City & Citizenship: *Socio-technical Imaginaries on The Governmental Discourse of Indonesia's Future (Smart) Capital City*

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"If men define situations as real, they are real in their consequences."

- William Isaac Thomas

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ABSTRACT

Ibu Kota Nusantara (IKN), is Indonesia's future capital city designed by the Government of Indonesia (GoI) to be a smart and environmentally sustainable city. This thesis examines the GoI's socio-technical imaginaries about the future (smart) capital city project. Mobilising multimodal discourse analysis, I illustrate that digital citizenship - conferred on the basis of one's digital literacy proficiency - is highly valued in a city that is envisioned to rely on technological solutions to address urban governance complexities.

This thesis also traces the historical links between the GoI's imaginaries of IKN and past GoI's projects on smart cities (i.e., *100 Smart* Cities) and digital citizenship (i.e., *Siberkreasi*). Using historical analysis, I present an account that shows the influence of corporate narratives of smart cities on the GoI's conceptualisation of smart cities. It is shown that these corporate narratives of smart cities are appropriated into the techno-nationalism narratives that the GoI performs.

Recognising that these corporate narratives are non-neutral, the thesis advocates for wider public participation in shaping IKN. It emphasises the strategic importance of imagining alternative future visions for the IKN project, and concludes by suggesting a more participatory approach to technology assessment in order to produce alternative visions during the development of the IKN project.

Keywords: *socio-technical imaginaries, IKN, digital citizenship, smart city.*

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ABBREVIATIONS

HoR	: House of Representative
GoI	: Government of Indonesia
NNCA	: Nusantara National Capital Authority
IKN	: *Ibu Kota Nusantara*
STS	: Science, Technology, and Society
IMF	: International Monetary Fund
ADB	: Asian Development Bank
CBS	: Central Bureau of Statistics
MPWPH	: Ministry of Public Works and Public Housing
MNDP	: Ministry of National Development Planning
MCI	: Ministry of Communication and Informatics
MOFA	: Ministry of Foreign Affairs
MOHA	: Ministry of Home Affairs
ICT	: Information and Communication Technology

INTRODUCTION

The future of Indonesia is exciting to watch as the nation continues to grow. A recent report by International Monetary Fund (IMF) recorded that 277,43 million people inhabit this archipelago nation in 2023 (IMF, 2023), and it is projected to grow to 324 million people in 2045 (Indonesian MNDP, 2023, as cited in Kamalina, 2023). This population growth is also accompanied by its economic growth, where the Asian Development Bank (ADB) projected Indonesia's economy to grow by 4.8% in 2023 and 5.0% in 2024 as the commodity boom decreases and domestic demand normalises (ADB, 2022). This slightly differs from the Indonesian Central Bureau of Statistics (CBS) report, as Indonesia hit 5,03% growth in its first quarter of 2 compared to last year's quarter (Indonesian CBS, 2023).

Considering the growing population and developing economic capabilities, the Government of Indonesia (GoI) also enacts its infrastructure-oriented policies across different times and places. To emphasise the importance of infrastructure for Indonesia's growth, the official website of Indonesian MPWPH clearly states that 'infrastructure development plays a significant role in spurring economic growth, both at the national and regional levels, as well as reducing unemployment, alleviating poverty and of course increasing people's welfare' (Indonesian MPWPH, 2012). This emphasis on infrastructure is continuously reflected in the policies of the current president of Indonesia, Joko Widodo. While infrastructure development became a priority program during Widodo's first term of presidential office in 2014 (President of the Republic of Indonesia, (n.d.)), we can see numerous infrastructure projects since then. From 2016 until December 2022, 152 national strategic projects have been completed and are fully operational, while as many as 46 projects are currently in the preparation stage (Portal Informasi Indonesia, 2023). Among these different infrastructure projects, one bears more expectations and concerns from various stakeholders than the others. That particular project is *Ibu Kota Nusantara* (IKN), or the future capital city of Indonesia that is currently being built on Borneo island. To further solidify the project's plan and the legality status of this project, the GoI produced several regulations and derivative legal frameworks which attract a diversity of public reactions.

The Indonesia National Capital City Law, or Law No. 3/2022[1], is the general umbrella regulation that oversees the development of the IKN project. Ratified by the Indonesian House of Representatives (HoR) in January 2022 (Indonesian HoR 2022), this ratification is an essential milestone for Indonesia's history of capital city relocation planning. It reflects the commitment of the current cabinet of the GoI to start an ambitious megaproject, which is to build an *ex-novo* capital city named *Nusantara*. While the initial construction process of this project commenced in the middle of 2022 (Karunia, 2023), this megaproject is more than just an ordinary national project. First, it will relocate Indonesia's current capital city in Java island (i.e. Jakarta) to Borneo island. This relocation implies not only material or logistical consequences but also unforeseen socio-political and economic impacts on the future of Indonesia as a nation. Second, as relocating the Indonesian capital city to another island is not ambitious enough, the GoI also aims to build this future city as a smart city (NNCA, 2022b). Referring to a publicly accessible official document by the Nusantara National Capital Authority (NNCA), the smart capital city that the GoI envisions consists of six main components, namely 'governance', 'transportation and mobility', 'living', 'natural resources and energy', 'industry and human resources', and 'built environment and infrastructure (Berawi, 2022, p. 11). The Indonesian Ministry of National Development Planning (MNDP) plans various advanced technologies (e.g., autonomous vehicles, big data analytics, etc.) to be implemented within these main components to support life arrangements in the future capital city (Indonesian MNDP, 2021). As this future capital city is currently under construction, the GoI aims to establish the core infrastructure of the new capital city by 2024 (Karunia, 2023), which is estimated to cost around 12 billion Rupiah from the state budget (NNCA, 2022a). The level of commitment that the GoI put to this project is further reflected in President Joko Widodo's statement that targets the 2024 national independence day ceremony to be held in the newly-built Presidential Palace of Nusantara (Indonesian Cabinet Secretariat, 2022a).

Considering its massive scale of socio-political and financial consequences, the IKN project has sparked public discussions and controversies, despite the various strategies implemented by the government to gain public support and investment. For example, an online petition led by various prominent academicians and activists openly stated its objection to the IKN project (Narasi Institute, 2022). These strategies include the production of imaginaries or visions about the IKN

[1] Translated from Indonesian language, original language can be found in the appendix 4.

project through the circulation and enactment of various political decisions, regulations, material representation, and government official addresses. These government-led imaginaries are embedded within the complex interactions between multiple stakeholders in discussing the IKN project. Different proponents and opponents of this project can be identified in the discourse of the IKN project, mainly responding to the circulated imaginaries about the IKN project produced by the GoI.

This thesis then takes the direction to study the imaginaries produced by the government and circulated within the governmental discourse on the IKN project, which implies two research goals. First, given the complexities of interactions within the IKN project's general discourse, it might be difficult for the general public to critically engage and understand the GoI's imaginaries about the IKN project. Therefore, the first research goal of this thesis is to provide a critical reading on the underlying imaginaries within the governmental discourse of the IKN project. By providing these critical readings, it hopes to present a more nuanced understanding of the imaginaries of the IKN project made by the GoI. Second, implications from these imaginaries will also be discussed within this thesis. It analyses the implications of such imaginaries, particularly on citizenship and how the GoI sees its citizens in this new city project.

By achieving these two research goals, this thesis encourages more comprehensive public participation and deliberation in scrutinising the IKN project, as their participation is fundamental to assessing and evaluating the development of the IKN project. Drawing from the research goals, this thesis investigates the following research question: ***How do socio-technical imaginaries within the governmental discourse of the smart city IKN project reflect a particular form of seeing the city and citizenship*?** Stemming from this research question, I first explore the socio-technical imaginaries embedded within the governmental discourse of the IKN project in Chapter 1. This will be done by mobilising multimodal discourse analysis on the publicly accessible government documents related to the IKN project.

The second chapter employs historical analysis to trace the genealogy of the socio-technical imaginaries within the IKN project. It does so by looking at the history of GoI's projects on smart cities and digital citizenship. This will be done to understand the forms of knowledge and assumption about smart cities and citizenship drawn upon these projects, relating to the socio-technical imaginaries found within the governmental discourse of the IKN project.

The third chapter proposes a philosophical reflection on the relationship between smart city projects and digital citizenship. In particular, it seeks to investigate how socio-technical imaginaries can transform into reality by drawing on a concept that explains the performativity of promises and expectations within socio-technical imaginaries (van Lente & Rip, 1998). Upon investigating the way these socio-technical imaginaries transform into reality, I will draw them to reflect on how the visions about digital citizenship may affect the existence of Indonesia's informal citizenship (Berenschot & van Klinken, 2018) in the new city project.

This thesis subsequently advocates for broader public participation to produce alternative future visions for the IKN smart city by offering an account highlighting the strategic importance of imagining the future. In particular, I will draw the suggestion to a specific approach of participatory technology assessment called 'controversing' (Baibarac-Duignan & de Lange, 2021), where this approach can provide a relevant contribution to the ongoing public discussion on the IKN project.

ACADEMIC RELEVANCE

The academic relevance of this thesis is twofold. First, it aims to fill the empirical gap of key concepts application that will be mobilised throughout this thesis, particularly the concept of socio-technical imaginaries. By using the concept of socio-technical imaginaries to analyse the case study of the IKN project, I present an account to illustrate that this conceptual framework is helpful in analysing an empirical case. Several research have shown various findings from the concept application to a particular case study. A previous study, for instance, traces the exercise of certain imaginaries across multiple social settings and temporalities (Lawrence, 2020). Another study uncovers the background assumption within the imaginaries of the well-known concept of the Fourth Industrial Revolution (Schiølin, 2020). A third study also analyses the contestation between competing socio-technical imaginaries (Levidow & Raman, 2020). In contrast, another study synthesises such competing imaginaries to suggest future research avenues that can serve as practical aims in promoting certain paths of socio-technical order (Sovacool et al., 2020). While these studies provide unique findings as the result of their conceptual application to their specific case studies, this will also become the first academic relevance of this thesis.

Second, as these previous studies present their findings through different methods, this thesis also aims to contribute to the methodological gap within the scholarship of socio-technical imaginaries. It does so by combining multimodal discourse analysis and historical analysis to generate new insights, particularly about the concept's application on a new city project case study. In regards to the choice of the case study, there is only limited research at hand that discuss the development of the IKN project from different angles. Some studies discuss the political communication of the GoI's plans to build the IKN project (Hairunissa & Syaka, 2022, pp. 13-14) and how it is circulated and discussed in social media (Septiani et al., 2022, p. 253) (Delfirman, et al., 2022, p. 5). Another study focuses on reviewing the GoI's plan for preparing the smart city development in the new capital city of Nusantara (Rifaid, et al., 2023, pp. 118-123). A study also analyses how Western media coverage frames this new capital city project plan (Amalia & Andung, 2023, pp. 190-193). However, there are still few research results that provide a combined analysis based on multimodal discourse analysis and historical analysis that links smart cities and digital citizenship with the IKN project. Therefore, this becomes the second contribution of this thesis to the ongoing research on the topic of the IKN project.

To conclude, this thesis presents a synthesis between the concept of socio-technical imaginary imaginaries and literature on the planning of new cities and smart cities. Furthermore, using specific methods such as multimodal discourse analysis allows us to see the alignment of expectations between corporate interests and the GoI's techno-nationalism in the IKN project that reflect specific kinds of administrative structure and a certain understanding of citizenship. This alignment of expectations (and its implications) restricts the alternative possibilities for the kind of city (and nation) that might be built, which inevitably will face a variety of resistance from what already exists in Indonesia (e.g., informal citizenship, local tribe's refusal on IKN's land provision, hesitance to move to IKN since Jakarta will still exist, etc.). In other words, the academic relevance of this thesis is present in the way this thesis mobilises a specific analytical lens of socio-technical imaginaries to offer a nuanced analysis and critique of the emergent new-smart city phenomena in the IKN project as it continues to be developed in Indonesia.

