4), lack of foundation (4), financial ease (4), sustainability (4), engaging (4), belonging (3), diversity of families (3), collaboration (3), investment (3), and spatial diversity (3). This shows some results that seem aligned with the company's narrative and the conceptual frame created behind its implementation; others do not. Technology, quality of life, community, housing transformation, financial ease, sustainability, collaboration, and investment seems to be in the wheelhouse of the company's communication with its potential buyers and future residents (very much aligned with Murakami Wood's description of the 'platform city people' – mentioned in subsection 2.2 – and the narrative constructed wrapped in that. However, the other codes (superficiality, excessive advertising, exaggeration, lack of foundation, engaging, belonging, diversity of families, and spatial diversity) seem very much connected to this thesis, which is odd. The reasoning might be that the same project was used in Atlas.ti for both (website screenshots and interviews), and the processing and analysis were done in parallel, which could be a reason for such specific vocabulary to show up in the thematic repetition code. Or it also could be that the tool takes 'tone' or other elements into account to present this kind of results, although that is not disclosed, which makes it a black box where the results cannot be tracked.

On the other hand, the thematic coding based on the theme of this thesis (inclusion vs. exclusion), with the coding done by the researcher, is shown in Figure 18. Here, if the counterparts of inclusion vs. exclusion are pared, the pattern that emerges is the company's obvious focus on inclusion, but some friction with exclusion appears apparently without notice. When comparing social engagement (34) with social distancing (10), it is clear that the content tries to show a picture of inclusion through social engagement, but to an attentive eye, it also shows friction with exclusion.

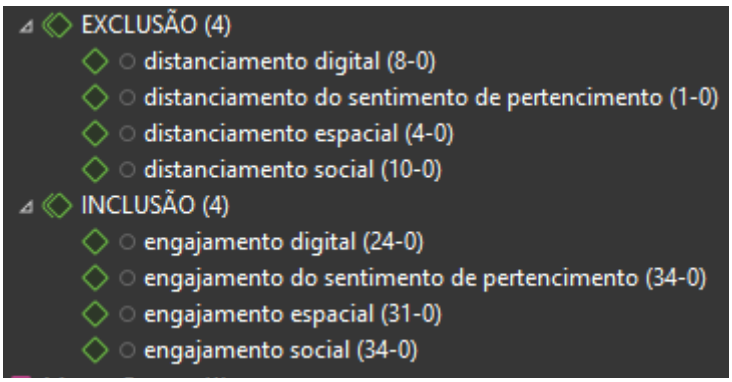


Figure 18 - Thematic coding (inclusion vs. exclusion) - Planet's Website
Source: Author using Atlas.ti and Planet website screenshots from (2022a)

For example, Figure 19 shows the sentence: "building affordable housing to redefine the way we live", while on the left invites people to check out their house models and see "which one fits into your dreams" (point to the homeownership dream) and on the right invites investors to try a simulation of a possible investment plan in the area. Here the friction between inclusion vs. exclusion is shown in trying to capture two very different clients with the same section of content.

Figure 19 - Social (engaging vs. distancing) – website.
Source: (Instituto Planet Smart City, 2022a, p. 0 – 1.9)

When comparing spatial engagement (31) with social distancing (4), the company's focus on inclusion is clear, but friction with exclusion also arises. For example, Figure 20 shows the following sentence: "privileged location in one of the fastest growing economic areas", while the text goes on to point out that the location is near beaches, industrial parks, a port, and an export processing zone, which can be seen as inclusive in terms of potential accessibility to jobs; the use of the term 'privileged' creates friction with that inclusion, differentiating a place and making it 'for few', pointing towards exclusion.

Figure 20 - Spatial (engaging vs. distancing) – website.
Source: (Instituto Planet Smart City, 2022a, p. 1 - 1.1 - 1.1.1 (6))

When comparing digital engagement (24) with social distancing (8), the company's focus on inclusion in how they communicate matters speaks louder. For example, Figure 21 shows the following "200+ smart solutions custom-made. The Competence Center located in Turin, Italy, has a team of more than 100 multidisciplinary professionals", while the content can be amusing to "tech bros" (Murakami Wood, (forthcoming), p. 6), there

little actual information there. There's no mention of which are those solutions, why they are smart, what is this Competence Center, what do they have to do with SCL, what are the kinds of professionals working there, and what their mission is, among many other questions that could be asked here. This points towards digital distancing in the sense of not providing any substantial information on how people's lives are affected by this technology implementation (in terms of data management, privacy, services, or quality of life).

Figure 21 - Digital (engaging vs. distancing) – website.
Source: (Instituto Planet Smart City, 2022a, p. 1 – 1.2 (1))

Figure 18 also shows the coding about (engagement vs. distancing) of sense of belonging, although it was decided not to analyze the coding further since the term was more of a substitution of 'inclusion' in the fieldwork (seemingly people had a better grasp of the definition of sense of belonging in Brazilian Portuguese, rather than inclusion or any of its dimensions). Since none of the research questions point towards that aspect of inclusion specifically, going after it would demand time that the constraints of the Master's wouldn't allow for.

If we go back to subsection 1.3.3, the fact that the development made a partnership with a government financing program for social housing, and it is providing housing access to some of the social housing tier established by the Brazilian Federal government, although not all, there another clear ambivalence and friction created between inclusion vs. exclusion. On the one hand, there's a movement towards providing affordable housing and tackling the housing deficit, although the fact that it isn't all-inclusive creates doubt about the motivation for that.

If we go back to Figure 7, these kinds of representations of urban developments are somewhat of a trend in trying to blend the new development into the existing environment, which in this specific case, is trying to show a privileged place and space, but that it is open – no fences or spatial barriers in the main entrance. Although the connections with the surrounding urbanized areas have fences or the connection is poorly done. Another important aspect of this is that the lived experience is of residents building their fences and walls to feel safer and with more privacy. This shows that no matter how hard a new paradigm can try, if people's understanding of the matter differs from what was advertised, they figure out ways to do it for themselves, 'the way they know to be best'.

If we go back to Table 3, the smart solutions are presented as technological betterment. However, the application has little smartness; most of the features would (and are) working just fine without needing the application. Still, it is shown as an opportunity for engaging the residents differently. There's something to be said about introducing people to different applications and digital 'ways' of living, but having the 'platform city people' in the back of the mind (Murakami Wood, (forthcoming)), makes it wonder if there's an actual need for that or is it just the new fleeting trend in urban development, that in a few years will have all those digital infrastructures either abandoned or completely repurposed.

Notably, Planet Smart City, and its communication through its website, tries to distinguish itself by allowing for financial ease, dissolving the main spatial barriers, and using the technological solutions narrative to try and impact residents' quality of life – calling that inclusive. Although, what is noticed is that even though those efforts do exist, they are also met with opposing ones, creating friction between inclusion and exclusion, creating mixed or contradictory feelings towards it, and no sense of holistic solution.

4.2. Dimensions applied to Smart City Laguna

Within the context of SCL, and going back to the literature exploration of section 2, applying the notion of inclusion incites a range of challenges and complexities. As a digitalized and technologically-driven urban development, SCL ostensibly seeks to address the socio-spatial exclusion, well-known to the Brazilian context and almost synonymous with the concepts of 'fortified enclaves' and 'gated communities'. SCL tries to achieve this confrontation by integrating digital technologies into various facets of urban life to optimize efficiency and quality of services – likewise, the 'smart city' and 'platform city' concepts. However, here it seems the inclusive will end up suffocated by the ambivalences of an intricate socio-spatial and socio-digital dynamics fabric.

Regarding socio-spatial inclusion, SCL aims to mitigate the spatial disparities in the Brazilian urban form. Providing houses without fences and the main entrance to the urban development having a monumental structure but no physical gate also points the buyers and residents towards spatial inclusion, free access, and circulation of people. Although the company also promises digital services and infrastructures that would allow the residents to monitor the streets through cameras, seeing who enters and who leaves, and even a kind of concierge (much like in gated communities) to greet the visitors and ask for their identification. So, it seems there's a simultaneous dissolution of a spatial barrier (front gate) and promotion of a digital barrier (cameras) – to 'solve' the same problem but from different angles.

Simultaneously, the socio-digital dimension of inclusion in SCL warrants critical examination. Using digital technologies to promote inclusion raises concerns about data privacy, surveillance, and the commodification of urban spaces. The accumulation of personal data (and its ethical implications) within the smart city infrastructure could lead to more imbalance in existing power imbalances. Furthermore, the digital inclusion narrative may inadvertently overshadow other aspects of urban life contributing to social cohesion and well-being as the focus shifts disproportionately towards technological solutions in regions where that shift didn't happen yet, and life has 'another rhythm'. The emphasis on digital solutions might inadvertently exclude segments of the population that lack adequate digital literacy, access to technology, or the ability to navigate the digital landscape effectively. As SCL advances its technologically-driven agenda, there is a risk the focus group, in terms of having more housing access, could be further marginalized due to the potential inability to engage with complex digital services.

Recognizing that the pursuit of inclusion in SCL is valid but not without inherent ambivalence is important. The juxtaposition of its socio-digital aspirations with the practical realities of socio-spatial disparities underscores the complex interplay between technology, urban design, and social equity. The challenge lies in reconciling the promise of digital inclusion with the pressing need for holistic and comprehensive socio-spatial strategies that truly address the diverse needs and experiences of the city's inhabitants. The potential benefits of digital integration for urban inclusion must be critically examined against the backdrop of potential exclusionary practices, data privacy concerns, and the potential marginalization of groups.

4.3. Dimensions experienced in Smart City Laguna

From April 3rd, 2023 through April 12th, 2023, the researcher conducted semi-structured interviews with the residents of SCL who were encountered, available, and interested in participating in the research. Based on the sampling strategies (mentioned in subsection 3.2), the number of participants interviewed was thirty (30), the maximum possible due to budgetary restrictions, with an interview recordings' total time of 09 hours and 30 minutes (or 570 minutes). In keeping with the topic discussed in subsection 3.5, the anonymization of the data was done by giving the participants an alias (see Table 1); if a direct citation occurs, they'll be addressed by the first name of the alias.

#	ALIAS	#	ALIAS	#	ALIAS
01	Amanda Burden	11	Freusa Zechmeister	21	Paola Berenstein Jacques
02	Annabelle Selldorf	12	Jan Gehl	22	Raquel Rolnik
03	Anne Lacaton	13	Gae Aulenti	23	Rosa Grena Kliass
04	Carme Pigem	14	Jane Jacobs	24	Shelley McNamara
05	Carolina Bueno	15	Jô Vasconcelos	25	Lucio Costa
06	Elizabeth de Portzamparc	16	Kazuyo Sejima	26	Oscar Niemeyer
07	Ermínia Maricato	17	Lina Bo Bardi	27	Silke Kapp
08	Farshid Moussavi	18	Lota de Macedo Soares	28	Yvonne Farrell
09	Jaime Lerner	19	Maria Elaine Kohlsdorf	29	Zaha Hadid
10	Françoise Choay	20	Marianne Mckenna	30	Zaida Muxi

Table 5 – Participants' aliases[15]
Source: Author (2023).

The researcher`s basic routine for those days would be to review any relevant material (news articles, literature, or a quick look into the step-by-step – see Appendix 4) before going to SCL. The researcher would roam the streets in a car, looking for movement and trying to create an environment where people would not be guarded in talking. For that, once a street with some movement was designated, the researcher would park the car outside the street and appear walking with a clipboard, some papers (information sheet, consent form, a scrapbook for note taking), and a pen in hand. Even though the area's climate was very hot and humid: black t-shirt, black jeans, and sneakers were the 'uniform' so that the researcher didn't look or seem pretentious and to ensure a similar look to the people that go door-to-door to collect Census data (conveying familiarity and an idea of trust was key). After each interview, the researcher would either take notes on a scrapbook or record small audios with first impressions and observations, highlighting something important that was said or even already making connections between answers or themes. With the end of the working day approaching (and with that the sun setting around 6 pm), the researcher would finalize her work in SCL and go back to her accommodation, where she would save and store all the files (making copies and being sure to password-protect all data that contained personal information).

Now, to characterize the profile of the group of participants based on the criteria for participation mentioned in 3.2 (leaving out any information that could lead to the identification of any individual participant): in terms of genre, 26 participants identified themselves as female, and 04 as male; regarding the age range, 37% of the sample was in between 18-30 years of age, 43% in between 31-45, 17% in between 46-60, and 3% in between 61-75, with that, 80% of the sample is in between 18-45 years of age; in terms of participations or not on a government real estate financing programs, 13 participants did use that financial tool, and 17 didn't. Regarding their place of last residence[15], based on the 14 Brazilian cities identified as previous homes towns: 07 are within the same state as SCL (Ceará) and are within a maximum radius of 71 km; and the other 07 are distributed in the 5 Brazilian macroregions, North, Northeast, Center-West, Southwest, and South, within a maximum radius of 3,247 km away - see Figure 22.