SOCIETAL RELEVANCE

This thesis also brings some relevancies to the societal debates on the development of the IKN project. As the IKN project bears multiple consequences to the present and future of Indonesian society, the methodological choice of this thesis also brings focus to the continuing narrative and public communication that the GoI carries out to further advance the development of the IKN project. By looking at the circulation of narratives within the governmental discourse of the IKN project, this thesis aims to reveal the underlying assumptions and values that drive the development and implementation of smart city technologies in the new capital city of Nusantara. By critically examining the dominant imaginaries of the IKN project that the GoI produces, this thesis identifies implicit biases and ideologies that shape the innovation design and governance of the new capital city. This can lead to a more nuanced understanding of the potential benefits and drawbacks associated with specific policies in the development of the IKN project. While the GoI is still pushing for new investment to develop the IKN project (Salim, 2023), public deliberations should also be encouraged to ensure that multiple perspectives and values are considered in the innovation design and governance process of the new capital city development. In this direction, the results of this thesis are aimed at facilitating broader public deliberation and participation in the decision-making processes related to the IKN project. By revealing the dominant imaginaries of the IKN project in the governmental discourse, this thesis also suggests anticipatory approaches that can produce alternative visions about the future of the IKN project. Such alternative visions about the IKN project can lead to the provision of more diverse and creative solutions that address the needs and aspirations of a wider range of stakeholders in the IKN project.

KEY CONCEPTS

In this section, I will elaborate on three guiding key concepts that will be mobilised throughout the thesis, namely *socio-technical imaginaries, smart city,* and *digital citizenship.* Starting with the concept of socio-technical imaginaries, this concept becomes a growing research theme within the science, technology, and society (STS) field. Various definitions of socio-technical imaginaries have been discussed in different strains of literature. Synthesising upon various similar definitions of it, we can identify several general characteristics of socio-technical imaginaries definition. First, socio-technical imaginaries (or as different scholars call them 'futures') are future-oriented visions

and potential scenarios related to envisioned social and technological orders (Konrad & Böhle, 2019, p. 101) (Sismondo, 2020, p. 505). Second, they need to be stable in order to have the power to shape decisions and actions related to the envision social and technological order (Sismondo, 2020, p. 505). Third, such stability exists because socio-technical imaginaries are *collectively and continuously performed* (Felt, 2015, p. 104) not only through narratives and roadmaps but also through the practices and processes that afford the ways they affect the innovation and governance of the envisioned social and technological order (Konrad & Böhle, 2019, p. 101). Fourth, although these imaginaries need to be stable, previous literature has also shown that socio-technical imaginaries are generally contested and flexible to change (Sismondo, 2020, p. 505). This is because different actors can produce their unique imaginaries about certain future socio-technical arrangements, or there are different ways of performing and practising certain socio-technical imaginaries (Felt, 2015, p. 119-120). Fifth, socio-technical imaginaries situate technologies not as merely the result of technical expertise and arrangements but are deeply entwined with social, cultural, and political values. In this sense, socio-technical imaginaries are shaped by various factors, including cultural norms, historical links, political ideologies, and technological advancements (Felt, 2015). Combining these social and technical factors, these imaginaries can provide a sense of coherence and direction for technological development and deployment.

In this thesis, the technological development project that is chosen as the primary focus of analysis is a smart city development project. In relation to the case study, chapter two will trace the history of smart city projects in Indonesia to understand how the GoI understands and implements smart city concepts in its urban policies. However, the concept of a smart city itself is variously defined by different scholars and literature (Albino et al., 2015, pp. 6-8). Generally, a smart city is often conceptualised as a socio-technical arrangement that incorporates information and communication technology (ICT) approaches to find solutions and manage cities' challenges (Albino et al., 2015, pp. 4). Within this socio-technical arrangement, six components compose the portrayal of urban life in a smart city (Lombardi et al., 2012). These components include smart economy, smart people, smart governance, smart mobility, smart environment and smart living, in which certain indicators can be applied to further define the meaning of every component (Albino et al., 2015, p. 14). However, this thesis follows the turn to further politicise the concept of a smart city. While previous literature has offered an insightful critique of the smart city as a techno-solutionist model of urban governance (Luque-Ayala & Marvin, 2015), a particular focus of this

thesis is drawn upon how smart city projects transform urban governance problems into issues that require "technical" solutions. As these urban governance problems are inherently political (thus demanding broader public deliberation), citizen participation in a smart city becomes constrained by techno-solutionist logic (Lynch, 2019, p. 665). To further scrutinise the concept of smart city, this thesis follows the strain of research that conceptualised smart city as a technological imaginary that is driven by corporate interests from technology companies, such as IBM and Cisco (Sadowski & Bendor, 2019, pp. 548-553). Such conceptualisation situates smart city projects as some depoliticised projects that serve certain ideas of profit-maximising for multinational technology companies (Sadowski & Bendor, 2019, p. 556). By conceptualising it in that way, it takes the attention away from not only focusing on the abundance of technological innovation that is embedded within a smart city project but takes us to uncover the underlying assumption of such a project. Given that there are risks of technological lock-in and smart city projects proliferation across the world, there needs to be a realisation that smart city projects can also be imagined differently from the corporate imaginary of a smart city. Such alternative imaginaries of a smart city can initially stem from a critical interpretation of smart city concepts that open the way to confront the influence of the corporate imaginary in global smart city projects.

As previously mentioned, a smart city does not only consist of the technical infrastructure arrangement but also involves the human agency that constitutes a socio-technical configuration in the city. To support the arguments of this thesis, I will focus on the component of smart people, or as Ayona Datta calls "smart citizens" in her research on the digital turn in postcolonial urbanism (Datta, 2018b, pp. 408-409). Within this line of research, the "smart citizens" concept refers to citizens who earn their citizenship through their engagement with the technologically saturated urban governance that the government provides (Datta, 2018a, p. 133). In this sense, citizenship is no longer claimed as a right but rather a 'gift' from the government as a result of their engagement with technologically saturated urban governance that makes them digital citizens (Datta, 2018a, p. 133). Citizens' engagement with technologically saturated urban governance here plays a key role in understanding digital citizenship. These engagements can be drawn to the appropriate norms and responsible behaviour regarding technology use or one's ability to participate in society through online platforms (Choi, 2016, p. 570). This can then be understood as a predetermined social construction of a community in a smart city.

However, such construction of digital citizenship is dynamic in the sense that there is coercion by the government and resistance from the citizens to submit to the dominant construction of citizenship that the government tries to build in a smart city. This process is what Datta conceptualises as *enumeration, articulation,* and *breaches;* three key processes that elaborate the meaning-making and performance of digital citizens in an ICT-driven urbanism context (Datta, 2018b, pp. 408-409). It becomes interesting to see how these processes work in a postcolonial state like Indonesia, as Indonesia is known for its existing citizenship that differs from Western patterns of citizenship, namely informal citizenship (Berenschot & van Klinken, 2018). The study from Berenschot & van Klinken (2018, p. 107) conceptualises such informality as a form of political agency that stems from the cultivation of personal connections with state or public officials. As informal citizenship has three dimensions – mediation, the invocation of social norms and the use of informal networks (Berenschot & van Klinken, 2018, pp. 103-107) – the latter chapter of this thesis will explore the possible implications of the interaction between the enactment of digital citizenship through the smart city IKN project, with the existing informal citizenship of Indonesia.

1. CHAPTER 1: GOVERNMENTAL IMAGINARIES OF IKN

In this chapter, I aim to capture the socio-technical imaginaries that are embedded within the governmental discourse of the IKN project. By looking at the governmental discourse, I investigate the discursive construction of the IKN project and how it is being circulated through regulations and public policies that promote the construction of the smart city project. This is a deliberate choice to limit the focus of analysis only to the governmental discourse (i.e., narratives, conversations, and frames that are circulated by state or public officials and within the government network). While the analysis may have drawbacks (as it does not pay much attention to the narrative outside the governmental discourse), this limitation is driven by two reasons. First, as the IKN project is still in a very initial stage, much discussion on online media has been dominated by narratives from state officials. This does not necessarily imply that there are no visible counter-narratives from other actors. However, as this thesis mainly relies on secondary and publicly available documents in online media, I focus on government-produced narratives and framing about the IKN project in several online media and state official websites which can be considered sufficient for this thesis' resources. Secondly, the choice to focus on the governmental discourse aligns with the key concepts and the research goal of this thesis. While the key concept of socio-technical imaginaries is often associated with the way a state actively exercises its power in certain socio-technical arrangements (Sismondo, 2020, p. 506), the decision to focus on governmental discourse on the IKN project can sharpen the elaboration of the state performance on its socio-technical imaginaries. Focusing on the governmental discourse can also provide the revealing of background assumptions and patterns of narratives that the state performs about certain socio-technical imaginaries. By revealing this, I aim to encourage wider public deliberation to scrutinise the development of the IKN project further.

To present the analysis of the governmental discourse of the IKN project, I mobilise multimodal discourse analysis that covers textual information from news coverage and official documents about the IKN project. As multimodality here refers to symbolic forms that are not limited to language (Bi, 2019, p. 1035), I also analyse publicly available audio and visual materials about the IKN project that serves as digital representations of the IKN project's imaginaries. Such digital representations of new cities become increasingly crucial to look at, as they constitute key components within the broader assemblages of new city projects (Lynch, 2018, p. 3). While it is

interesting to trace the circulation of these digital representations across multiple spaces of power and agency, this thesis takes focus on analysing the symbolic forms embedded within these digital representations. By doing so, I aim to understand the ways in which various symbolic forms in this corpus (such as agent deletion, passivation or nominalisation) can affect how a phenomenon is understood (Bauer & Gaskell, 2000, p. 4). Following this line of understanding, such symbolic forms are understood as constructive of our world, performing not in a 'direct' way but rather as a transparent medium that reflects the way things are (Bauer & Gaskell, 2000, pp. 5-6). Symbolic forms also possess the feature of 'action orientation' (Bauer & Gaskell, 2000, p. 6), in which people use these forms to *do* things while adjusting to the interpretive context where they mobilise such symbolic forms. In this sense, discourse is then understood as a social practice, rather than something that occurs in a social vacuum.