[14] The use of such a tool was recognized as safe, in terms of data privacy, by UT-ITC's data steward.
[15] Exact locations were avoided to prevent identification of participants.

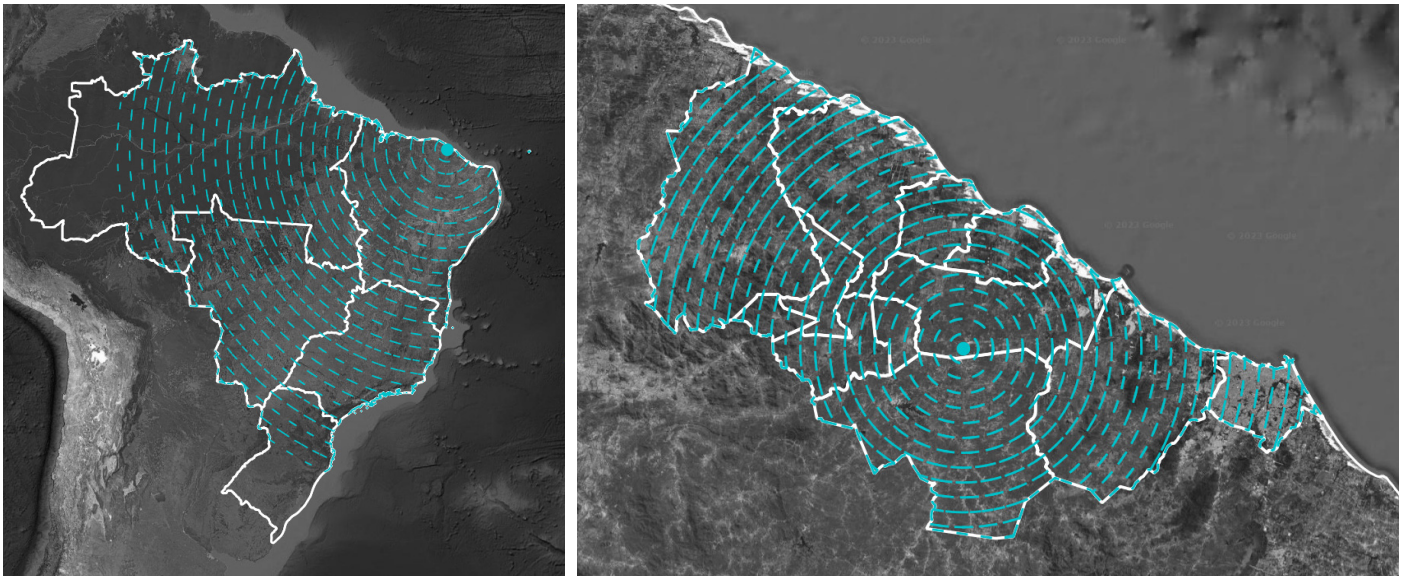


Figure 22 – Distances of the last place of residence to SCL (national and regional).
Source: Author (2023).

Now, regarding their experience of inclusion and with Atlas.ti AI thematic repetitions coding, using the transcripts of the interviews, the patterns shown appeared in Figure 21. Showing as the following list: security (100), insecurity (48), sense of belonging (32), housing: community (29), comfort (27), business: technology (27), life experience: moving (26); housing (26), life experience: adapting (25), social relationships: satisfaction (25), tranquility (24), quality of life (23), life experience: diversity (23), fear (22), housing: belonging (22), and social relationships: consent (21).

Figure 23 – Distances of the last place of residence to SCL (national and regional).
Source: Author (2023).

This shows more interesting results; again, some aligned with the company's narrative and the conceptual frame created behind its implementation, but some were seemingly based on the vocabulary used by the researcher in the questions that were repeated, maybe just as a tool of remembering what was said while answering the question. Security, insecurity, housing: community, comfort, business: technology, life experience: moving; housing, life experience: adapting, social relationships: satisfaction, tranquility, quality of life, and fear seem to be, again, most of them are in the wheelhouse of the company's communication with its residents, although very interestingly ambivalence in security and insecurity appearing both in the top coded, as well as fear appearing by the end of the list, but still, very significant. The overall impression is that the residents somewhat absorbed SCL's narrative,

although the residents have insecurities given what they are used (in terms of urban living and security) to pop up, and with that, they react in a contradictory manner – for example, saying they feel very safe living in SCL, but that they plan to build fences and walls within their plots to improve their sense of safety; as well as complaining about the company's supposed promise of a concierge in the main entrance of SCL to manage the entrance of people or the company's promise of installing cameras all over SCL so that all residents could monitor the live stream (and not only in the company's main buildings). Point towards a contradictory feeling of seeking liberty and freedom while asking for more dependence and control over others – a clear friction between being included and excluding.

Codes such as sense of belonging, life experience: diversity, housing: belonging, and social relationships: consent, seem to be more connected to the vocabulary used by the researcher in the questions made to the participants; as mentioned, the reason might be some level of mimicking to ensure understanding of the question, or some level of thinking they needed to answer something "that the researcher wanted", or that they didn't have a specific vocabulary to use while describing the themes discussed and what was offered in the questions seemed better or easier. Nonetheless, the overall finding is the satisfaction expressed and experienced in feeling good about moving and embarking on an adventure, building a new life in a new place, or realizing that they are working towards owning property – which might be Brazilian's biggest dream.

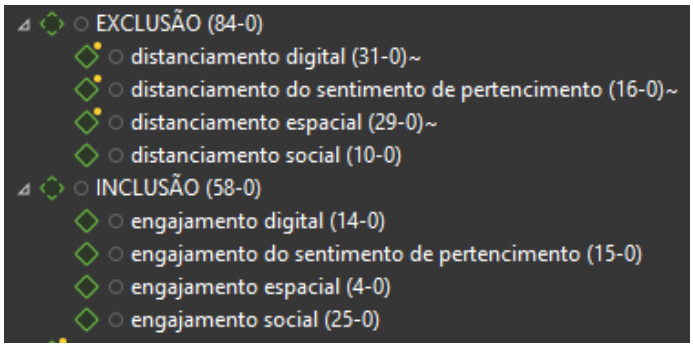


Figure 24 - Thematic coding (inclusion vs. exclusion) - interviews
Source: Author using Atlas.ti and interview transcripts

On the other hand, the thematic coding based on the theme of this thesis (inclusion vs. exclusion) (see Table 4), with the coding done by the researcher, is shown in Figure 22Figure 16. Here, suppose the counterparts of inclusion vs. exclusion are pared. In that case, the pattern that emerges is that the residents, even while trying to be complimentary to their place of residence, with more unassuming questions, express and experience tending more exclusion, and also that there's friction with inclusion. When comparing social engagement (25) with social distancing (31), it is close but leaning towards a picture of exclusion through social distancing, which could be given the spatial distance between residents (since there aren't a lot of them, and they don't have much contact outside of their streets); but also do to a lot of the socializing being pushed to happen digitally, through the app, could be a barrier for further interaction; or even (and connecting again with Murakami Woods characterization of the 'platform city people'), the participants seemed somewhat introverted and not seeking a lot of social interaction with their neighbors.

When comparing spatial engagement (04) with social distancing (29), the residents' becomes very clear regarding exclusion; the main points of contention seem to be the lack of fences and walls in the individual plots, the lack of security cameras throughout SCL, the lack of control over the main entrance in SCL, and also the lack of good connection with the neighboring area (Croatá) – since SCL still does not have enough shops and services, the residents need to go far for to go to work or school, to do groceries or go to the pharmacy, among other basic day-to-day activities.

When comparing digital engagement (14) with digital distancing (31), once more, the residents' experience points towards exclusion; a very interesting finding is that 21 of the participants never used or no longer use the Planet App, which for a sample of 30, says a lot. The reasoning varies: some are not 'tech bros' and don't see the value in participating in the digital sphere of life in SCL; some find it interesting but hard to manage, so they don't bother with it; and others use it just because the home warranty can be triggered through the application, and if they need to schedule a maintenance visit, they do it through the application. With that, the mismatch between what is nar-

rated as digital inclusion by the company and what is experienced by the residents and users of the services is clear.

Overall, the lived experience of SCL's residents concerning the social, spatial, and digital dimensions of inclusion appears marked by a discordance between the company's aspirational narrative and the practical realities they encounter daily. Despite the company's branding efforts to foster an inclusive and technologically advanced urban environment, the insights from semi-structured interviews suggest a more intricate and contradictory landscape. While certain aspects of inclusion, such as security, comfort, and a sense of belonging, seem to align with the company's agenda, the underlying currents of insecurity, fear, and pragmatic challenges in the spatial and digital spheres hint at an exclusion undercurrent. The thematic repetitions from interview data often echo the language propagated by the company, yet they also reveal residents grappling with uncertainties, contradictions, and obstacles about the image of SCL as inclusive. This is particularly evident in the thematic analysis of inclusion vs. exclusion (engaging and distancing), where concerns around safety and inadequacies in digital interfaces highlight exclusion. As such, the residents' overall encounter an urban experience far more complex than the company's narrative suggests, raising questions about the extent of inclusion within the SCL.

4.4. Barriers to inclusion in Smart City Laguna

Considering the last three sections and their discussions, this section (and the next one) combine two 'visual vignettes', with a representative quote from the interview transcripts and satellite imagery from the area, to create a way to visualize the participants' opinions on SCL's barriers to inclusion regarding the socio-spatial and socio-digital dimensions, separately.

According to Gugganig and Douglas-Jones (2021), 'visual vignettes' represent a methodological approach for examining and presenting research findings by seamlessly integrating textual narratives with visual imagery. This format combines a concise snapshot (commonly employed in qualitative social sciences) to encapsulate significance with an image's materialized structure - through which the complexities of sensing technologies can be reimagined and comprehended. To contextualize spatially where the visual vignettes are located – see Figure 23.

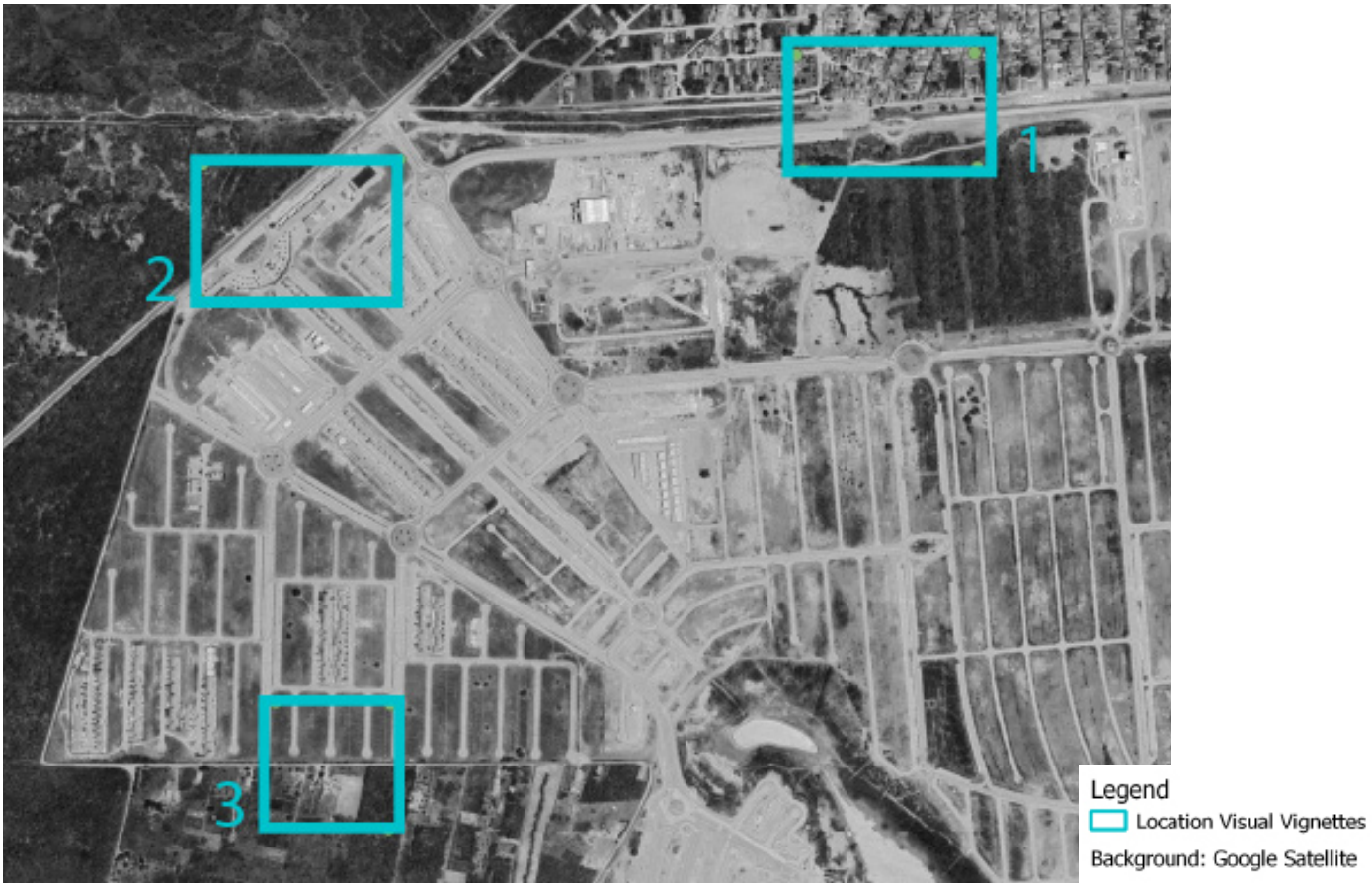


Figure 25 - Visual vignettes location in SCL
Sources: Author (2023).

SOCIO-SPATIAL

With the theme of socio-spatial distancing within the context of SCL (based on the discussion in subsection 4.3 about the resident's perception of the topic), alongside the efforts (or lack of efforts) to dissolve them, a visual vignette was created (based on a representative interview quote and satellite imagery) to captured in an image with textual elements the depiction of the lack of proper connectivity between Croatá (above in the visual vignette) and SCL (bellow in the vignette) - see Figure 26.

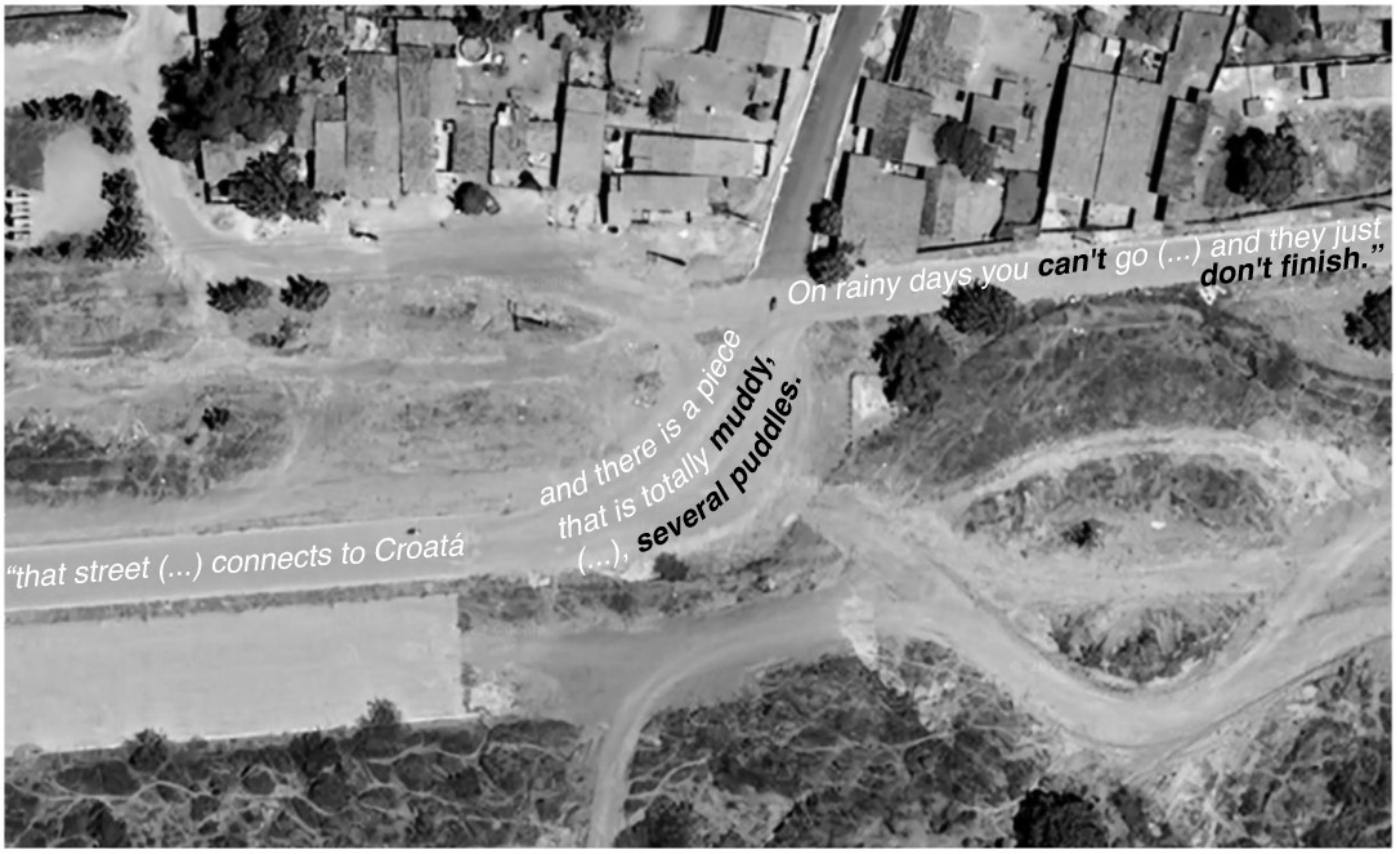


Figure 26 - Visual vignette (socio-spatial).
Sources: Author based on Jan's quote (2023).

The frustration expressed by Jan further underscores this spatial disconnect, as they lament the absence of initiatives from both the municipality and the construction company to bridge the gap between the two communities. This visual vignette resonates with the overarching concept of inclusion vs. exclusion by encapsulating the physical manifestation of a socio-spatial barrier that hinders interactions between the two communities that should mingle socially, spatially, and digitally (here, the focus is spatial).

The reality of this separation is demonstrated in the muddied, impassable road and standing puddles that hinder mobility between the areas, particularly during rainy days. The implications extend beyond physical obstacles, resonating with the socio-spatial dynamics. This spatial barrier reinforces the perception of social distinctions between the communities and impedes the envisioned shared and integrated urban fabric – which puts into question what was envisioned area.

Jan's quote encapsulates this sentiment, emphasizing the unfinished nature of the street connecting the two neighborhoods and its consequences – while representing a common complaint for other residents as well, since they depend on Croatá's groceries, pharmacies, schools, gyms, among others. This situation exemplifies how even a small distance can significantly impact promoting barriers to inclusion. The absence of a well-connected and accessible spatial dimension becomes a tangible manifestation of the broader challenges surrounding socio-spatial inclusion within the context of SCL.

SOCIO-DIGITAL

With the theme of socio-digital distancing within the context of SCL (based on the discussion in subsection 4.3 about the resident's perception of the topic), another visual vignette was created (also based on a representative interview quote and satellite imagery) to captured in an image with textual elements the depiction of the residents' ambivalence regarding socio-digital inclusion vs. exclusion – in one hand wanting a higher sense of safety, but understanding the solution to be further control and surveillance – see Figure 25. The visual vignette shows Jaime's opinion on the lack of (promised) socio-digital barriers within SCL with this imbalance in digital infrastructure distribution, thereby encapsulating the concept of socio-digital distancing in pointing to the only area in SCL with security cameras, Planet's Innovation HUB (in terra-cotta), and the lack of that kind of solution in the residents' houses (in turquoise).

Figure 25 - Visual vignette (socio-digital).
Sources: Author based on Jaime's quote (2023).

The image depicting the main entrance of SCL adorned with a semi-circular structure (simulating a gate, but allowing free access), the prominent administrative building of Planet Smart City, and glimpses of the residential structures represent this digital divide. Jaime's opinion expresses frustration, and their quote focuses on the promised and realized digital surveillance framework. Their dissatisfaction with the concentration of security cameras solely around the company's main building, despite previous assurances - during the property acquisition phase - that comprehensive coverage would be implemented all over SCL. Jaime's desire for ubiquitous digital infrastructure throughout the streets underscores the yearning for control of their security, not trusting the one provided by other spheres (such as the company's private security or the municipality's police monitoring) – with that, the socio-digital distancing becomes clear and the friction with the concept of inclusion shown.

The situation becomes emblematic of a multifaceted dynamic within the community, where residents' perspectives diverge (even tho the digital distancing side doubles the digital engaging side, they cannot be ignored). On the one hand, there is an attempt to dissolve barriers to inclusion by not extending surveillance to the entire locality. On the other hand, a contrasting push exists to promote barriers to inclusion by concentrating digital surveillance around the whole area. This ambivalence unveils a nuanced interplay, where while some seek to enhance technological coverage and, with that safety, others inadvertently accentuate disparities.

The visual vignette captures the essence of this socio-digital distancing by showing how spatially close the opposing sides of the coin are, and still, the disparities between them are loud. The differential distribution of surveillance technology accentuates exclusionary tendencies, despite the narrative focusing on creating a technologically advanced environment. It is noteworthy to consider the potential feelings of overwhelm triggered by the omnipresent digital infrastructure, which should be evaluated in light of residents' varying perceptions and needs. In the end, fostering a more inclusive environment would entail the equitable dissemination of digital resources, aligning with residents' expectations of comprehensive surveillance and a shared sense of security, but that seems like a long-term battle.

4.5. Dimensions' mutual influence in Smart City Laguna

Considering the last two sections and their discussions, this section creates a 'visual vignette', using a representative quote from the interview transcripts and satellite imagery from the area to create a way to visualize the participants' opinions on how the socio-spatial and socio-digital dimensions mutually influence each other, now together.

The interplay between socio-spatial and socio-digital barriers within the SCL unveils a complex relationship that underscores this thesis' the themes of (socio) spatial-digital distancing, where they intertwine to reinforce urban divisions. Figure 26 visually encapsulates this dynamic by portraying the positioning of SCL (above in the visual vignette) with a small neighboring build-up area (below in the visual vignette), separated by a modest road and a green belt on SCL's side.

Jane's quote captures their frustration stemming from the perceived lack of agency over access control to SCL's perimeter (already flagged by Jaime in subsection 4.4). Jane expresses concern that resonates with the potential trajectory of the area if unchecked access persists. This scenario manifests in the built environment as a tangible spatial (dis)connection that augments existing social distinctions. The participant's call for increased (digital) control amplifies this phenomenon, further emphasizing the perceived divide.

Figure 26 - Visual vignette (spatial-digital).
Sources: Author based on Jane's quote (2023).

In the context of inclusion vs. exclusion, and the mutual influence relationship between the socio-spatial and socio-digital dimensions, the visual vignette materializes the enduring impact of established paradigms, as evident in

conceptualizing decentralized fortified enclaves and gated communities (back in subsection 2.1). The configuration between the urban form infrastructure and the technological infrastructure mirrors the persisting patterns of promoting barriers to inclusion, which can linger in individuals' perceptions and societal constructs.

The vignette serves as a poignant visual example of historical urban development's powerful influence on contemporary perspectives and how these paradigms can perpetuate social, spatial, and digital divisions. This intricate relationship between socio-spatial and socio-digital barriers underscores the necessity of a comprehensive approach to inclusion, where spatial and digital spaces and landscapes are designed in true conjunction (if that is possible) to mitigate the risk of further entrenching social, spatial, and digital divisions and promote inclusion, connectivity, and shared (social, spatial, and digital) spaces.

5. Discussion and Conclusions

This thesis's focal point was to critically evaluate the concept of an inclusive 'platform city' based in Smart City Laguna-SCL and to explore its dimensions of inclusion vs. exclusion through the lens of socio-spatial and socio-digital barriers. The research objectives were outlined to comprehensively analyze these barriers and their implications for residents' lived experiences within SCL. The research questions delved into how SCL presents itself as inclusive, how the inclusion concept is applied in SCL, how the residents experienced inclusion, what existing socio-spatial and socio-digital barriers exist, and the mutual influence between these barriers.

The exploration of SCL's presentation as an inclusive urban development (RQ 1) unveiled a dissonance between the company's aspirational narrative and the practical reality of the 'actual built city'. While SCL's branding emphasizes safety, comfort, and community engagement, residents' interviews contrast that vision in exposing the underlying insecurity, fear, and day-to-day challenges experienced. Revealing a gap between the narrative of inclusion, the denial of exclusion, and the actual lived experiences, thereby inviting a critical assessment of SCL's implementation and its communicated ideals.

Examining inclusion's concept applied to SCL (RQ 2) further substantiated this gap, showcasing a pattern of embracing inclusion's benefits while simultaneously perpetuating exclusionary practices. The interviews revealed instances where the pursuit of inclusion contradicted residents' experiences of feeling excluded due to limitations in digital infrastructure, spatial accessibility, and social security. This tension speaks to the challenges of translating conceptual ideas into operational reality and materializing them into the built environment.