Aligned with the concept of socio-technical imaginaries, I situate discourse as the ensemble of stories and ideas that are shared and can be produced and reproduced through a set of practices (Hajer, 2006, p. 67) by a certain exclusive community. This community here refers to the Indonesian governmental network that practices discourse on the IKN project, which limits the corpus of this thesis to documents and audio-visual materials that are produced by the government and circulated within the governmental discourse on the IKN project. The circulation of materials are traced in state officials' quotations and public addresses, policy briefs, press releases, and governmental news that are published from the official websites of several GoI institutions. In addition to that, two major Indonesian newspapers (i.e., Tempo and Kompas) are also chosen as resources for this corpus due to their features of wide coverage, timely reporting, and availability for online access. As I use multimodal discourse analysis, audio-visual materials regarding the IKN project from official YouTube accounts of several GoI institutions and their affiliations are also included in this corpus. To filter these various materials before incorporating them into this corpus, I use several keywords in the search query that is mainly done through Google Search.[2] This results in the inclusion of Indonesian language materials, which I can translate into English due to my fluency with the Indonesian language.[3] Drawing from the results of the selection criterion, I

[2] Keywords include the combination of: "smart city", "IKN", "Ibu Kota Nusantara", "Kota Cerdas", "Presiden Jokowi", "OIKN", "Otorita Ibu Kota Nusantara", "technology", "teknologi", "digital literacy", "literasi digital".
[3] The non-translated quotations are documented in the appendix.

proceed to code[4] those materials and identified common frames of smart city imaginaries within the governmental discourse on the IKN project. As the analysis evolves, codes and sub-codes were inductively added. This results in two dominant imaginaries that relate smart city with digital citizenship. I call these the imaginaries of **a) *techno-solutionist logics for sustainable urban governance*** and **b) d*igitally-literate citizens.***

1.1 TECHNO-SOLUTIONIST LOGICS FOR SUSTAINABLE URBAN GOVERNANCE

The governmental discourse on the IKN project initially grow around the standpoint of moving the capital city from Jakarta and building an *ex-novo* capital city of Indonesia on Borneo island. This standpoint refers to the Indonesian President's state address at the Annual Session of the Indonesian National and Regional HoR back in August 2019 (Hendartyo, 2019), which is illustrated through the following quote:

"...by asking for permission and support from honourable Members of the House of Representatives, elders and leaders of the Nation, especially all Indonesian people, I hereby ask permission to move our National Capital to the island of Borneo".[5]

Through the pocket guide of the IKN project that was published by the Indonesian MNDP (2021), this standpoint is further specified as "the creation of the smart capital city in Borneo island". It is interesting to see as there is a transformation of agenda framing, from initially "moving the capital" into making not just an *ex-novo* city, but one that is deemed as 'smart' due to technological adoption and development. The standpoint of making an *ex-novo* smart capital city was also addressed by the Head of the NNCA (2022b), who claimed:

"We will realise smart city in the form of a city that possesses advanced technologies, which can help us in our daily lives".[6]

This statement clearly explicates the reliance on technologies to solve urban challenges in the new capital city. In this sense, it also associates the 'smartness' feature of a city with

[4] Initial codes include: "technological promises of Nusantara", "problem framing of Nusantara", "general claims of Nusantara", "implications for citizens".
[5] Translated from Indonesian language, original quotation can be found in the appendix 1.
[6] Translated from Indonesian language, original quotation can be found in the appendix 2.

technological adoption. This demonstrates the reference to smartness that follows not the intelligence of a city that comprises many aspects, but rather solely follows the intelligence of technology (Sadowski & Bendor, 2019, p. 541). The 'intelligence of technology' here refers to the deployment of algorithmic decisions with data-driven analytics and networked communication that adapt to real-time, dynamic situations. These components of technology were further affirmed by the Head of the NNCA who claims several very general advanced technologies to be implemented in the IKN (2022b):

"There will be smart transportation system, smart building management system, smart energy, unmanned vehicles, and electronic data exchange".[7]

While the GoI officials circulate such claims of advanced technologies implementation in the IKN project, it becomes interesting to see how the spoken imaginaries of the IKN project are reflected in the digital representations of the IKN project. One of the most widely circulated digital representations of the IKN project in the governmental discourse is the "Nagara Rimba Nusa"; a visual representation of the IKN project that won the nationwide public design contest of IKN held by the GoI and the NNCA. In this visual representation of IKN, the city is depicted with elevated buildings that combine elements of technological modernity and ecological sustainability (see Figure 1). Such a combination emanates from the designer's awareness of the ecological richness of Borneo island, which is taken as a source of "inspiration" to design a modern city (Sofian, 2021).

Fig. 1 A glimpse of the inner city in the visual representation of IKN. It includes several infrastructures such as playground areas, open public spaces, and wood & terracotta-based housings that are compact and interconnected.

[7] Translated from Indonesian language, original quotation can be found in the appendix 3.

Aiming to provide well-design public spaces that support freedom of movement for its inhabitants, several technologies are included in the visual representation of IKN. Following the claims made by the Head of the NNCA, smart transportation technology is included in the visual representation of IKN (see Figure 2). The smart transportation technology here refers to a flying car that resembles a drone taxi carrying passengers and goods. Affirming this visual representation the Deputy Head of the NNCA claimed the testing of the advanced air mobility ecosystem to be done in IKN 2024 as a result of collaboration with Hyundai Motor Group (Sugiharto, 2022). This demonstrates the position of the new city as a 'living laboratory', where it functions as a platform for the experimental application of advanced technologies to generate both economic prosperity and societal advantages (Miller, 2020, p. 378). These technologies are anticipated to hold the potential to validate their applicability and replicability within global urban centres, in which the official policy book of IKN envisions the new city to be a universal inspiration for tackling climate issues with technology (Indonesian MNDP, 2021, p. 15). In one of his many public addresses about IKN, President Jokowi clearly indicates his ambition to make IKN the global reference for smart city design (Fadli, 2021):

"Let's design IKN in East Borneo to be a city and region that is truly smart in its design, which can be a global pioneer of reference for other cities."[8]

Fig. 2 Public spaces and transportation system in the visual representation of IKN

[8] Translated from Indonesian language, original quotation can be found in the appendix 5.

While ecological sustainability is situated as one of the key city features in the imaginaries of IKN, there is a tendency to bring technology forward as the solution to urban governance issues in the imaginaries of IKN. As the issue of sustainability becomes an integral concern for the design of global future cities, the policy book of IKN clearly posits technology as the solution to tackle climate issues (Indonesian MNDP, 2021, p. 15). Technologies such as smart waste management, smart energy system, sustainable urban drainage, and telehealth are listed as a few of the advanced technologies that will be developed in the IKN (Berawi, 2022, p. 8).[9] These technologies are framed as prerequisites to achieve the goal of making IKN a carbon-neutral city by 2045 (Berawi, 2022, p. 5). This goal is further envisioned through the planned implementation of other advanced technologies, such as smart biodiversity monitoring, smart forest fire management, and smart agroforestry (Berawi, 2023). However, little to no clear and detailed explanations about these technologies from the GoI officials can be found throughout the search scope. This results in a vague and ambiguous reference to technologies in the IKN project with minimal elaboration about the detailed implementation plan of these technologies. The connection between sustainability and the deployment of advanced technologies in a smart city context can be drawn from what Cugurullo (2016) calls "urban eco-modernisation", where eco-city project capitalises on environmental sustainability issues to generate profit by creating opportunities to deploy 'clean' or 'green' technology. What is worth reflecting on from his case study drawn in Masdar City is that these new eco-city projects are positioning the city as a commodity whose development is dictated by the logic of the market, enriching the economic interests of the local elites (Cugurullo, 2016, p. 2431). This only adds more importance on the need to scrutinise the future development of the IKN project, whether the provision of any official policy documents from the GoI that explain the technology implementation plan in detail will be provided or not.

Apart from sustainability issues, other components of urban life such as governance, urban public spaces, and urban citizens are all imbued with many forms of advanced technologies (Berawi, 2022, pp. 12-22) that project a sense of hyper-technologisation. While imaginaries of techno-solutionism appear to complement aspects of sustainability goals, we should be aware that there is also a tendency to ignore the inherent tensions and contradictions (Karvonen, 2020, p. 421).

[9] Prof. Berawi is an active academician who currently also serves as the Deputy Head on Green & Digital Transformation of the NNCA.

This is not to say that we should reject any adoption of technologies for urban governance, as we already live within a technologically-saturated environment. Yet, all these 'smart' technologies seem to present a vision of future urban governance that is based on citizen data extraction and depends on them to 'behave' in ways that allow the intended technological design performance. For example, many technologies in urban public space governance (see Figure 3) require data inputs from the inhabitant that will be extracted as an output to implement urban policies. Not only that these data-exhaustive analytics are entangled with concerns about privacy, data ownership and profit, but these technologies also reflect a lack of vision on the importance of a robust human agency (Miller, 2020, p. 380) that is crucial for an inclusive and democratic urban life.

Fig. 3 Public presentation from the Deputy Head of the NNCA on urban public space management in IKN

One might wonder why such a techno-solutionist approach in the imaginaries of IKN seems to intermingle with sustainability and environmental issue. Smart city imaginaries tend to situate urban citizens to be in confrontation with numerous challenges and crises of urban governance (Sadowski & Bendor, p. 548). Reflecting on the governmental imaginaries of IKN, the GoI uses environmental urban issues in Jakarta as one of the catalysts to implement smart city technologies in the new city of IKN. In the official policy book of IKN, the GoI mobilises Jakarta's environmental urban issues (i.e., flooding, water and air pollution, earthquake, land level decrease, and hyper urbanisation growth) as an urgency to move the capital to Borneo island (Indonesian MNDP, 2021, pp. 2-4). As Jakarta with its numerous problems is considered incompetent to be the

future capital of Indonesia, IKN in Borneo island is seen as a new land that should not repeat the burgeoning environmental and urban problems of Jakarta with the help of technological intervention. This view, however, is not free from criticisms that scrutinise the underlying flawed assumptions. For example, the emphasis on Jakarta's environmental issues will not be solved by moving the central government, as central civic state apparatuses and their activities constitute only a small fraction of the population living in and around Jakarta which will not affect much to Jakarta's environmental crisis (Amir, 2023, p. 12).

The imaginaries of IKN that link the techno-solutionist approach with sustainability can be traced to the environmental problem that Jakarta currently faces. However, certain technologies that are planned to be implemented in IKN seem to contradict the sustainability goals that are embedded within the imaginaries of IKN. For example, the GoI planned to create a metaverse version of IKN (Noor Hidayat, 2022), which was officially launched on October 2022 and is called 'Jagat Nusantara' (see Figure 4). The implementation of a metaverse in IKN is considered an impact of technological advancements that could help the GoI to introduce their visions of IKN (Noor Hidayat, 2022). However, metaverse technologies require AI-powered data centres and cloud services that consume large amounts of energy (Rosenberg, 2022). This projects an indication of contradiction between techno-solutionist logic and the sustainability goals that the GoI tries to relate in their imaginaries of IKN.

Fig. 4 The virtual reality version of President Jokowi on the Metaverse version of IKN

As Borneo island is considered as a 'green' land that possesses rich tropical biodiversity that needs to be protected (i.e., reflected in the material promotion of IKN that prioritises visuals of green parks and forestry; see Figure 4), technology is simply taken as the means to conserve the environmental richness of IKN. This reliance on technology in protecting the green environment of IKN is also reflected through the quantification of issues on the visual materials and representations of IKN (see Figure 5). Abstract land features or urban governance issues are quantified through certain percentages without any clear explanation of the calculation. This quantification of issues depicts the effort of the GoI to produce a well-defined problem formulation and how to tackle it, which further reflects technocratic rationality. Such rationality prefers technically rational action, which relates to the tendency to simply use technologies as well-defined means to overcome precisely defined problems. When the problem formulation in the IKN is imbued with technocratic rationality, then smart city technologies seem to be the inevitable solution to be implemented in the new city.