Exploring residents' lived experiences of inclusion (RQ 3) highlighted a complex web of perceptions. While thematic repetitions aligned with the company's narrative, such as security and belonging, an underlying ambivalence emerged regarding spatial and digital aspects. The contraposition of themes like security and insecurity underscored the complex nuance of residents' experience, where they seem to embrace SCL's narrative while expressing reservations about its implementation.

The examination of socio-spatial barriers to inclusion (RQ 4) and socio-digital barriers to inclusion (RQ 5) showcased challenges the residents face concerning the intertwinement of the socio-spatial and socio-digital dimensions, like the opposing accessibility and control. While the company projects a sense of unity and digital integration into the residents, the interviews unveiled frustrations with spatial disconnects and the unfulfilled promise of comprehensive digital infrastructure. The residents' experiences of inadequate spatial connections and digital surveillance demonstrated the gap between SCL's narrative and the realities of the denied exclusion.

The investigation into the interplay between socio-spatial and socio-digital barriers (RQ 6) highlighted, once again, the intricate relationship between spatial and digital dimensions. The visual vignettes provided an insight into the residents' experience of SCL's urban fabric, where spatial and digital disparities interact to reinforce urban divi-

sions. The simultaneous push for control and surveillance in the digital sphere and the desire for spatial accessibility underscored a nuanced friction of inclusion vs. exclusion. This intricate interplay revealed the promotion of barriers to inclusion while the narrative strives for a technologically advanced and integrated space.

In conclusion, this thesis critically examined the concept of an inclusive 'platform city' within the context of Smart City Laguna. By exploring socio-spatial and socio-digital dimensions, the research revealed a gap between SCL's aspirational tone and narrative, the practical realities of contemporary urban development, and the residents' experience. The thematic analysis of interviews and the visual vignettes underscored the complexities of residents' perceptions, highlighting tensions between the company's discourse and the barriers to inclusion they can promote. The findings prompt reconsidering how urban concepts are translated into practice, urging a more nuanced understanding of the challenges in promoting inclusion. As the residents navigate these barriers, the thesis' outcomes encourage a broader discourse on the evolving nature of inclusion in urban development, urging the acknowledgment first and then addressing the discrepancies between idealized aspirations and lived experiences.

5.1. Limitations

Despite the researcher's efforts in the approach of this thesis, several limitations affected its scope and outcomes. First, the research was constrained by budgetary restrictions (too expensive to fly to Brazil, and so on, even though the researchers secured an external grant to pay for the flights), leading to a small window when the fieldwork could happen and the sample size suffered with that. The limited number of interviews does not fully represent the diverse range of perspectives within SCL, which the researcher was aware of from the beginning. The focus was never to be statistically representative, more so because the urban development is in its first implementation phase, and there's not much there to begin with (less credible information online, which made it difficult to resemble any certainty in going to the fieldwork). Furthermore, only residents were interviewed due to time constraints, excluding other stakeholders such as the construction company and municipal authorities. Although this was a deliberate approach so that the topic would fit into an MSc scope, it would be interesting to contrast other perspectives. With limited time to thin through the interview questions (lots of budgeting and scheduling took place, taking a lot of time), the researcher understands the interview questions were not as precise as they could have been (while understanding qualitative data and interviews is a bit a gamble the types of answer one gets); nonetheless, more well-throughout, mature and better-translated questions could have made the processing and coding of the data less overwhelming.

The researcher's presence during interviews might have introduced bias or influenced participants' responses, impacting the authenticity of the collected data. Language barriers and the potential mismatch between participants' vocabulary and research terminology could have led to misunderstandings or incomplete responses. While necessary to protect participants' identities, the anonymization process may have inadvertently obscured certain contextual details that could have enriched the analysis, such as the actual location of the residents' prior residence or their current place of work, among others.

The genre disparity in the answers surprised the researcher, who assumed it could have something to do with the fact that she identified as female and was alone approaching the residents, and male-identifying potential participants did refuse to participate a few times. But more so, for safety reasons, the interviews were done during working hours (from 08:00 until 18:00[16]), and SCL while located in the countryside of Brazil, with a bit more of a traditional hetero-normative dynamic; most of the time, the researcher would knock on a door, the resident to asnwer the researcher would in the large majority identify as female, and either work from home or be a stay-at-home mom.

The thematic analysis approach employed for data analysis, while useful, is inherently subjective and dependent on the researcher's interpretation. This subjectivity could introduce bias and affect the generalizability of findings. And lastly, the study's temporal scope was confined to a very short period, limiting the depth of insights into how residents' experiences might evolve.

[16] Or less if the sun was too intense or enough interviews were done for a day.

5.2. Recommendations

Given the abovementioned limitations, future research could address these gaps and expand the understanding of inclusive urban development in SCL and beyond. To mitigate the budgetary constraints, allocating additional resources for a larger and more diverse sample of participants could provide a more comprehensive perspective on residents' experiences. Including other stakeholders like the construction company and municipal authorities would offer a more well-rounded understanding of the factors influencing SCL's inclusion efforts and its governance ecosystem within Brazil.

To counter potential bias, researchers could employ a mixed-methods approach combining qualitative interviews with quantitative data analysis. This approach would allow for triangulation of findings and a more balanced interpretation of results. Moreover, incorporating participants from different backgrounds and professions could provide a more holistic understanding of the challenges and opportunities within SCL. Even though the researcher still values and appreciates a qualitative method that pushes the participants' experience to the forefront of the debate.

Future research could also leverage additional data sources, such as the company's proprietary application data, to better comprehend residents' interactions with digital platforms and services. Comparing the case of SCL with other urban developments in similar urban contexts within Brazil, Latin America, and beyond could provide valuable insights into the universalities and specificities of the 'platform city' urban planning pushing for inclusive strategies. Longitudinal studies spanning extended periods would capture the evolving nature of residents' experiences and identify trends over time. Lastly, investigating the potential impact of external socio-political, economic, and cultural factors on SCL's inclusive efforts could shed light on how broader contexts influence urban development. By addressing these recommendations, future research can provide a more robust analysis of 'platform cities' like SCL, contributing to a more nuanced understanding of the contemporary urban development trends, how they utilize buzzwords such as 'smart city' and 'inclusion' and what are its challenges in an ever-evolving urban development landscape.

References

Ash, J., Kitchin, R., & Leszczynski, A. (2018). Digital turn, digital geographies? In Progress in Human Geography (Vol. 42, Issue 1). https://doi.org/10.1177/0309132516664800

Augé, M. (1992). Não-lugares: Introdução a uma antropologia da sobremodernidade (Tradução M). 90 Graus Editora.

Benjamin, W., & Lacis, A. (1925). Naples. In Reflections (pp. 163–173).

Brants, K., & Frissen, V. (2003). Inclusion and exclusion in the Information Society.

Bryman, A. (2015). Social Research Methods (4th Edition) by Alan Bryman. Abhigyan VO - 32, 4.

Caldeira, T. (1996). Building up walls: the new pattern of spatial segregation in São Paulo. International Social Science Journal, 48(147), 55–66. https://doi.org/https://doi.org/10.1111/j.1468-2451.1996.tb00056.x

Caldeira, T. (1998). Fortified Enclaves: The New Urban Segregation. In Cities and Citizenship (pp. 114–138). Uni versity of California Press. https://doi.org/https://doi.org/10.2307/j.ctv11cw70j.9

Caldeira, T., & Holston, J. (2005). State and Urban Space in Brazil: From Modernist Planning to Democratic In terventions. In A. Ong & S. J. Collier (Eds.), Global Assemblages: Technology, Politics, and Ethics as An thropological Problems (pp. 393–416). Blackwell Publishing Ltd.

Cardullo, P. (2021). Citizens in the 'Smart City': Participation, Co-production, Governance. Routledge.

Cass, N., Shove, E., & Urry, J. (2003). Changing infrastructures , measuring socio-spatial inclusion (Issue April).

Cocchia, A. (2014). Smart and Digital City : A Systematic Literature Review. https://doi.org/10.1007/978-3-319-06160-3

Corrêa, R. L. (2004). Quem produz o espaço urbano? In O espaço urbano (4th ed.). Editora Ática.

Dalton, C. M., Taylor, L., & Thatcher, J. (2016). Critical Data Studies: A dialog on data and space. Big Data and Society, 3(1). https://doi.org/10.1177/2053951716648346

Forbes Daily. (2019, October 22). Depois do Ceará e do Rio Grande do Norte, smarty city social quer estrear em São Paulo. https://forbes.com.br/colunas/2019/10/depois-do-ceara-e-do-rio-grande-do-norte-smarty-city-social-quer-estrear-em-sao-paulo/

G1. (2020, December 10). Minha Casa Minha Vida e Casa Verde e Amarela: entenda as diferenças entre os programas. Globo.Com. https://g1.globo.com/economia/noticia/2020/12/10/minha-casa-minha-vida-e-casa-verde-e-amarela-entenda-as-diferencas-entre-os-programas.ghtml

G1 CE. (2023, June 28). Censo do IBGE: Fortaleza passa Salvador e se torna a quarta cidade mais populosa do Brasil. Globo.Com. https://g1.globo.com/ce/ceara/noticia/2023/06/28/censo-do-ibge-fortaleza-passa-salvador-e-se-torna-a-quarta-cidade-mais-populosa-do-brasil.ghtml

Graham, M. (2019). There are no rights "in" cyberspace. In B. Wagner, M. C. Kettemann, & K. Vieth (Eds.), Re search Handbook on Human Rights and Digital Technology: Global Politics, Law and International Rela tions (pp. 24–32). https://doi.org/10.4337/9781785367724.00008

Graham, S. (2002). Bridging Urban Digital Divides ? Urban Polarisation and Information and Communications Technologies (ICTs). 39(1), 33–56. https://doi.org/10.1080/0042098022009905

Guerra, P. (2012). Da exclusão social à inclusão social: eixos de uma mudança paradigmática. Revista Angolana de Sociologia, 10, 91–110. https://doi.org/10.4000/ras.257

Gugganig, M., & Douglas-Jones, R. (2021). Visual Vignettes. In Sensing In/Security: Sensors as Transnational Security Infrastructures. Mattering Press.

Haché, Alexandra. (2011). Under the radar : the contribution of civil society and third sector organisations to eInclusion. Publications Office.

Harrison, C., Eckman, B., Hamilton, R., Hartswick, P., Kalagnanam, J., Paraszczak, J., & Williams, P. (2010). Foun dations for Smarter Cities. IBM Journal of Research and Development, 54(4), 1–16. https://doi.org/10.1147/JRD.2010.2048257