Fig. 5 Quantification of land management in one of the official public presentations about IKN

1.2 DIGITALLY-LITERATE CITIZENS IN THE (SMART) CAPITAL CITY

Within the interwoven imaginaries of techno-solutionist logic for sustainable urban governance, the values of efficiency and effectiveness are also framed as the values to be pursued in developing

the IKN project. As IKN is envisioned to be a "world city that is inclusive for all" (Indonesian MCI, 2022), these values are seen as crucial to be demonstrated in IKN, particularly to improve the public sector governance and ease of doing business (Indonesian MNDP, 2022, p. 8). A higher-rank official from the Indonesian MNDP clearly indicates (Indonesian MCI, 2022):

"Governance at the IKN requires agile, effective and efficient work. Even though the form of government at the NNCA is special, it must be constitutional, it must still be based on the 1945 Constitution, but it still adopts the needs in the context of realising IKN,"[10][11]

From the formulation of the above statement, the values of efficiency and effectiveness are considered crucial components to address the needs in constructing IKN. Drawing upon the technological apparatus mentioned in the previous sub-chapter, technologies such as smart offices become the material translation from the values of efficiency and effectiveness to technology design. Equipped with digital connectivity, such technical arrangements are anticipated to transform not only physical workplaces but also the working style of people (i.e., particularly for the state civil apparatus) in IKN (Indonesian MNDP, 2021, p. 21). It reflects the translation of efficiency and effectiveness values into a new norm of working and organisational culture called agile methodology (Indonesian MNDP, 2021, p. 20). As an integral part of the e-government implementation in IKN, state civil apparatuses in IKN are envisioned to adapt to the fast and dynamic working environment using flexible resources (Indonesian MNDP, 2021, p. 20).

It is worth noting to scrutinise the concept of agile methodology in the context of IKN imaginaries. Stemming from the ICT field, agile is a set of *know-how(s)* and *know-why(s)* for working in a technologically-enabled organisation that deals with dynamic changes. This way of thinking exists as a response to the rapid growth of technology that disrupts our way of working and organising (McKinsey, 2023). While the disruption of technology in our daily lives is something we can witness nowadays, the movement to adapt ICT-based thinking into our ways of working is something still worth investigating. Aiming to embody fast-paced adaptability that can establish competitive advantages in uncertain conditions, the agile methodology seems to work perfectly with the abundance of technologies in the IKN imaginaries of techno-solutionist logic.

[10] The NNCA is a special agency that operates under the immediate authority of the Indonesian President. This agency is responsible for overseeing and administrating the city of Nusantara, with executive power equal to a ministerial office.
[11] Translated from Indonesian language, original quotation can be found in the appendix 6.

As scholars have argued for smart cities' similarity to knowledge infrastructures (Miller, 2020, p. 378), the imaginaries in IKN situate agile methodology as the underlying knowledge infrastructure in the envisioned smart city of IKN. We should remember that such knowledge infrastructure is never neutral, as it shapes the public perception and directs public policy and planning decisions to govern a city (Miller, 2020, p. 378).

The influential power of agile methodology in the policies related to IKN can be discovered by reflecting upon the current imaginaries of IKN. As the agile method is generally suitable for private sectors, this makes the hierarchical characteristics of public sector organisation to be an obstacle to implementing the agile methodology in the public sector (McKinsey, 2023). To overcome this, the official policy book of IKN stipulates the need to transform public sector governance from 'a hierarchical organisation structure into an agile organisation' (Indonesian MNDP, 2021, p. 20). The transformation of organisational culture for the public sector in the envisioned IKN is also complemented by the current efforts to transform the skills of the people living in the new city. 'Re-skilling and up-skilling' become an integral part of the development of IKN (Berawi, 2022, p. 26).

Among many policy efforts that aim to transform people's competencies to prepare for the new city, improving people's digital literacy skills is the recurring theme of education that the GoI provides in its current human resource policies of IKN. Digital literacy here refers to a wide range of skills that generally demonstrate one's competencies and abilities to think and work with technologies. For example, the Indonesian MPWPH collaborated with its counterpart in South Korea to provide its civil state apparatuses with multiple trainings on the topic of 'Smart Building, Smart District, Smart City, Smart and Sustainability in Regulation and Smart Development' (Indonesian MPWPH, 2022a). The local and regional civic state apparatuses are also not included in these workshops on digital literacy. In one of the skill workshops held in Kutai Barat, an interesting remark about digitalisation and digital literacy was made by a high-rank local state official (Secretariat of Kutai Barat, 2023):

"In nowadays' era of disruption, everyone should understand that digitalisation is an inevitable necessity. No one can avoid the influence of digitalisation. The choice is to be friends with this condition; understand and take advantage of this condition.[12]

Here we can see a statement that resembles the total acceptance of digitalisation as a force that directs the way people manage their skills as a way to cope with the impacts that digitalisation brings. In particular, against this backdrop of digitalisation lies the assumption of digitally-literate civil state apparatuses that will result in the improvement of public service delivery. This assumption draws uncritical causal effect relations between the improvement of civil state apparatuses' digital literacy with their performance in delivering improved public services. The statement also represents an interesting discursive link that goes on between a new urban space, a new form of institutional organisation, and a new "agile" digital citizen.

The assumption that valorises digital literacy as a 'must-have' skill for civil state apparatuses in IKN is further reinforced through the human resources management policies for civic state apparatuses. In order to be transferred to IKN, civil state apparatuses must follow the nationwide assessment. This assessment (although not limited to) includes a digital literacy competence assessment that targets 60.000 civil state apparatuses (Indonesian State Employment Agency, 2022). Unfortunately, at the time of writing this thesis, there are no publicly accessible documents or materials about the details of the assessment that can be found online. However, the fact that digital literacy assessment is made as one of the core assessments to determine whether one can move to IKN reflects the importance of digitally-literate citizens in IKN's policies.

It is not only civil state apparatuses that deal with the imaginaries of digitally-literate citizens in IKN. Local inhabitants of Borneo island (particularly those from local regencies that are close to the IKN region) are also witnessing this movement to realise the imaginaries of digitally-literate citizens in IKN. The NNCA brings various workshops under the theme of digital literacy to transform 'ordinary' villages into 'smart and digital' villages (see Figure 6). These digital literacy workshops include lessons on graphic design, coding & website development, and digital marketing (Maysha, 2023). When these workshops are framed as 'community empowerment', it indicates the assumption of human empowerment in the age of digitalisation that should be done

[12] Translated from Indonesian language, original quotation can be found in the appendix 7.

by equipping people with the necessary digital literacy skills. Combined with the projection of ICT infrastructure development that improves digital connectivity access in the area around IKN, digital literacy seems to be an indispensable skill set to be harnessed by the local inhabitants.

Fig. 6 Visual evidence of various digital literacy workshops to transform digital villages

1.3 CONCLUSION

The first chapter aims to present a nuanced reading on the socio-technical imaginaries that are embedded within the governmental discourse of the IKN project. By mobilising multimodal discourse analysis, I argue that there are two intertwined dominant visions about the future capital city of Indonesia, namely the imaginaries of techno-solutionist logic for sustainable urban governance and the imaginaries of digitally-literate citizens. The link between the two imaginaries embodies the underlying assumption that 'lock' technological advancement with human progress that is measured by how well a person can adapt to digitalisation by harnessing digital literacy skills.

The provision of digital literacy training and workshops for both civil state apparatus and the local inhabitants of nearby areas around IKN can be seen as a form of civic participation in the technologically-saturated environment of IKN. This participation constitutes a form of 'digital citizenship', where people are expected to acquire and maintain the basic necessary skills and

knowledge to participate in a digital society by 'up-skilling and re-skilling' themselves in order to adopt new technologies and applications (Lynch, 2020, p. 3). Following this conception of digital citizenships, the identified values of effectiveness and efficiency in the governmental imaginaries of IKN are central to determining the standard of a 'good' digital citizen, who is expected to be able to cope in a fast-changing and disrupted new (digitalised) world of work and leisure (Emejulu & McGregor, 2019: p. 133).

Whether or not citizens have the opportunity to critique or potentially change the aforementioned conception of digital citizenship, or how citizens can produce alternative imaginaries of citizenship in the new life of IKN will be discussed in chapter three. The following chapter delves deeper into the Indonesian context, particularly aiming to trace the connection and origins of such imaginaries that I have shown in the first chapter. By mobilising historical analysis to investigate GoI's projects on smart city and digital citizenship, I present a historical account of Indonesia's techno-nationalist projects that will help us to understand the identified governmental imaginaries of IKN as a reflection of continuous messy processes through which national technopolitical identities are created and maintained through the establishment and enactment of certain nationwide technological projects (Felt, 2015, p. 104).

2. CHAPTER 2: TRACING THE GENEALOGY OF GOVERNMENTAL IMAGINARIES OF IKN

Drawing from the previous chapter, I proceed to investigate the genealogy of the governmental imaginaries of IKN by tracing it through different national projects in Indonesia. In this sense, these previous GoI projects serve as frames of reference for the governmental imaginaries of IKN. By looking at these frames of reference, my aim is to understand the history and evolution of these imaginaries in a way that uncovers their complex and often contested origins, shifts, and transformations. Specifically, I want to scrutinise the forms of knowledge that were drawn upon the previous projects and find the pattern of relations with the current governmental imaginaries of IKN. Following the conceptualisation of smart cities as knowledge infrastructures, this chapter also presents the discussion around knowledge claims about smart city technologies that gain credibility and shape urban infrastructures in these previous projects. The discussion around knowledge claims of smart city projects takes us to look at the influence of business technology enterprises in the journey of smart city projects in Indonesia, and scrutinise the extent of public participation that can be reflected in these projects.

As the historical analysis focuses on projects that the GoI led, this chapter follows the direction of previous research that aims to understand how technologies (and the choice to use them) matter in the formation of national identities (Felt, 2015, p. 103). The deep entanglement of technologies and national technopolitical cultures is mutually constitutive (Felt, 2015, p. 104), as technological artefacts are present in the continuous articulation and rehearsal of imaginations of nationhood (Hecht, 1998, p. 12-16). This aligns with Benedict Anderson's (2006, p. 163) observation on how technology artefacts play a role as “institutions of power” that contribute to the formation, stabilisation, and development of nationalist imaginations. Contextualised in the case of IKN, such a reading of technology and nationalism is highly relevant. In one of the public presentations of IKN by President Jokowi, the creation of a smart capital city of IKN is explicitly framed as "a milestone that symbolises the creation of a new history of Indonesia's civilisation" (Indonesian Cabinet Secretariat, 2022c) (see Figure 7).

Fig. 7 President Jokowi's address in the public investment presentation for the IKN project.

The title in the above illustration is translated as "IKN: New History, New Civilisation".

Drawing upon the way President Jokowi draws the relation between IKN as a technological project and Indonesia's history as a nation, one might be tempted to ask what it is about smart city technologies that trigger such a way of thinking. However, as Edgerton notes, 'whenever technology is invoked in discussions of the nation or globalisation, remember that it is very probable that it is not technology which is doing the explaining, but an account of technology which should have been discredited long ago' (Edgerton, 2007, p. 32). This motivates the effort to investigate the general account of smart city technologies in Indonesia that will be traced from previous GoI's projects related to smart cities. Tracing the genealogy of governmental imaginaries on IKN is not only to understand the historical roots of those imaginaries, but also to question the current understanding of them. In doing so, I mobilise historical analysis based on state officials' quotations and public addresses, policy briefs, and press releases about the previous projects on smart cities and digital citizenship that are published on the official websites of several GoI institutions and reputable Indonesian online newspapers. In particular, I focus on the project of *100 Smart Cities* and the *National Digital Literacy Movement Siberkreasi.*

The reasons to focus solely on the two projects are twofold. First, from the analysis in this chapter, it can be seen that these projects contain knowledge and values that are related to the governmental imaginaries of IKN. Secondly, as these two projects are currently still running, it

becomes interesting to see how the implementation of these projects relates to the development of the IKN project. In this sense, I aim to understand not only the historical trajectories from these projects that result in the governmental imaginaries of IKN but also how these projects can influence the development of IKN. In this chapter, I argue that while the governmental imaginaries of IKN are historically linked with previous GoI projects, these imaginaries are also actively circulated and exercised through other projects outside of the IKN project. By showing that imaginaries have a history, are contingent, and are bound up with power relations, the move to trace their genealogy can help to problematise them. It can show us that these imaginaries are not inevitable or given, but are the product of specific historical, political, and cultural circumstances. In this way, genealogy can open up new possibilities for thinking and acting differently.

2.1 *100 SMART CITIES* PROGRAM: ADOPTING THE CORPORATE STORYTELLING OF SMART CITY

"In its essence, a smart city is an urban governance concept based on ICT to make cities to be more intelligent and efficient in using various available resources, also to improve public service and citizens' life quality with still paying attention to environmental sustainability"[13]

The quotation above is the opening statement from an official document from Indonesian MPWPH (2014) that studies the development of smart city projects in Indonesia. This document presents a historical account of smart city project development in Indonesia. I will use this document as the base of my analysis because it contains a reflection of the underlying knowledge and values of how the GoI conceptualises a smart city. In particular, it reviews the foundational paradigm of the *100 Smart City* project by laying out its features, moral rationalisation and problem formulation of why such technological intervention is crucial to be implemented in Indonesia. Within the conceptualisation of smart city in the quotation above, I identify recurring governmental imaginaries of IKN in the history of the *100 Smart City* program that are further explored below.

While there is no universally accepted definition of a smart city, the GoI presents its own definition by reviewing several conceptions of a smart city (Indonesian MPWPH, 2015, pp. 4-5. What is interesting to see here is the explicit inclusion of several technology enterprises (e.g., IBM

[13] Translated from Indonesian language, original quotation can be found in the appendix 8.

and Siemens) conceptualisation of a smart city (Indonesian MPWPH, 2015, pp. 6-7. As Sadowski & Bendor (2019) have extensively reviewed and scrutinised these corporate narratives of a smart city, there is a narrative structure that can be identified within these corporate narratives. This includes the emphasis on considering crisis as a catalyst, transforming the city through technological solutions, and strategising different (yet often overlapping) implementation policies of urban governance (Sadowski & Bendor, 2019, p. 556). Interestingly, these corporate narrative structures are present and clearly adopted into the policies of the *100 Smart City* program.

The tendency to situate crisis (or problems) as the catalysator to implement technologies for urban governance clearly exists in the historical account of the *100 Smart City* program that the GoI makes. They list down several problems such as urban population growth, poverty, and the decreasing quality of life in the urban environment (Indonesian MPWPH, 2015, p. 3). Besides highlighting social and economic inequalities in urban cities, the problem formulation here indicates that there is an environmental crisis that urban cities face. Since the environmental crisis is also a global-level crisis, this is seen by the corporations as an opportunity to build something that IBM calls a "smarter planet" (Sadowski & Bendor, 2019, p. 550). The framework is captivating that it is explicitly included as a reference in the government's historical account of its *100 Smart City* program (Indonesian MPWPH, 2015, p. 6). The following quote from an official document on Indonesia's smart city projects depicts the rationalisation that relates urban crisis with technological intervention:

"Regarding those urban problems, it illustrates the pressing needs but also the challenges to find "smart" solutions and the right strategy to solve the problems and increase the welfare of urban citizens."[14]

The "smart" solutions are referred to technological solutions that represent three main features, namely *control*, *connect*, and *monitor* (Indonesian MPWPH, 2015, p. 38). These features are then translated into technological artefacts that embody such characteristics. Take the example from the Bandung Smart City which built a command centre (see Figure 8) with a live dashboard to monitor certain data about the city (see Figure 9). These dashboards render many components of a city into numbers that reflect the quantification tendency within the corporate narratives of a

[14] Translated from Indonesian language, original quotation can be found in the appendix 9.

smart city. As a control room might become the most popular portrayal of smart city solutions (Sadowski & Bendor, 2019, p. 553), it reinforces the story of a crisis that is happening in a city. Typically consisting of computers and workstations occupied by city officials and policymakers, it promises actionable insights that make control rooms a passage for salvation to the predefined crisis of urban life (Sadowski & Bendor, 2019, p. 553). By transforming the complexities of urban life into consumable aethestics data graphics, these control rooms represent the notion that there is the power of data-driven analysis to extract hidden insights from urban life in the city that is rendered as datasets (Tenney & Sieber, 2016, p. 109).

Fig. 8 Bandung Command Centre, launched in January 2015

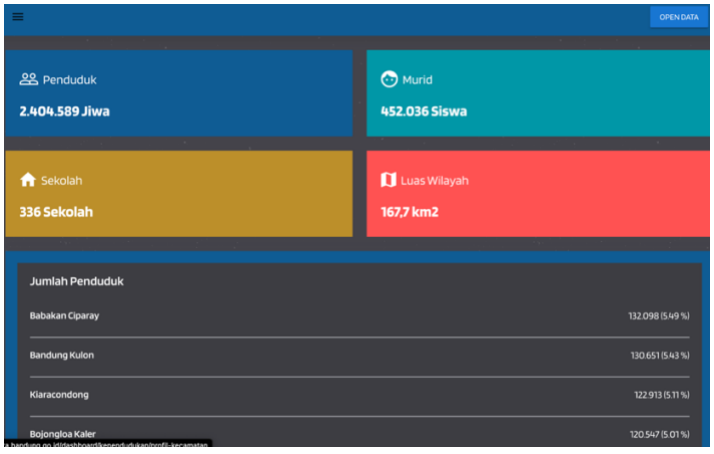

Fig. 9 One of the live monitoring dashboards of Bandung Command Centre

Another example from the Bandung Smart City project that resembles the feature of 'connect' is the provision of online public service and government information portals (see Figure 10). From applications to websites that collect public inquiries, these so-called 'platforms' are provided to improve the interconnectivity between the government and its citizens. Within the effort to improve the delivery of public service to its citizens, two familiar values prevail: values of effectiveness and efficiency. These values become the goal (*if not the main)* of public service delivery that uses ICT technologies. The formulation of 'these values as an end and the technology as the means' in the context of public service is further illustrated in Law no. 11/2008 on Electronic Information and Transaction which states: *"The use of ICT technologies and electronic transactions is done with the aim to increase effectivity and efficiency of public service."*[15][16] This reaffirms the entanglement between the values of efficiency and effectiveness with the implementation of smart city technologies; something that we can also identify in the governmental imaginaries of IKN. Furthermore, the embeddedness of these values in the GoI's conceptualisation of ICT-driven public services may pose the risk of situating citizens as 'receivers of public services' that need to be connected with the bureaucracy in a certain way, instead of considering them as political agents whose interests can dynamically shape the city that they live in.

Contoh berbagai aplikasi yang diterapkan di Kota Bandung

Fig. 10 Examples of online portals for public service and government information, from websites to applications.

[15] Translated from Indonesian language, original quotation can be found in the appendix 10.
[16] The clause is from the popular *ITE Law,* one of the foundational law in Indonesia that governs the use of digital technologies. Besides its foundational influence, its popularity also comes from several problematic clauses in it.

We can also see the adoption of these overlapping smart city frameworks in the account of the *100 Smart City* program. From IBM's concept of a "smarter planet" to Siemens's "green city index", these frameworks are the results of strategising the implementation policies of a smart city. However, these prescriptive frameworks tend to overlap (Sadowski & Bendor, 2019, p. 550), consisting of multiple layers of abstractions and indicators that function as a 'know-how' to design, deploy, and measure the performance of a smart city. The complex conceptual and indicator layers constitute the overlapping smart city frameworks produced and circulated by technology corporations such as IBM and Cisco. Their complex overlapping smart city frameworks represent the corporate's paradigm of seeing the city as a "system of systems" or a "network of networks" (cited in Sadowski & Bendor, 2019, p. 551), in which different components of a system or network are deeply entangled and overlapping one another to constitute a complex assemblage. From the National Roadmap of Urban City Development (see Figure 11), we can see how the "green city" concept of Siemens is positioned as an important milestone to achieve before realising smart cities in Indonesia. This formulation illustrates the adaptation of overlapping smart city frameworks from the technology corporations into Indonesia's official policy plan for smart city projects.

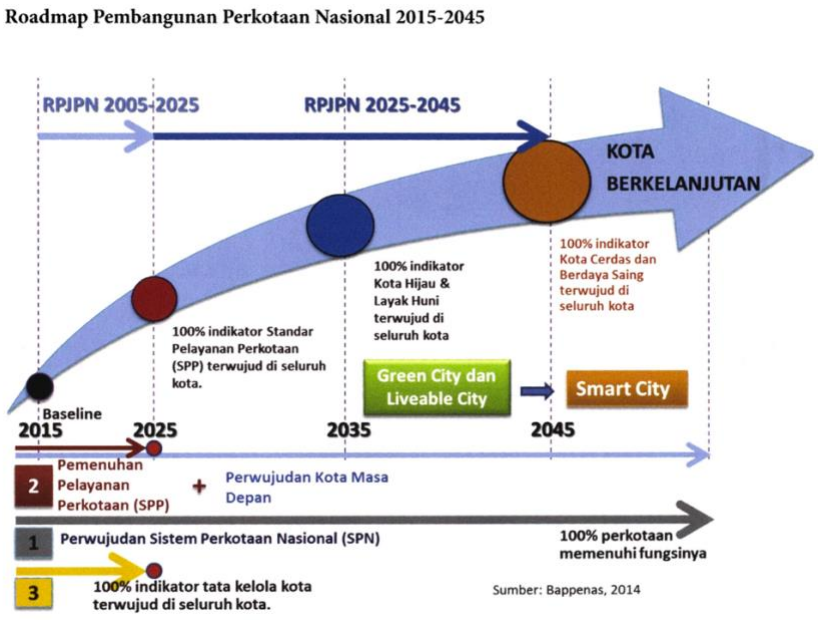

Fig. 11 National Roadmap on Urban City Development 2015-2045, comprising various concepts coined by technology corporations.

Initiated in 2017, the *100 Smart Cities* program[17] is a joint GoI program that combines different ministries and state agencies. Initially led under the directive of Minister Rudiantara[18] from the Indonesian MCI, its inception year managed to appoint 25 cities and regencies (Rachmawati, 2019b, p. 211). Until 2019, there were already 100 cities and regencies that were appointed to join the program (Rachmawati, 2019b, p. 211), and the number continued to grow reaching 191 cities and regencies by 2022 (Nugroho, 2022). The term 'appoint' here is deliberately chosen as the GoI decides which cities or regencies deserve state support and assistance to realise a smart city in their respective areas. In deciding this, the GoI use all sorts of scoring assessments (e.g., green-city index, sustainable cities index, government performance index, etc.) (Rachmawati, 2019b, p. 211) that render various cities and regencies into quantified and measurable entities. While this quantification paradigm becomes quite familiar in the discourse of smart city, the GoI's policy to 'appoint' cities and regencies to become smart cities resembles Datta's conceptualisation of citizenship in a smart city as a 'gift of the state' (Datta, 2018a, p. 133). As smart cities constitute what Saskia Sassen calls 'cityness' (Sassen, 2013, as cited in Sadowski & Bendor, 2019, p. 542), the case of the *100 Smart City* illustrates that the 'cityness' of those cities and regencies also becomes a 'gift of the state'. This scenario of 'cityness'-giving by the state to cities and regencies continues as the *100 Smart Cities* program is extended into *Smart Provinces* that targets the development of two smart provinces by 2023 (Nugroho, 2022).