Hick, S. F., Graham, J. R., & Jones, M. E. (2008). Navigating the Digital Divide. 2002.
Hind, S. (2022). Data Power: Radical Geographies of Control and Resistance. The AAG Review of Books, 10(4), 1–3. https://doi.org/10.1080/2325548x.2022.2114748
Holston, J. (1998). Spaces oflnsurgent Citizenship. In J. Holston (Ed.), Cities and Citizenship (pp. 155–174). Uni versity of California Press. https://doi.org/https://doi.org/10.2307/j.ctv11cw70j.11
Holston, J. (2008). Insurgent citizenship: disjunctions of democracy and modernity in Brazil (P. Rabinow, Ed.). Princenton University Press. https://doi.org/10.5860/choice.46-2840
IBGE - Brazilian Institute of Geography and Statistics. (2023a). Nasce o Censo 2022: SES/CE realiza coletiva de imprensa para lançamento dos primeiros resultados do Ceará. https://censo2022.ibge.gov.br/noticias-por-estado/37281-nasce-o-censo-2022-ses-ce-realiza-coletiva-de-imprensa-para-lancamento-dos-primeiros-resultados-do-ceara
IBGE - Brazilian Institute of Geography and Statistics. (2023b, June 28). De 2010 a 2022, população brasileira cresce 6,5% e chega a 203,1 milhões. Agência de Notícias. https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/37237-de-2010-a-2022-populacao-brasileira-cresce-6-5-e-chega-a-203-1-milhoes
IBGE - Brazilian Institute of Geography and Statistics. (2023c, June 28). País tem 90 milhões de domicílios, 34% a mais que em 2010. Agência de Notícias. https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/37238-pais-tem-90-milhoes-de-domicilios-34-a-mais-que-em-2010Instituto Planet Smart City. (2017a). Revista Planet The Smart City. https://issuu.com/midiasmartcity/docs/revista_planet_the_smart_city
Instituto Planet Smart City. (2017b). Revista Planet The Smart City - 1a Edição. https://issuu.com/midiasmartcity/docs/revista_issu_12.06
Instituto Planet Smart City. (2018a). Revista Planet Smart City – 2a edição. https://issuu.com/midiasmartcity/docs/revista_planet_2__edi__o
Instituto Planet Smart City. (2018b). Smart City Laguna. https://www.planetidea.it/allegati/Laguna%20Book%20EN.pdf
Instituto Planet Smart City. (2019). Annual Report 2019.
Instituto Planet Smart City. (2020). Annual Report 2020 - Leading a new generation of inclusive, affordable, and connected living.
Instituto Planet Smart City. (2021a). Laguna: um lugar, mil oportunidades.
Instituto Planet Smart City. (2021b). Um lugar, Aquiraz, mil oportunidades.
Instituto Planet Smart City. (2021c). Um lugar, Natal, mil oportunidades.
Instituto Planet Smart City. (2022a). Planet Smart City' Brazilian website. https://planetsmartcity.com.br/
Instituto Planet Smart City. (2022b). Planet Smart City's global website. https://planetsmartcity.com/our-mission/
Instituto Planet Smart City. (2023). Evolução de obras - Junho 2023.
Instituto Planet Smart City, & SG Desenvolvimmento. (2016). A primeira cidade inteligente do Ceará.
Kitchin, R. (2014). The real-time city? Big data and smart urbanism. GeoJournal, 79(1), 1–14. https://doi.org/10.1007/s10708-013-9516-8
Kitchin, R. (2016). Getting smarter about smart cities: Improving data privacy and data security. Department of the Taoiseach on Behalf of the Government Data Forum,Dublin, Ireland., February, 82. https://www.researchgate.net/publication/293755608
Kitchin, R. (2019). The Timescape of Smart Cities. Annals of the American Association of Geographers, 109(3), 775–790. https://doi.org/10.1080/24694452.2018.1497475
Lefebvre, H. (2011). O direito a cidade (5th ed.). Centauro Editora.
Lombard, M., & Meth, P. (2017). Informalities. In M. Jayne & K. Ward (Eds.), Urban Theory: new critical perspectives. Routledge.
Maguire, M., & Delahunt, B. (2017). Doing a Thematic Analysis : A Practical , Step-by-Step Guide for Learning and Teaching Scholars . 3(3).
Mariën, I., & Prodnik, J. A. (2014). Digital inclusion and user (dis) empowerment : a critical perspective. 16(6), 35–47. https://doi.org/10.1108/info-07-2014-0030
Maxar Technologies. (2023). Google Earth Satellite Imagery. Google Inc.
Ministério das Cidades. (2023). Programa Minha Casa Minha Vida. Gov.Br. https://www.gov.br/cidades/pt-br/acesso-a-informacao/acoes-e-programas/habitacao/programa-minha-casa-minha-vida

Mitchell, W. J. (1996). City of bits: space, place, and the infobahn. The MIT Press.
Mora, L., Bolici, R., & Deakin, M. (2017). The First Two Decades of Smart-City Research: A Bibliometric Analy sis. Journal of Urban Technology, 24(1), 3–27. https://doi.org/10.1080/10630732.2017.1285123
Morozov, E., & Bria, F. (2018). Rethinking the Smart City. www.rosalux-nyc.org
Murakami Wood, D. (forthcoming). Platform City People.
Murakami Wood, D., & Mackinnon, D. (2019). Partial platforms and oligoptic surveillance in the smart city. Sur veillance and Society, 17(1–2), 176–182. https://doi.org/10.24908/ss.v17i1/2.13116
Nemer, D. (2016). From Digital Divide to Digital Inclusion and Beyond : A Positional Review Is Access Enough ?
January. https://doi.org/10.15353/joci.v11i1.2857
Neves, J., & Steinberg, M. (2023). The Cultural Politics of In/Convenience. https://doi.org/10.13140/ RG.2.2.32214.11840
Nowaczyk, S., Resmini, A., Long, V., Fors, V., Cooney, M., Duarte, E. K., Pink, S., Aksoy, E. E., Vinel, A., &
Dougherty, M. (2022). Smaller is smarter: A case for small to medium-sized smart cities. Journal of Smart Cities and Society, 1(2), 95–117. https://doi.org/10.3233/scs-210116
Planet Holding. (2022). Planet App. https://play.google.com/store/apps/details?id=it.planetidea.smartci ty&hl=en&gl=US
Portugal, P. H. F., Moreira, J. F., Póvoas, M. D. S., da Silva, C. A. F., & Guedes, A. L. A. (2021). The favela as a place for the development of smart cities in brazil: Local needs and new business strategies. In Smart Cit ies (Vol. 4, Issue 4, pp. 1259–1275). MDPI. https://doi.org/10.3390/smartcities4040067
Projeto MapBiomas. (2022a). Mapeamento Anual das Áreas Urbanizadas no Brasil entre 1985 e 2021. https:// mapbiomas-br-site.s3.amazonaws.com/MapBiomas_Area_Urbanizada_2022_03_11.pdf
Projeto MapBiomas. (2022b, March 11). Mapeamento Anual de Cobertura e Uso da Terra do Brasil. Coleção 7.
Przeybilovicz, E., Cunha, M. A., Geertman, S., Leleux, C., Michels, A., Tomor, Z., Webster, C. W. R., & Meijer, A. (2022). Citizen participation in the smart city: findings from an international comparative study. Local Government Studies, 48(1), 23–47. https://doi.org/10.1080/03003930.2020.1851204
Rawal, N. (2008). Social Inclusion and Exclusion: A Review. Dhaulagiri Journal of Sociology and Anthropology, 2, 161–178.
Reis Filho, N. G., Tanaka, M. M. S., & Sposito, M. E. B. (2007). Brasil: estudos sobre dispersão urbana. FAUUSP.
Roitman, S., & Giglio, M. A. (2010). Latin american gated communities: the latest symbol of historic social segre gation. In S. Bagaeen & O. Uduku (Eds.), Gated Communities (1st ed., pp. 63–75). Earthscan.
Shamsuddin, S., & Srinivasan, S. (2021). Just Smart or Just and Smart Cities? Assessing the Literature on Housing and Information and Communication Technology. Housing Policy Debate, 31(1), 127–150. https://doi.or g/10.1080/10511482.2020.1719181
Shelton, T., Zook, M., & Wiig, A. (2015). The "actually existing smart city." Cambridge Journal of Regions, Econ omy and Society, 8(1), 13–25. https://doi.org/10.1093/cjres/rsu026
Soja, E. W. (2009). The city and spatial justice. 12–14.
Swyngedouw, E. (2016). The mirage of the sustainable 'smart' city. Planetary urbanization and the spectre of com bined and uneven apocalypse. In O. Nel-lo & R. Mele (Eds.), Cities in the 21st Century (pp. 134–143). Routledge.
Titchkosky, T. (2011). The Question of Access: Disability, Space, Meaning. https://www.researchgate.net/publi cation/303419533
Villaça, F. (1999). Uma contribuição para a história do planejamento. In C. Deák & S. R. Schiffer (Eds.), O proces so de urbanização no Brasil. (pp. 169–243). Editora da Universidade de São Paulo.
Villaça, F. (2011). São Paulo: Segregação urbana e desigualdade. Estudos Avancados, 25(71), 37–58. https://doi. org/10.1590/S0103-40142011000100004
Wolfrum, S. (2008). Porous City: From Metaphos to Urban Agenda. Birkhäuser.
Wyatt, S., Henwood, F., Miller, N., & Senker, P. (2000). TECHNOLOG Y AND IN/EQUALITY (S. Wyatt, F.
Henwood, N. Miller, & P. Senker, Eds.). Routledge.
Yönet, N. A., & Yirmibeşoğlu, F. (2018). Why People Prefer to Live in Gated Communities in Istanbul? Current Urban Studies, 06(01), 180–195. https://doi.org/10.4236/cus.2018.61010
Ziosi, M., Hewitt, B., Juneja, P., Taddeo, M., & Floridi, L. (2022). Smart cities: reviewing the debate about their ethical implications. AI & Society. https://doi.org/10.1007/s00146-022-01558-0

Appendices

Appendix 1: Smart City Laguna's houses

Following are the promotional images used by Planet to show the four typologies of houses on their Brazilian website (Instituto Planet Smart City, 2022a).

OLÍMPIA

House Type	Price (BRL)	Price (EUR)	Area (m^2)	Bedrooms	Bathrooms	Kitchen	Living area	Terrace	Utility area
Olímpia	172,000.00	31,705.50	81.98	2	1	1	1	1	1

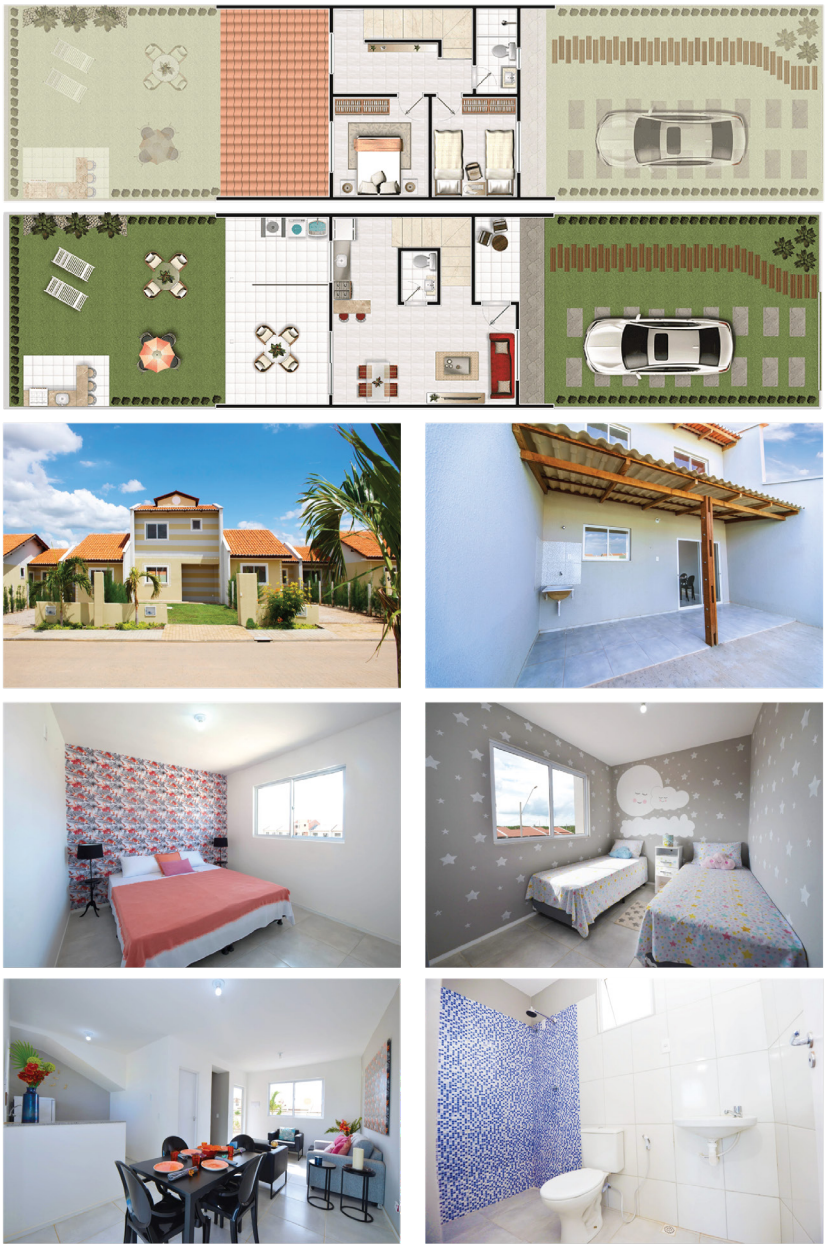


Figure 27 - SCL's Olímpia house
Source: (Instituto Planet Smart City, 2022a)

For the complete table, see Table 1.

DIANA

House Type	Price (BRL)	Price (EUR)	Area (m^2)	Bedrooms	Bathrooms	Kitchen	Living area	Terrace	Utility area
Diana	145,000.00	26,728.47	62.53	2	2	1*		1	1

Figure 28 - SCL's Diana house
Source: (Instituto Planet Smart City, 2022a)

For the complete table, see Table 1.

DAPHNE

House Type	Price (BRL)	Price (EUR)	Area (m²)	Bedrooms	Bathrooms	Kitchen	Living area	Terrace	Utility area
Daphne	130,000.00	23,963.46	54.00	2	1	1*		1	1

Figure 29 - SCL's Daphne house
Source: (Instituto Planet Smart City, 2022a)

For the complete table, see Table 1.