As illustrated in the previous paragraphs, the corporate narratives of a smart city are clearly present in the way the GoI conceptualises what a smart city is. The structure of these corporate narratives is explicitly adopted in the official government documents that present their account of a smart city. While these corporate narratives influence the development trajectories of smart city infrastructures, this is not to say that the construction of smart city infrastructures in Indonesia exclusively follows the profit-oriented rationalisation of the technology corporates. Rather, these smart city infrastructures become an important site to showcase the spirit of Indonesia's techno-nationalism. Take the example of the inauguration of West Java Province's Command Center (see Figure 12). On that occasion, the state officials explained the technological features of the

[17] The official term of the program is "Towards 100 Smart Cities". However, the term is used interchangeably with "*100 Smart Cities Movement*" or *"100 Smart Cities Program".*

[18] While usually Indonesian ministers come from political career background, Minister Rudiantara is a minister who got elected from a professional (IT field) background. He is known for his technocratic, expert-based and result-oriented approach.

command centre that imply a sense of national pride. The pride that is related to the nation's affinity with using and developing technologies is perfectly captured in West Java Governor's public address (Indonesian MCI, 2015):

> *"Hopefully with the presence of the smart city, we can show the world that there is an acceleration of (Indonesia's) public service delivery that is based on technology"*[19]

Fig. 12 Governor of West Java province talking with his staff

at the inauguration of the West Java Command Center

This observation is aligned with Larkin's account of technological infrastructure. Larkin (2013, p. 329) argues that there is substantial inaccuracy in accounts that consider technological infrastructures to be solely dictated by economic logic or technical considerations. Instead, they function as vessels for, and originate from, intricate expressions of desire and fantasy (Larkin, 2013, p. 329). In the context of Indonesia's smart city projects, it is the desire of techno-nationalism that wants to leverage Indonesia's identity on the global stage using its demonstration of competence in dealing with technology. The picture of Figure 12 reminds me of Mrazek's historiography of technology and nationalism in Indonesia. He notes that Indonesian engineers are also cultural and political leaders who focus on engineering society and culture to promote what they perceived would lead Indonesia in the direction of their particular modern imaginaries

[19] Translated from Indonesian language, original quotation can be found in the appendix 11.

(Mrazek, 2002). His observation still bears relevancy in today's Indonesia, where Indonesia's smart city projects are filled with cultural and political figures who promote Indonesia's techno-nationalism along with the adoption of smart city corporate narratives on its smart city program. However, such a spirit of techno-nationalism is not necessarily taken as a positive notion, as there have been accounts that pose critiques to the nature of techno-nationalism in Indonesia. While technological development and nationalism in Indonesia are intertwined and co-strengthening each other, techno-nationalism can also be seen as a strategy to legitimate the high-technology policy that may absorb a lot of economic and political resources, producing complicated implications to the society (Amir, 2004, p. 111-113).

2.2 *SIBERKREASI:* ENVISIONING DIGITAL CITIZENSHIP IN INDONESIA

At one of Indonesia's smart cities and regencies awarding events in 2019, former Minister of the MCI Johnny Plate delivered his remarks on the innovation of smart cities across Indonesia. He stated, "I saw the *"Toward 100 Smart Cities"* movement as a good initial step to realise this nation's dream to become *a digital nation"*[20] (Rizkinaswara, 2020a). This movement is even considered "an opportunity for "anak bangsa" to showcase their talents in solving urban problems" (Rizkinaswara, 2020a). While the word "anak bangsa" can be translated into English as "children of the nation", however, here I wish to emphasise that the use of such terms is widely familiar in Indonesia's public addresses that aim to trigger people's sense of nationalism. While I have previously discussed the entanglement of technology and nationalism in Indonesia's *100 Smart Cities* program, in this section I would like to focus more on whom the GoI refers to as "anak bangsa".

The terminology of "anak bangsa" in this context does not come as an ordinary random choice of words. Instead, it contains meanings that aim to provoke Indonesian people's sense of nationalism and mobilise it to engage them with Indonesia's journey on technological advancement. To realise this, the GoI does not only provide the 'opportunity' for Indonesian people to engage with technological advancement by providing technological artefacts or projects such as the *100 Smart Cities* program. The GoI also provides, or in other words, *gives*, the opportunity for its citizens to equip themselves with digital literacy competencies through the provision of the

[20] Translated from Indonesian language, original quotation can be found in the appendix 12.

National Digital Literacy Movement *Siberkreasi.* By examining this movement, I would like to illustrate that the use of "anak bangsa" terminology in Minister Plate's statement refers to Indonesian citizens who are equipped with the literacy and competence to use and deal with technology.

The notion that "technology should be followed by the making of digitally-literate users" seems to be a recurring theme in the discourse of smart cities in Indonesia. Adopting the corporates' conceptualisation of a smart city, smart people become one of the integral components of the smart city concept in Indonesia (Indonesian MPWPH, 2015, p. 64). Defined by the GoI as "citizens who possess skills and competencies to access technology" (Indonesian MPWPH, 2015, p. 64), the existence of these citizen profiles is also deemed crucial in the *100 Smart Cities* program. Based on the result of the smart city assessment from 2017 to 2019, one of the key challenges in realising a smart city in Indonesia was the lack of human resources (both from the civil state apparatus and citizen side) who profess technical proficiency to deal with smart city technologies (Rizkinaswara, 2020a). However, this is not to say that the GoI considers smart cities as a purely technological project. Instead, it highlights the problem with Indonesia's digital and technological literacy in the implementation of the *100 Smart Cities* program as a way to reconsider this program as a program for 'cultural change' (Rizkinaswara, 2020a). To envision this, *Siberkreasi* exists as a 'gift' from the GoI to those "anak bangsa" who would like to participate in transforming the nation into a *digital* nation.

Siberkreasi represents Indonesia's collective endeavour involving various stakeholders who are dedicated to improve Indonesia's digital literacy. The uniqueness of *Siberkreasi* is its wide-reaching support network, which includes the various state agencies & ministries, private sector, and civil society organisations that focus on digital literacy agenda. Inaugurated in 2017 (i.e., the same year when the *100 Smart City* program officially launched), *Siberkreasi* exists to advance Indonesia's digital literacy through various public campaigns and training workshops. In this agenda, *Siberkreasi* contributes in three ways, namely, providing competent speakers or trainers, developing the content of digital literacy knowledge and activities, and promoting these digital literacy events (Siberkreasi, n.d.). The wide-reaching network of this movement makes it able to gather various speakers and trainers from different digital literacy-related organisations, with each organisation having its own expertise and angle on digital literacy (Siberkreasi, n.d.). While the

GoI's conceptualisation of a smart city presupposes the existence of smart people (Indonesian MPWPH, 2015, p. 64), *Siberkreasi* also provides numerous digital literacy workshops for civil state apparatus (Tempo, 2022).

For its impact on Indonesian society, this movement got its recognition from the International Telecommunication Union as the winner of the WSIS Prize in 2020 (Rizkinaswara, 2023). As a further recognition of the network and the impacts of *Siberkreasi*, the GoI decides to mobilise this movement as one of the key drivers for its policy of "*Indonesia Makin Cakap Digital*"[21]. This policy targets 50 million Indonesian people to be digitally literate by following various digital literacy workshops and public campaigns that this policy offers (Rizkinaswara, 2020b). However, the mobilisation of *Siberkreasi* in this policy is not surprising, as the movement itself can be considered a *quasi-government* organisation that aims to improve Indonesia's digital literacy. Although the network of *Siberkreasi* includes stakeholders from civil society organisations and the private sector, the organisational structure of this movement is still occupied by government officials who have an influential say about the direction of this movement.[22] To further illustrate the GoI's influence on *Siberkreasi,* we can also take a look at the kind of content and activities that *Siberkreasi* provides.

One of the famous campaigns from *Siberkreasi* is the "healthy internet campaign", which envisions the 'healthy internet' as behaviour on the internet that favours 'positive' content over 'negative' content. The negative content includes misinformation, hate speech, cyberbullying and online radicalism that internet users potentially consume, while positive contents refer to appreciative and knowledge-sharing content (Widyasari & Allert, 2019, p. 112). This paradigm of 'healthy internet' is further encapsulated in their digital literacy curriculum, particularly in the pillar of 'digital ethics' and 'digital culture'. In this curriculum, digital ethics serve as a 'best behaviour guidance to participate in a digital society', while digital culture refers to 'the utilisation of one's digital competencies to act as a digital citizen who has rights, duties, and responsibilities under the state's authority' (Japelidi, 2021). Such ambiguous arbitrary definitions reflect a sense of

[21] For terminology precision, I decide not to translate the name of the policy into English. However, the literal translation of the policy is "Indonesia to be More Digitally Savvy".
[22] The vice chairman of *Siberkreasi's* organisational development is currently held by a government official from the Indonesian MCI, while the first chairman of this movement was also from the Indonesian MCI (see Siberkreasi's organisational structure on <https://gnld.siberkreasi.id/tim-kolaborasi-siberkreasi/>).

paternalism in the realm of digital literacy. This paternalism can be further illustrated by the controversial statement from the former Minister of Indonesian MCI (Dirhantoro, 2020):

"If the GoI stated that (information or online content) is a hoax, then it is a hoax. Why argue?"[23]

This leads to some criticisms of *Siberkreasi*, as the movement still regards digital literacy from a narrow angle where it mostly advocates for the circulation of positive content and the prevention of negative content (Widyasari & Allert, 2019). Consequently, this leaves little room for citizens to cultivate their critical thinking in digesting the variety of content and information in the online world. As a result, the *Siberkreasi* movement does not sufficiently engage with the critical area of how online media literacy should be understood in a diverse society like Indonesia's (Widyasari & Allert, 2019). In this sense, *Siberkreasi* exists to train citizens to be able to self-govern in the digital realm by being able to determine the positive and the negative aspects of the internet. This follows Datta's observation on the creation of smart citizens within the liberal project of a postcolonial state (i.e., smart city projects) who are urged to be able to self-govern themselves in the digital realm (Datta, 2018a, p. 134). The ability to normatively decide on which content is good or bad then becomes the 'acceptable pattern of behaviour' that is valuable for citizens of the future smart city (Datta, 2018a, p. 134-135).

2.3 CONCLUSION

This chapter presents the genealogy of the two governmental imaginaries of IKN. It does so by providing a historical analysis that is focused on two previous projects on smart cities (i.e., *the 100 Smart Cities* program) and digital citizenship *(Siberkreasi* movement). By providing a historical analysis of these two projects, I show that the governmental imaginaries of IKN do not emerge fully formed or in isolation. Instead, they are born out of particular historical and cultural contexts and are continuously shaped by social, political, and economic forces.

From the historical analysis of the *100 Smart Cities* program, we understand that the techno-solutionist logic emerges from the corporate narratives of a smart city. These corporate narratives are adopted into policies and frameworks of the *100 Smart Cities* program, which embody the

[23] Translated from Indonesian language, original quotation can be found in the appendix 13.

values of effectiveness and efficiency. However, as these values become entangled with the profit orientation of corporate, the GoI also inscribes the narrative of techno-nationalism in its policies and discourse of smart cities that are heavily influenced by the corporate narratives of a smart city. This illustrates that the technology infrastructure of Indonesia's smart city is not necessarily governed by economic logic or technical considerations, but it also carries the spirit of Indonesia's techno-nationalism. What is clearly illustrated in this chapter is that the GoI continues to incorporate its visions of techno-nationalism into technological artefacts and infrastructures of smart cities, adapting to the dominant corporate narratives of a smart city.