FLORA

House Type	Price (BRL)	Price (EUR)	Area (m^2)	Bedrooms	Bathrooms	Kitchen	Living area	Terrace	Utility area
Flora	130,000.00	23,963.46	52.92	2	1	1	1	1	1

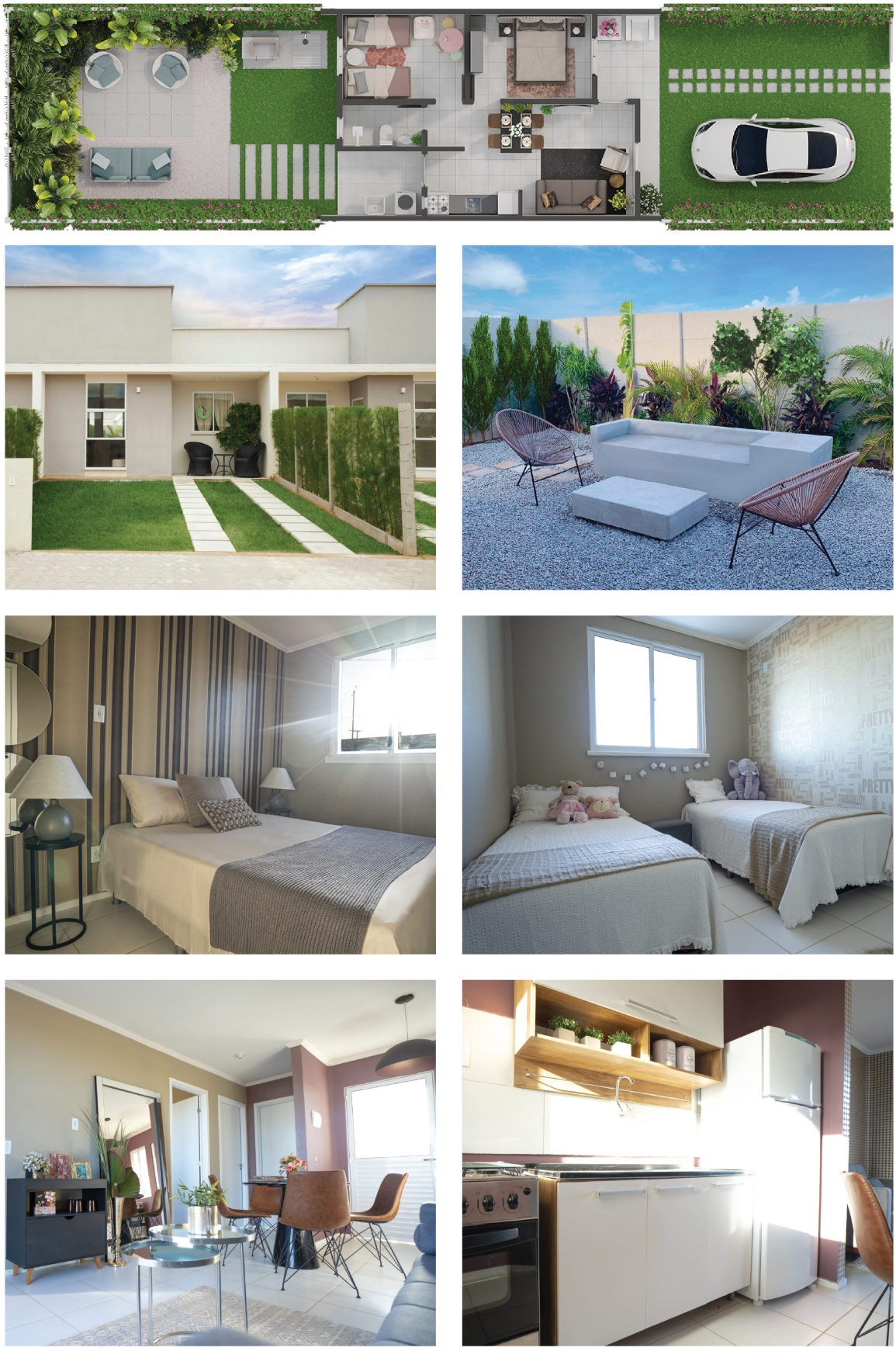


Figure 30 - SCL's Flora house
Source: (Instituto Planet Smart City, 2022a)

For the complete table, see Table 1.

Appendix 2: Planet App's architecture

Here, Figure 31 shows how Planet App is subdivided and the features offered to the SCL's residents. The main sections are: city diary (to provide current and updated information about SCL to the residents); info (provides information about the company and SCL to buyers, a live video stream of the cameras, and the company's contact information); community (presents a calendar with the activities planned, the spaces to reserve, and posts about news and residents' offers and services); plus sign (presents a way to create a new post on the timeline, a button to ask for urgent help or assistance, another way to contact the company, and a guide to explore the 'your house', 'SCL', and 'ways of living' sections); home (this section is for residents to monitor their houses, but without a 'house key number' there's no access to it); and profile (showing the user's profile [email, date of birth, and phone number]; among support and settings subsections).

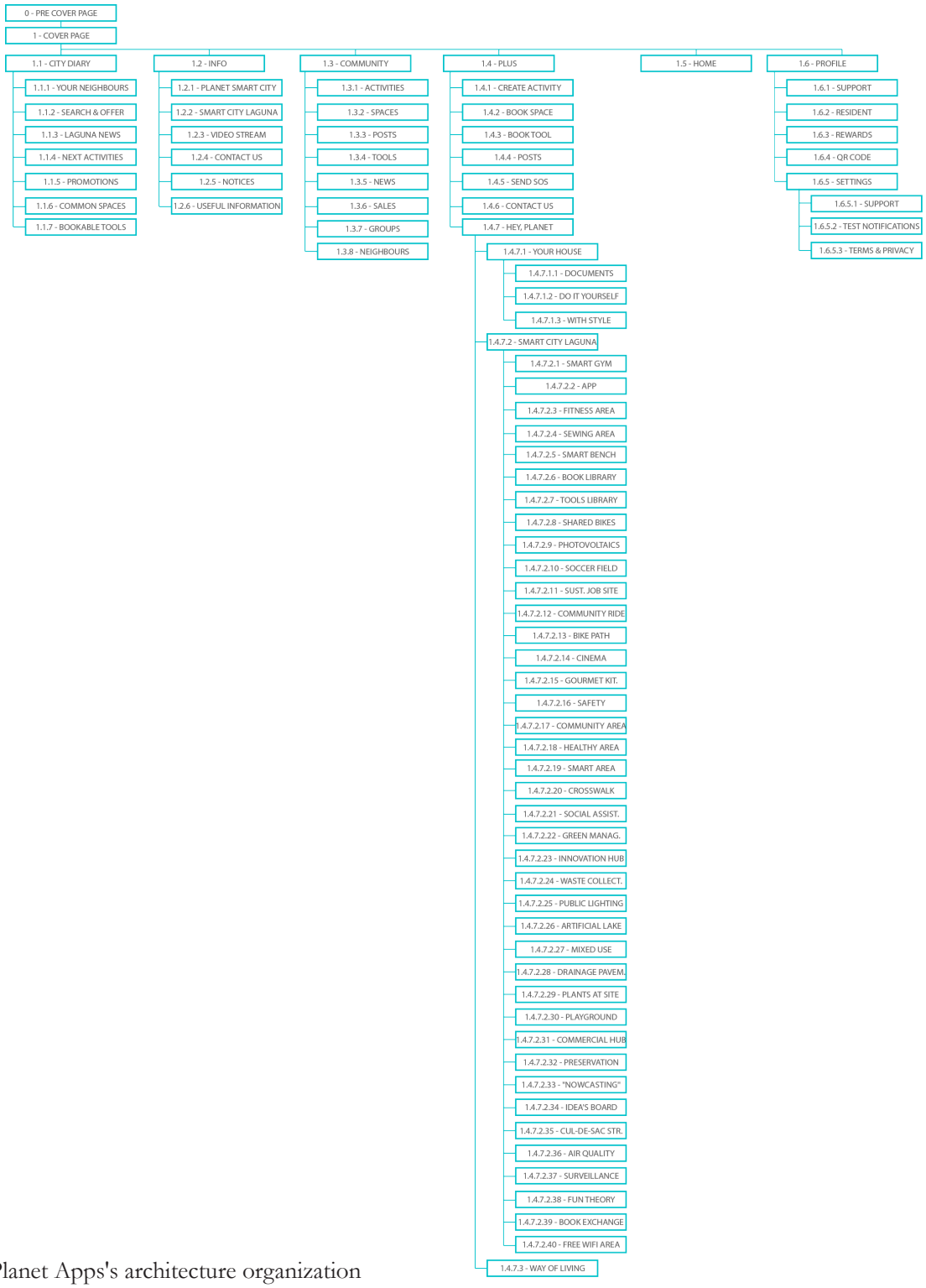


Figure 31 - Planet Apps's architecture organization
Source: (Planet Holding, 2022)

Appendix 3: Conceptual framework (macro)

Here, the concepts become increasingly narrow from the outer to the inner circle, and the progressive intensifying of color shows the subjects that will be the center of the discussions and research.

With that, Figure 32 shows – starting from the outer circle - the broader umbrella term used as a conceptual starting point for the research to explain how data-driven urban planning and design came to the forefront of the urban debate. The next circle is within the one before, making smart cities part of data-driven urban planning and design; here, the intention is to show how the concept became one of the more discussed strategies of that group. Given the purpose of this thesis, one key aspect of smart cities to be discussed, and the next circle, is the ethical implications of its implementations and why they occur. The framework to understand which ethical implications would make sense in the smart city context presents four main concerns: postpolitical governance, network infrastructure, sustainability, and social inclusion (Ziosi et al., 2022). Within the given implications, this research follows the thread of how social inclusion plays out in that scenario. Social inclusion can be a very broad term and vary depending on the field of knowledge chosen to describe it; here, amongst seven possible divisions within the subject (Ziosi et al., 2022), the path will be 'inclusion vs. exclusion' given the created contextualization and trying to understand the debate around the consequences of the presence of either inclusion and/or exclusion. All the analysis will focus on making parallels with the case study of this thesis so that the connections and exemplifications are clearer.

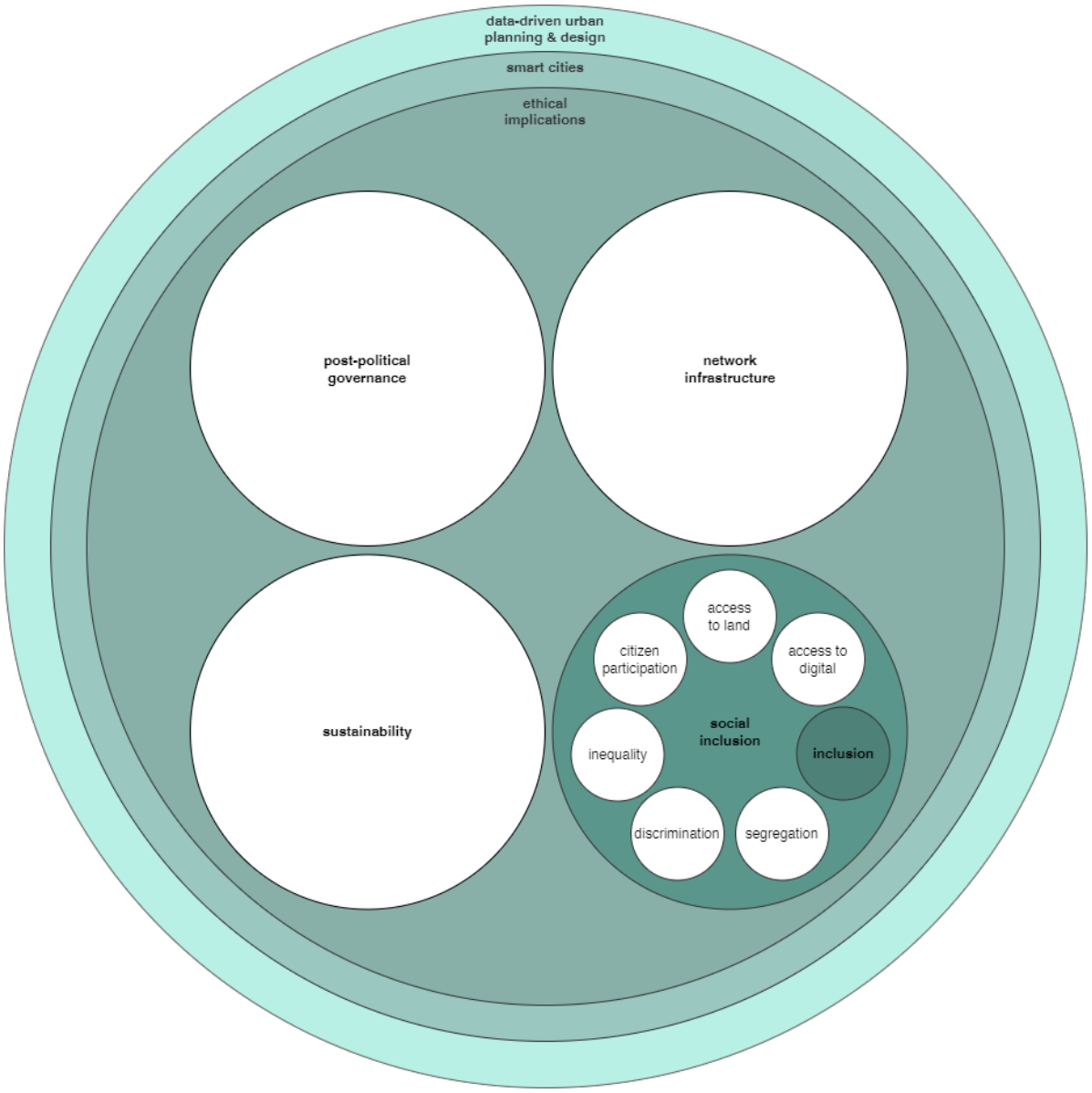


Figure 32 - Conceptual Frameworks (macro).
Source: Author's diagram.

Appendix 4: Data collection step-by-step (semi-structured interviews)

Here, the step-by-step planning of all the activities regarding the semi-structured interviews (pre, during, and post) for the researcher's approach to be as systematic as possible and try to introduce 'similar biases' for all interviews, making them still comparable (Bryman, 2015). The content below is in Brazilian Portuguese due to nuance in the language and the researcher's desire to make the interaction and the questions as natural-sounding as possible. Nonetheless, the presented content was discussed in English between the researcher and supervisors of this thesis.

- PRÉ:
  - ESTUDAR
    - Geografia, cultura e conhecimento local
    - Sotaque e gírias
    - Referências potenciais em comum (nacionais e regionais)
  - PROCURA POR PARTICIPANTES
    - Andar pelas ruas do bairro e notar a movimentação das ruas e casas. Ir aos lugares que demostram maior chance de sucesso na abordagem.
    - Educação e bom humor ao abordar possíveis participantes.
    - Prezar pela segurança da pesquisadora (evitar entrevistas à noite, procurar estar em público e ser vista, evitar entrar em casas de participantes que estejam sozinhos, ou qualquer situ ação que deixe a pesquisadora desconfortável).

Após bater às portas de possíveis respondentes ou já ter agendado a reunião:

- INTRODUÇÃO
  - Me apresentar (oralmente)
  - Apresentar brevemente a pesquisa/trabalho de campo (oralmente)
  - Entregar aos/às participantes a folha de informações (escrita).
    - O que se espera deles/as?
    - Quanto tempo levará?
    - Quais são os riscos?

- Deixe-os/as ler a folha de informações. Dê algum tempo para ler e processá-la.

[...]

- Pergunte se os/as participantes se encaixam nos critérios:
  [i] residente da SCL;
- Estou curiosa, há quanto tempo você mora aqui?
  [ii] adulto/a (18+);
- Se você não se importar, pode me dizer sua idade?
  [iii] participou do processo decisório da família para mudar para SCL (auto-proclamado/a); e
- Eu estava me perguntando, você ajudou a decidir mudar-se para cá?
  [iv] o lar é participante ou não-participante de um programa governamental de financiamento imobiliário.
- Estou intrigada com a idéia de uma vizinhança inclusiva e como ela é definida aqui. Sua família participou de um programa de financiamento imobiliário do governo?

- CONSENTIMENTO INFORMADO

Percorrer o documento com os/as participantes, destacando os tópicos mais importantes e assegurando que eles/as entendam o que podem assinar - em termos de suas informações pessoais, privacidade, anonimato, criptografia, uso dos dados, armazenamento dos dados, que o sinal de apreço é uma forma de agradecimento pelo tempo passado comigo e nada mais, e que eles podem se retirar da pesquisa qualquer momento. Se eles/as derem consentimento informado oral ou escrito, o processo continua. Caso contrário, o processo para.

- INICIAR A GRAVAÇÃO

Repita as primeiras perguntas para que sejam gravadas (mais tarde esta seção será cortada das gravações).

a. A pesquisadora declara o início da gravação e a data.
b. Você deu consentimento informado oral ou escrito para participar desta pesquisa?
c. Como você se expressa em termos de gênero?
d. Quantos anos você tem?
e. Desde quando você é um residente da Smart City Laguna?
f. Você participou da decisão da família de se mudar para Smart City Laguna?
g. Sua família é participante de um programa governamental de financiamento imobiliário?

• PERGUNTAS DA ENTREVISTA

P1: Como você se sente vivendo aqui, e qual tem sido sua experiência até agora?
[PROMPT] Quais são as vantagens e desvantagens de se viver aqui?
[PROMPT] Se você tivesse a oportunidade, haveria alguma coisa que você mudaria?
[PROMPT] Como é viver em um lugar completamente novo enquanto a construção está acontecendo e novos moradores estão chegando?

P2: Como você se liga a este lugar, e o que torna a vida aqui diferente de onde você vivia antes?
[PROMPT] Você sente um sentimento de pertencer depois de ter se mudado para cá?
[PROMPT] Que atividades, serviços ou oportunidades você tem aqui que não tinha antes (e o contrário)?

P3: Qual foi o motivo da mudança para cá, e como você tomou essa decisão?
[PROMPT] O título de "primeira cidade inteligente inclusiva" influenciou a decisão?
[PROMPT] Que outros aspectos influenciaram a decisão?

P4: O que é inclusão para você, e como você vê o que acontece no bairro?
[PROMPT] O que faz deste lugar um bom lugar para se viver?
[PROMPT] Como é o senso de conviviencia? E de pertencimento?
[PROMPT] Você vê a vizinhança como um lugar inclusivo? Por quê? Qual é o tipo de perfil de pessoa que escolhe vir pra cá, na sua opinião?
[PROMPT] Qual é a relação da cidade inteligente Laguna com o bairro Croatá?

P5: Existem novas maneiras de interagir com o bairro?
[PROMPT] Como você percebe a existência (ou falta) de portões, divisões e outros elementos espaciais? Como você se sente em relação a isso?
[PROMPT] Como você percebe a existência do aplicativo para os/as moradores/as? Você o utiliza? Como? Porquê?
[PROMPT] Você utiliza as amenidades oferecidas no bairro? Como?

• DEBRIEF

Informar o/a entrevistado/a do fim da gravação.
Pergunte se eles/as têm alguma dúvida.
Dê-lhes o sinal de agradecimento por sua participação.
Lembre-os de que a retirada da participação é possível a qualquer momento e que o e-mail da pesquisadora está na folha de informações (que fica com eles).
Peça a eles/as que indiquem alguém que acharem que se encaixa nos critérios da pesquisa.

Appendix 5: Fieldwork: information sheet and consent form

Here is the first page of the information sheet, explaining who is researcher, what is the research, what is involved in participating, why they are being invited to participate, and asking if they want to participate (see Figure 33 - Information sheet (page 1).). The following page will continue the questions. All content in this Appendix is in Brazilian Portuguese since it was handed to the participants (Brazilian Portuguese native speakers). Nonetheless, the presented content was discussed in English between the researcher and supervisors of this thesis.

SENTIMENTO DE PERTENCIMENTO

estudo sobre a **vivência** e a **percepção**
dos(as) moradores(as) de **Smart City Laguna-CE**

1|2

Eu gostaria de te convidar a participar de uma pesquisa. Antes de decidir participar, você precisa entender por que a pesquisa está sendo feita e o que envolveria para você. Por favor, reserve um tempo para ler atentamente as seguintes informações. Faça perguntas se alguma coisa que você leu não estiver clara ou se gostaria de obter mais informações. Tire tempo para decidir se deseja ou não participar.

QUEM SOU EU, E SOBRE O QUE SE TRATA ESTE ESTUDO?

Olá, sou Lorena Borges Dias, arquiteta e urbanista, mestranda e pesquisadora. A fim de finalizar a minha dissertação de mestrado, estou fazendo uma pesquisa para avaliar o conceito de um bairro inteligente inclusivo baseado no exemplo de Smart City Laguna. O objetivo geral do estudo é entender a sua vivência cotidiana no bairro e as suas percepções como morador(a) do bairro.

O QUE VAI ENVOLVER A PARTICIPAÇÃO?

Participar da pesquisa envolverá:

- Primeiro, responder perguntas simples sobre informações pessoais;
- Depois, sentar com a pesquisadora para uma entrevista de até 1 hora de extensão. A entrevista será gravada em áudio e posteriormente transcrita como texto para análise da pesquisadora; e
- Após a entrevista, e caso seja do seu interesse, você fará uma rápida caminhada (de 10-15 minutos) pelo bairro, juntamente com a pesquisadora. Durante a caminhada você poderá apontar para elementos no ambiente construído que te lembrem ou que se relacionem com os sentimentos de pertencimento discutidos durante a entrevista.

POR QUE VOCÊ FOI CONVIDADO(A) A PARTICIPAR?

A pesquisadora elegeu critérios que estão alinhados com os objetivos da pesquisa, e talvez você se encaixe nesses critérios. Os principais critérios são: [1] ser residente de Smart City Laguna; [2] ser maior de idade; [3] ter participado da decisão familiar de se mudar para Smart City Laguna; e [4] participar ou não de um programa governamental de financiamento imobiliário para adquirir moradia em Smart City Laguna.

VOCÊ TEM QUE PARTICIPAR?

Sua participação é totalmente voluntária. Você tem o direito de recusar a participação e recusar quaisquer perguntas que a pesquisadora possa fazer. A pesquisadora quer deixar claro que você tem o direito de retirar sua participação da pesquisa a qualquer momento sem nenhuma consequência (basta informar a pesquisadora).

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PARCIALMENTE FINANCIADO POR
EFL STICHTING

Figure 33 - Information sheet (page 1).
Source: Author (2023).

Here is the second page of the information sheet, explaining the potential risks in participating, how the data management works, how they are being thanked for participating, what happens to the results, and the researcher's information for further contact (see Figure 34).

SENTIMENTO DE PERTENCIMENTO

estudo sobre a **vivência** e a **percepção** dos(as) moradores(as) de **Smart City Laguna-CE**

2 | 2

QUAIS SÃO OS POSSÍVEIS RISCOS DE PARTICIPAR?

Um risco potencial é a empresa de implementação e gestão (Planet Smart City) ou o município de São Gonçalo do Amarante-CE não apreciarem os resultados da pesquisa. Para evitar esse tipo de situação, a pesquisa não utilizará os dados de forma a tornar os participantes identificáveis. E como o Brasil é uma democracia, todos têm o direito de se expressar livremente.

COMO SERÃO REGISTRADAS, ARMAZENADAS E PROTEGIDAS AS INFORMAÇÕES QUE VOCÊ FORNECER?

As informações que você fornecer serão registradas através das respostas dadas durante a entrevista em arquivos de áudio e os apontamentos durante a caminhada poderão ser fotografados e geolocalizados. A estratégia de armazenamento e de cópias de segurança é manter os dados no computador, disco rígido e nuvem institucional da pesquisadora, com acesso exclusivo por meio de senha. A proteção dos dados será implementada através da anonimização de seus dados pessoais; a criptografia dos dispositivos utilizados; e somente a pesquisadora terá acesso aos seus dados brutos. Após a defesa da dissertação de mestrado, e baseado na política de dados da Universidade de Twente, é necessário arquivar os dados para que possam ser reutilizados em pesquisas posteriores. Somente dados anonimizados serão arquivados e armazenados no repositório da Universidade.

COMO SEREI COMPENSADO POR SUA PARTICIPAÇÃO?

É do interesse da pesquisadora demonstrar apreço por seu esforço e tempo gasto participando da pesquisa. Com isso, um sinal de agradecimento será dado para você após o término da entrevista e caminhada.

O QUE VAI ACONTECER COM OS RESULTADOS DO ESTUDO?

O plano de divulgação dos resultados finais da pesquisa é prioritariamente a apresentação da dissertação de mestrado da pesquisadora, mas também pode incluir futuras participações em conferências acadêmicas e/ou publicações.

QUEM VOCÊ DEVE CONTATAR PARA INFORMAÇÕES?

Caso ache necessário, fique à vontade para contactar a pesquisadora Lorena Borges Dias, pelo email **l.borgesdias@student.utwente.nl**
ou o Comitê de Ética da Universidade de Twente, pelo email **ethicscommittee-geo@utwente.nl**

OBRIGADA!