On digital citizenship, I offer my historical analysis based on the *Siberkreasi* movement. I show that there is an intertwined relationship between digital literacy and smart city projects in Indonesia, in which digital literacy is seen as one of the important prerequisites for the implementation of a smart city. In this sense, smart city technologies and citizens' digital literacy are mutually constitutive to realise the GoI's agenda of making Indonesia a *digital* nation. *Siberkreasi* then exists as a *quasi-government* organisation that proliferates the idea of digital citizenship by providing various training workshops on digital literacy. Citizens are 'counted' as digital citizens when they learn and practice digital literacy, in which the GoI determines the definition and the scope of digital literacy. This resembles a father and son relationship, where the state paid the money (i.e., in this context, the GoI provides digital literacy workshops through *Siberkreasi*) and citizens are expected to follow the criteria set by the state (Datta, 2019, p. 404).

From this historical analysis, I illustrate that these socio-technical imaginaries that represent national techno-politics identities are not static. Due to its politically situated and context-dependent, national techno-politics identities are dynamic and historically malleable, constantly being in a continuous process of re-enactment and in need of nourishment and caring (Felt, 2015, p. 120). Following this observation, the next chapter will discuss some considerations on the importance of imagining the future of IKN. It will start by reconsidering the performative role of socio-technical imaginaries, followed by some contextualisation of the identified governmental imaginaries of IKN towards citizenship in the new city of IKN. Drawing from this, I conclude Chapter 3 by offering some notes on the practice of imagining IKN's future.

3. CHAPTER 3: IMPLICATIONS OF GOVERNMENTAL IMAGINARIES OF THE IKN TO THE CITY AND CITIZENSHIP

The previous chapter presents a critical review of Indonesia's smart cities and digital citizenship projects to show the historical contingency of governmental imaginaries on IKN. Moving forward, this chapter scrutinises how such socio-technical imaginaries can be performed to such an extent that it affects the future trajectories of our socio-technical world, in this case, the IKN project. As the previous chapter illustrates the historical path of techno-solutionist logic and digital citizenship imaginaries in the governmental discourse of IKN, this chapter presents a reflection on the dynamics process of making and enacting socio-technical imaginaries based on the sociology of expectations (van Lente & Rip, 1998). Specifically, I reflect upon how socio-technical imaginaries can materialise and have effects on the real world, particularly contextualising it with the case of IKN. Such reflection is crucial to provide an understanding that these imaginaries are not just ordinary narratives and symbolic forms but powerful concepts that are continuously performed and governed with implications for socio-technical arrangements. By having such an understanding of imaginaries, I hope to encourage the readers to take part in imagining the future of IKN. As the formulation and the performance of socio-technical imaginaries bring dynamic avenues for contestation, I conclude the chapter by presenting some reflections and suggestions on the practice of imagining the future of IKN.

3.1 TURNING (SOCIO-TECHNICAL) IMAGINARIES INTO REALITIES

Upon the investigation of socio-technical imaginaries on the governmental discourse of IKN, we can identify various elements of promises and expectations that are embedded within narratives or other symbolic forms that represent the imaginaries of IKN. In this sub-chapter, I would like to elaborate on the idea that expectations, in particular collective expectations that circulate in particular communities or even the public more broadly, are forceful elements in the development and innovation processes of emerging technologies. In the sociology of expectations and related research fields, this is commonly referred to as the performativity of expectations (van Lente & Rip, 1998). van Lente & Rip analyse such performative effects of expectations on technology development, particularly studying the way actions become coordinated through the prospect of

new technology and its functions, while this emerging configuration between action and prospect is simultaneously shaping the development and materialisation of the new technology (van Lente & Rip, 1998, p. 204). Such configuration creates agenda (see Figure 13) that can be traced in interlocking stories (van Lente & Rip, p. 205).

As illustrated in the analysis of the governmental discourse of IKN, the emergence and stabilisation of this agenda can be found in texts and other symbolic materials about the future. These materials contain stories that help to create new patterns and institutions (van Lente & Rip, 1998, p. 206). Inside these stories, implications for action are drawn and used by actors to define possibilities and strategies of the projected future (van Lente & Rip, 1998, p. 206). When the implications of the projected future are accepted, it becomes forceful as these implications are used to evaluate the action of others, constituting what van Lente & Rip (1998, p. 206) calls 'prospective structures'. To my interpretation of the prospective structures, it seems that these structures are always filled in by an agency, adjusting with the dynamics of a self-fulfilling prophecy (van Lente & Rip, 1998, pp. 206-207). This prophecy can be seen as the strongest form of performativity when actors take up the performative statement of a prophecy as a directive to be acted upon accordingly. Take the example of Moore's law, where actors in the semiconductor industry meet in working groups and negotiate quite specific roadmaps (functioning as 'stories') that identify which technologies are expected to allow to continue along Moore's law (van Lente & Rip, 1998, p. 206). In a prospective structure, road mapping processes have become a popular practice and arena to formulate the future directions for certain technological development. The road mapping process can also be considered as a way to specify the promises and expectations of a socio-technical imagination. Once these promises and expectations get more specified, they provide a clearer orientation and guidance for actions to decide the design requirement of a technological artefact (see Figure 13) (van Lente & Rip, 1998, p. 223).

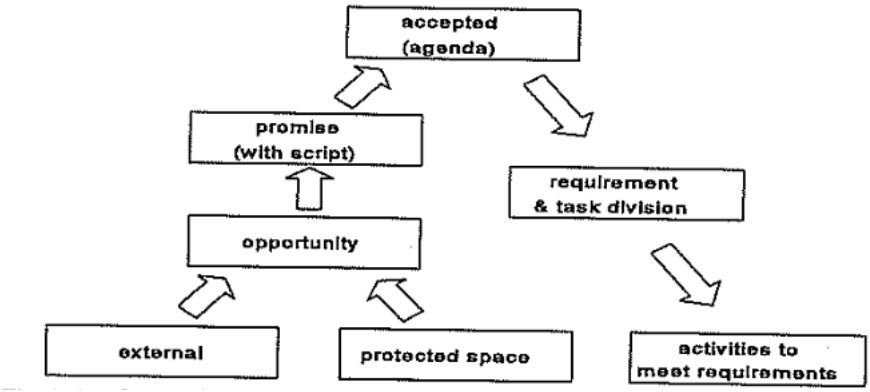

Fig. 13 van Lente & Rip's conceptualisation of 'from promise to requirement'

In the governmental discourse of IKN, we can identify various forms of promises about the projected future of IKN. President Jokowi believes that "IKN will be a representation of a superior nation by realising smart cities, sustainable modern cities, and having international standards so that it becomes an example for the development of other cities in Indonesia" (Indonesian MPWPH, 2022b). In this speech act, we can reflect upon the performative element of promises. A promise is not a neutral statement about what one might do to realise what is promised in the future. It implies that the person who makes it constrains him or herself to act in a particular way to ensure that whatever is promised will happen, as these promises are likely to be held accountable by others as well. We may think of other speech acts requesting something, obliging somebody or changing the status of someone or something, such as the statement "IKN will be a representation of a superior nation by realising smart cities" (Indonesian MPWPH, 2022b). In this statement, the voicing of promises about IKN that can change Indonesia's status as a nation is made in a strategic context to trigger the expectations of others that respectively provoke actions of others. Within this context, the GoI tries to trigger public support and foreign investment for the IKN project (Indonesian MOFA, 2023) as the form of actions that are expected from such formulation of promises on IKN.

As the storyline that contains promises and expectations mobilises actors to position themselves in relation to the general storyline, it also impacts other actors to become enunciators of stories of their own, which are inevitably linked to the original one (van Lente & Rip, p. 206). These different actors become a network of sensemaking of what technological innovation is supposed to be. This includes discussion on what is considered as technology's essential features, what it is good (and sometimes bad) for, and how this portrayal of technology can be materialised.

These are the discussion points that we can clearly see in the official policy book of IKN (Indonesian MNDP, 2021). One important aspect of such sense-making processes is the formation of an identity that represents the paradigm of the network. A crucial element of this is often the institutionalisation of a network that functions as a sort of entity to which people inside and outside the network can refer to. In the case of Indonesia and its smart city projects, Indonesia is included in the ASEAN Smart Cities Network, where it just recently holds the chairmanship in 2023 (Indonesian MOHA, 2022). This network serves as an important platform that echoes Indonesia's paradigm on smart cities, and such a network is helpful to attract attention and create funding for the realisation of smart city IKN. The formation of the NNCA can also be considered an institutionalisation of like-minded networks that share similar sensemaking about a smart city in the IKN project.

The situation becomes more complex when there are actors who do not perceive new technology as an immediate benefit but rather as a threat to their interests or their socio-cultural practices and values. For example, the construction of IKN is met with refusal by representatives from the local tribe of Borneo island who are concerned with the sustainability of their nature-dependent living sources and the availability of land that is inherited from their ancestors. One representative from the local tribe said (BBC News Indonesia, 2022):

> *"Our responsibility is only to defend our place of residence. Our place to grow crops. Do not let my children and grandchildren have no place to live... if this is not heeded, it will cause a commotion."*[24]

This refusal shows the nature of contestation towards the prospective structures that are embedded within socio-technical imaginaries. As the prospective structures take shape and get stabilised, it is worth considering not to think of these structures as always resulting in alignment and one joint agenda shared by different actors. It may also be that when multiple prospective structures emerge, there is a continuous contestation between prospective structures to formulate the desirable future. Within these structures, some convergence is likely to happen as actors become aware of the most common promises, expectations, and agendas that have formed and to which different groups of actors mostly subscribe. However, it should also be clear that not all technological development projects evolve smoothly, and not all prospective structures get filled in by actors. There are also

[24] Translated from Indonesian language, original quotation can be found in the appendix 14.

risks, particularly in the early phases, where breakdowns of promises may lead to the end of a prospective structure thereby terminating the actions that can materialise the technological development.

3.2 A REFLECTION ON THE IMPLICATIONS OF A (SMART) CITY TOWARDS (DIGITAL) CITIZENSHIP IN IKN

Serving as hubs that connect science and technology innovation with the built environment and everyday life, cities are situated at the centre of new technological imaginaries and expectations that are attached to new technologies (Miller, 2020, p. 370). However, this is not to say that technological imaginaries are always the overarching ideals of how every city should be constructed and governed. Drawing upon the analysis from the previous chapters, we see how the imaginaries about techno-solutions for urban governance in the discourse of smart cities are not neutral reflections of the ideal life in the city but rather technological visions that answer to certain values such as efficiency and effectiveness. Circulated by predominantly corporate actors and navigated through various socio-political choices, the imaginaries of techno-solutionism exist from a dynamic process based on human choices and interpretation, in combination with the material characteristics of the technological artefact that create technical affordance. As socio-technical imaginaries contain promises and expectations that can prescribe certain future(s), it appeals to certain values that describe how the physical entity should be. These values provide a normative basis that shows the potentiality of what actors consider the ideal physical entity, as one cannot prescribe or direct something without an idea of what is good. In the governmental imaginaries of IKN, the values of efficiency and effectiveness can be traced within its imaginaries of techno-solutionism. This sub-chapter then aims to contextualise the performative power of such imaginaries by reviewing the possibilities of implications that might arise, particularly in regard to the exercise and meanings of citizenship in Indonesian society. It does so by critically looking at the current policy plans of IKN that embody the imaginaries of techno-solutionist logic and digital citizenship.