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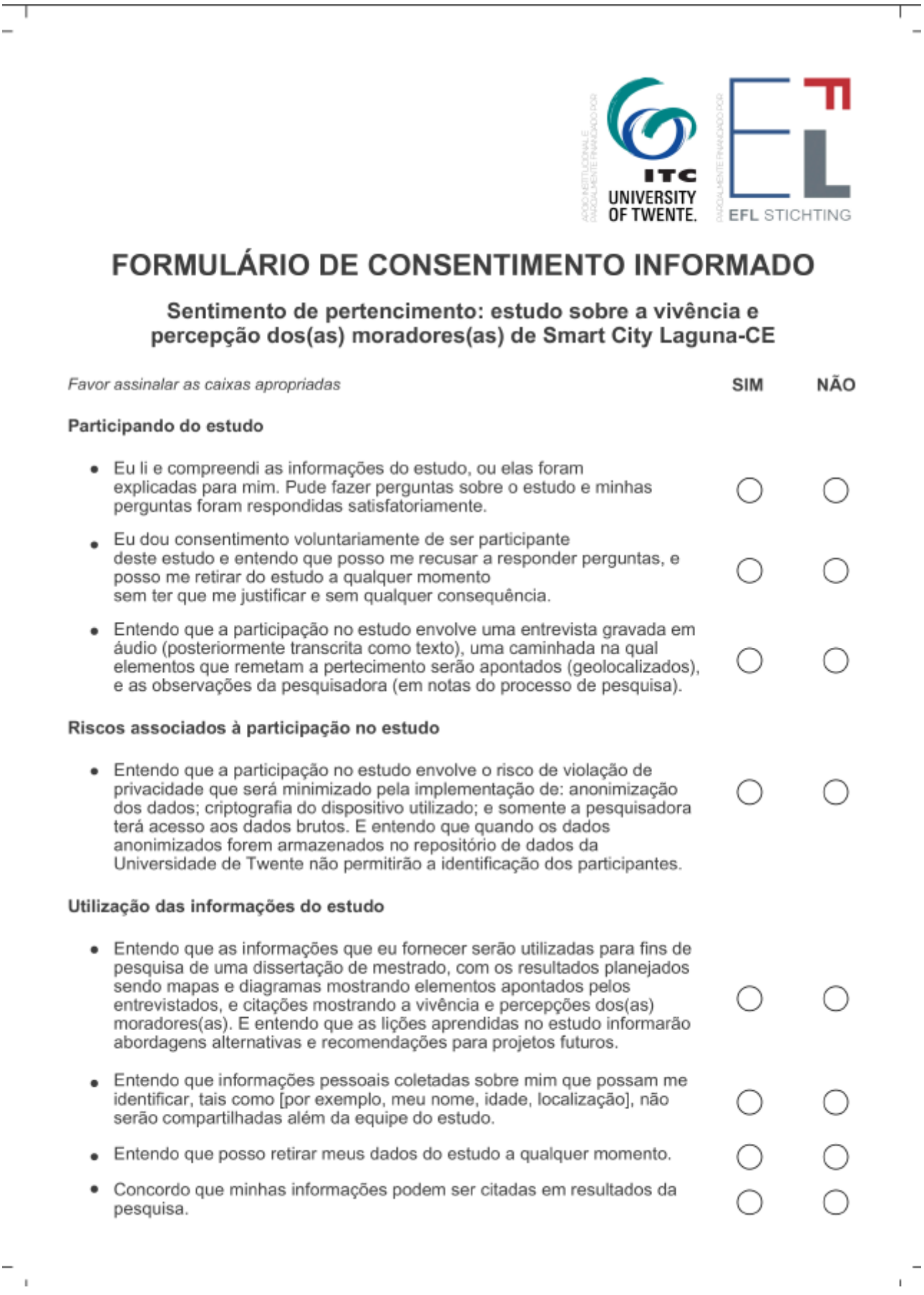
EFL STICHTING

Figure 34 - Information sheet (page 2).
Source: Author (2023).

Here is the first page of the consent form, explaining in more detail what was presented in the information sheet, now with two options (yes or no) where the participant would need to mark the option they felt more comfortable with - regarding their participation, associated risks, and the use of information provided (see Figure 35).



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EFL STICHTING

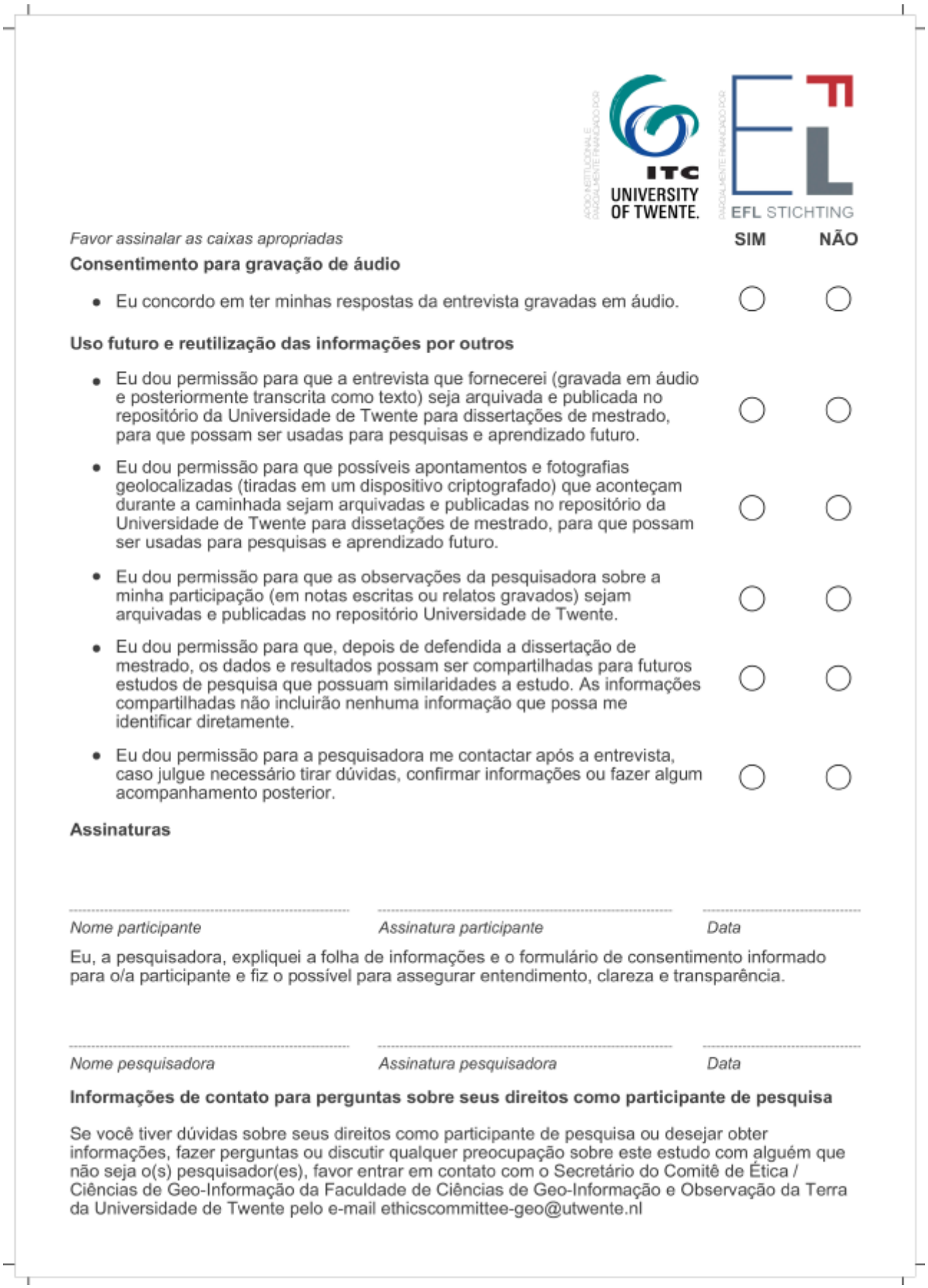
FORMULÁRIO DE CONSENTIMENTO INFORMADO

Sentimento de pertencimento: estudo sobre a vivência e percepção dos(as) moradores(as) de Smart City Laguna-CE

Favor assinalar as caixas apropriadas	SIM	NÃO
Participando do estudo		
• Eu li e compreendi as informações do estudo, ou elas foram explicadas para mim. Pude fazer perguntas sobre o estudo e minhas perguntas foram respondidas satisfatoriamente.	◯	◯
• Eu dou consentimento voluntariamente de ser participante deste estudo e entendo que posso me recusar a responder perguntas, e posso me retirar do estudo a qualquer momento sem ter que me justificar e sem qualquer consequência.	◯	◯
• Entendo que a participação no estudo envolve uma entrevista gravada em áudio (posteriormente transcrita como texto), uma caminhada na qual elementos que remetam a pertecimento serão apontados (geolocalizados), e as observações da pesquisadora (em notas do processo de pesquisa).	◯	◯
Riscos associados à participação no estudo		
• Entendo que a participação no estudo envolve o risco de violação de privacidade que será minimizado pela implementação de: anonimização dos dados; criptografia do dispositivo utilizado; e somente a pesquisadora terá acesso aos dados brutos. E entendo que quando os dados anonimizados forem armazenados no repositório de dados da Universidade de Twente não permitirão a identificação dos participantes.	◯	◯
Utilização das informações do estudo		
• Entendo que as informações que eu fornecer serão utilizadas para fins de pesquisa de uma dissertação de mestrado, com os resultados planejados sendo mapas e diagramas mostrando elementos apontados pelos entrevistados, e citações mostrando a vivência e percepções dos(as) moradores(as). E entendo que as lições aprendidas no estudo informarão abordagens alternativas e recomendações para projetos futuros.	◯	◯
• Entendo que informações pessoais coletadas sobre mim que possam me identificar, tais como [por exemplo, meu nome, idade, localização], não serão compartilhadas além da equipe do estudo.	◯	◯
• Entendo que posso retirar meus dados do estudo a qualquer momento.	◯	◯
• Concordo que minhas informações podem ser citadas em resultados da pesquisa.	◯	◯

Figure 35 - Consent form (page 1)
Source: Author (2023).

Here is the first page of the consent form, explaining in more detail what was presented in the information sheet, now with two options (yes or no) where the participant would need to mark the option they felt more comfortable with - regarding consent in being recorded, future use and reuse of data, the place for the signatures, and the Ethics Committee email address for contact (see Figure 36).



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EFL STICHTING

Favor assinalar as caixas apropriadas

	SIM	NÃO
Consentimento para gravação de áudio		
• Eu concordo em ter minhas respostas da entrevista gravadas em áudio.	○	○
Uso futuro e reutilização das informações por outros		
• Eu dou permissão para que a entrevista que fornecerei (gravada em áudio e posteriormente transcrita como texto) seja arquivada e publicada no repositório da Universidade de Twente para dissertações de mestrado, para que possam ser usadas para pesquisas e aprendizado futuro.	○	○
• Eu dou permissão para que possíveis apontamentos e fotografias geolocalizadas (tiradas em um dispositivo criptografado) que aconteçam durante a caminhada sejam arquivadas e publicadas no repositório da Universidade de Twente para dissetações de mestrado, para que possam ser usadas para pesquisas e aprendizado futuro.	○	○
• Eu dou permissão para que as observações da pesquisadora sobre a minha participação (em notas escritas ou relatos gravados) sejam arquivadas e publicadas no repositório Universidade de Twente.	○	○
• Eu dou permissão para que, depois de defendida a dissertação de mestrado, os dados e resultados possam ser compartilhadas para futuros estudos de pesquisa que possuam similaridades a estudo. As informações compartilhadas não incluirão nenhuma informação que possa me identificar diretamente.	○	○
• Eu dou permissão para a pesquisadora me contactar após a entrevista, caso julgue necessário tirar dúvidas, confirmar informações ou fazer algum acompanhamento posterior.	○	○

Assinaturas

Nome participante | *Assinatura participante* | *Data*

Eu, a pesquisadora, expliquei a folha de informações e o formulário de consentimento informado para o/a participante e fiz o possível para assegurar entendimento, clareza e transparência.

Nome pesquisadora | *Assinatura pesquisadora* | *Data*

Informações de contato para perguntas sobre seus direitos como participante de pesquisa

Se você tiver dúvidas sobre seus direitos como participante de pesquisa ou desejar obter informações, fazer perguntas ou discutir qualquer preocupação sobre este estudo com alguém que não seja o(s) pesquisador(es), favor entrar em contato com o Secretário do Comitê de Ética / Ciências de Geo-Informação da Faculdade de Ciências de Geo-Informação e Observação da Terra da Universidade de Twente pelo e-mail ethicscommittee-geo@utwente.nl

Figure 36 - Consent form (page 2).
Source: Author (2023).

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