I will start by briefly reviewing the techno-solutionist logic that is embedded within the governmental discourse of IKN. As we have seen in Chapter 1, there are imaginaries that situate technological artefacts as the answer to managing sustainable urban governance. Such imaginaries

become evident in the current development of IKN. Until April 2023, the GoI noted that there were already 182 Letters of Intent submissions from different companies to invest in the construction of IKN, where investment bids are mostly coming from companies who are working in the field of technology and sustainable energy (Nugraheny, 2023a). The domination of these technology and sustainable energy companies in the investment pool of the IKN project signals the alignment of prospective structures in the imaginaries that regard technology as the solution to achieve sustainable urban governance. This prospective investment pool of IKN also demonstrates the proximity between technology companies and smart cities projects. Big technology companies like Honeywell, IBM, and Samsung are examples of technology companies that take part in the potential investment pool of the IKN project (Purnama, 2022). Even further, the representatives from NNCA have visited Siemens' headquarters in Berlin to sign the collaboration Memorandum of Understanding (MoU) to build the smart city in the IKN project (NNCA, 2023). By looking at the network of prospective structures within the investment pool of IKN, we see how the promises of techno-solutionism in the governmental discourse of IKN are transformed into accepted agenda that will further affect the design requirements of the envisioned smart city of IKN.

While various potential technology companies have stated their interest in investing in the IKN project, we now turn our focus to scrutinising one particular technology that is repeatedly being discussed in the governmental discourse of IKN. In the mix of technological promises in IKN that the GoI conveys, big data analytics emerges as one of the primary sets of technologies to be implemented in the new city of IKN (Berawi, 2022). This orientation over harnessing data to generate insights for urban governance is particularly related to the demography of Indonesia, as Indonesia's internet penetration reaches more than 215 million people in 2023 (APJII, 2023). This is further signified by President's Jokowi conceptualisation of "data as new oil that its value is unlimited" (Nugraheny, 2023b). Situated in this sense, data possesses an inherent functional value that can provide insights and recommendations for urban governance. However, it is not the data itself that can present acumens for urban governance. The data needs to be gathered, processed, and transformed into insights that are adjusted to the goal of urban governance. Within this process, there is an assemblage of humans and technology that co-produce knowledge derived not only from the gathered data but also from the projection of certain values and paradigms into the process of transforming data into actionable insights for urban governance. From policymakers and

technology experts to ordinary citizens; all contribute to the process of making data the core component of a city that operates on the back of big data analytics.

Turning the focus on big data analytics then takes us to see the possible implications of its implementation to public participation and citizenship. Tenney & Sieber (2016) have extensively elaborated on data-driven forms of public participation that increasingly become the modern approach to urban governance. There are two key observations from Tenney & Sieber (2016) that matter for a critical discussion on the impact of data-driven urban governance on public participation and citizenship. First, the practice of gathering and processing data through the everyday use of algorithmic technological artefacts gets reconceived as a form of civic participation that renders citizen-government relationships into passive forms of indirect interaction (Tenney & Sieber, 2016, p. 109). This situates citizens as collaborators that help to materialise the system of a smart city, rather critical and active citizens (Datta, 2018a, p. 137). The datafication and passivation of active citizenship as the result of data-driven forms of public participation transform the integral process of democracy into data-market economies that are largely driven by corporate interests (Tenney & Sieber, 2016, p. 109). Consequently, data-driven forms of public participation eradicate deliberation and critical education which is crucial for the cultivation of active forms of citizenship. Looking at the critical examination of the *Siberkreasi* movement in Chapter 2, it is worth noting to reconsider whether such a movement can cultivate active forms of citizenship or, on the contrary, delimit citizens' ability to deliberate critically in the smart city of IKN.

Secondly, it is also argued that data-driven forms of public participation do not demonstrate suitability for marginal and vulnerable communities that desperately need to transform their circumstances (Tenney & Sieber, 2016, p. 109). This is particularly relevant to discuss as Berenschot & van Klinken (2018) have extensively elaborated on the unique characteristics of Indonesia's informal citizenship. Informal citizenship reflects the discussion about who's in and out of Indonesian citizenship as a street negotiation process that relies on personal social affinity (Berenschot & van Klinken, 2018). Such negotiation process includes access to public resources[25] that is vital to transform the circumstances of marginal and vulnerable communities. Adding to the growing literature that discusses the reliance of vulnerable communities on informal negotiations

[25] Berenschot & van Klinken takes the example of an ordinary person who relied on her close affinity with local politicians to get access to an upgraded medical facilities in Indonesia.

with state officials to alter the implementation and practices of state apparatuses, Berenschot & van Klinken (2018, p. 99) highlights Indonesia's 'informality' citizenship as a particular mode of state-citizen interaction marked by the use of personal connections[26] as a means to influence the implementation of state regulations.

This brings the question in regard to the technologisation of IKN: what happens with Indonesia's informality citizenship processes in IKN, which is projected to be heavily saturated with technology? Does the existence of these technologies shut down the informality of the negotiation process within Indonesia's informal citizenship? While answering this requires further empirical inquiry, one can imagine the probable scenario where technology can alter the practice of informal citizenship in IKN. Take the example that Berenschot & van Klinken (2018, p. 95) chooses about the informal negotiation process that happens between an ordinary citizen and a local politician to access an upgraded version of medical facilities. In that example, the local politician performs as a way to 'hack' the hospital bureaucratic system that initially recorded the ordinary citizen as non-entitled to receive an upgraded version of medical facilities.

As IKN is projected to implement various technologies to manage its urban governance, it is not entirely impossible that we may see the emergence of a digital form of decision-making in the urban governance of IKN. However, this form of decision-making demonstrates the tendency to relegate duties of governance to computerised processes (Diakopoulos, 2016). This is due to the view that regards the ability to interpret continuous flows of data that technology like big data analytics gather is transcending the cognitive capacities of humans, in which more advanced technological solutions are considered as the thing that can surpass the human barriers of understanding data (Tenney & Sieber, 2016, p. 106). Going back to the example that Berenschot & van Klinken (2018) draws, what happens if the local politician cannot 'hack' into the bureaucratic system of the hospital because it already implements advanced technologies that prevent manual alteration of data? In this sense, it is worth asking: does the technological mediation within the informal citizenship processes draw the focus away from informality to formal citizenship that is mediated by technologies? These questions are worth to be pondered while they may present an interesting avenue of future research.

[26] Personal connections in this context refer to connections developed in a context unrelated to the work and duties of state agents (Berenschot & van Kilinken, 2018, p. 99)

While previously I present a hypothetical case where technology can alter Indonesia's informal citizenship into formal citizenship, now I offer an empirical case that demonstrates how technology can strengthen the aspects of Indonesia's informal citizenship. In April 2023, a young Indonesian man named Bima criticised the worsening infrastructures in the Lampung Province through TikTok, using Indonesian vocabulary and terms that are generally considered inappropriate within Indonesia's social norms (Ahdira, 2023). Consequently, he received threats and intimidation from the local police, to the extent that his father was called to the office of the Lampung Regent (Ahdira, 2023). As a response, this young man tells the whole chronology of his experience in his TikTok account, and this gained momentum and allyship from diverse internet users. Resulting from the virality of his TikTok contents, the local government of Lampung fixed some road infrastructures in the Lampung region, leading to the invention of the term "Bima effect" (Nail, 2023). This case shows that the use of technology can alter some aspects of Indonesia's informal citizenship. While this young man was outside of Indonesia to do his study, he did not have personal connections with state officials to deal with his initial frustration towards the worsening infrastructure of Lampung Province. As informal citizenship is characterised by the establishment of personal connections with state officials to alter the implementation of policies, Bima's case illustrates that the use of technology (i.e., in this case, social media platform) could help facilitate people who cannot establish personal relations with Indonesian patronage, through online public discussion that forms an allyship in social media. This adds further consideration to the discussion of technology use and Indonesia's informal citizenship, which is highly relevant for the development of the IKN project. While digital literacy training and workshops are continuously provided along with the development of the IKN project, we should reconsider whether these digital literacy workshops could create more opportunities for citizens to engage with this kind of digitally-enabled politics.

3.3 WAY FORWARD IN IMAGINING THE FUTURE OF THE IKN PROJECT

The socio-technical imaginaries embedded in the governmental discourse of IKN exceed its traditional role as a mere representation. In the case of the IKN project, it acts as a guiding force, utilising regulatory mechanisms and infrastructure construction to steer the construction of a city towards designated objectives. Currently, this guidance appears to be predominantly informed by

a reductionist approach emphasising efficiency and techno-solutionism. However, this is not the only perspective from which the IKN can be conceptualised and subsequently, designed and deployed. Socio-technical imaginaries serve not only as an (unneutral) reflection mirror towards certain aspirational futures. It also functions as a tool for shaping that future(s), operating in both prescriptive and predictive capacities. It does not simply provide a neutral reflection but instead propels the future in distinct directions. The question then arises: how can we respond to the construction of such a non-neutral reflection about the development of the IKN project? In this sub-chapter, I offer some reflections that are hopefully helpful to remind the readers about the importance of imagining practice, in particular, imagining the kind of city that we all can aspire to be built. I would like to start the discussion by emphasising that techno-scientific imaginaries are not just out there, waiting to be materialised. Within the backdrop of today's technologically-saturated environment, these techno-scientific futures already exist and dynamically influence our current practices and values in designing our futures. Following this line, I call for constructive and critical behaviour to engage with our modern cities and urban environment, which are increasingly getting saturated with more technology. In this spirit, I encourage people to not only imagine their personalised ideal future but to co-produce collective critical reflections upon science and technology innovation products that open new ways but also limit our understanding to envision collective desirable futures. This is particularly relevant in the case of new cities planning as smart city concept has ubiquitously inspired governments and municipalities in different areas of the world to include technological solutions for a myriad of urban governance issues that they face.

The smart city concept, which predominantly emerges as a technology corporate storytelling, establishes urban problems as engineering problems to be solved by quantitative empirical methods that are mobilised through the deployment of technologies (Soderstorm et al., 2014, p. 309). As a result of the measurement of urban problems, it generates knowledge that is believed as the solution to the measured urban problems (Miller, 2020, p. 380). This why a smart city can also be considered a 'knowledge infrastructure', as it generates knowledge that shapes the public perception and directs public policy and planning decisions (Miller, 2020, p. 378). However, it should be noted that the knowledge that is generated from employing technologies represents a single voicing of solutions to urban problems. In the corporate storyline of a smart city, technological intervention is considered a set of universally-acceptable valid solutions; resembling the tradition of utopian storytelling (Soderstorm et al., 2014, p. 315). The resemblance of utopian

storytelling tradition in the corporate's storytelling of a smart city indicates that the values and knowledge under this corporate storytelling do not come from a collective project that includes different worldviews and interests but a singular 'emancipatory' vision that is driven by corporate's interests (Soderstorm et al., 2014, p. 315).

While it has been previously shown that the governmental discourse of IKN clearly adopts this corporate's storytelling of a smart city, we should remember that there are consequences for adopting such conceptualisation of a smart city. As the corporate's storytelling of a smart city is a vision that is coming from the profit-oriented technology corporates, we should anticipate how the adoption of this storytelling can result in the construction of city infrastructures that appear the same across different cities. Consider the technology of big data analytics, wrapped under the infrastructure of a common room that is filled with people who are working with computers to harness data into actionable insights. This is a socio-technical configuration that is embedded within the corporate storytelling of a smart city. Promising that such a socio-technical configuration can enact a smart city in a very real way, the control room becomes one of the most popular images of a smart city's technological solutions that are installed across different places (Sadowski & Bendor, 2019, p. 553). However, the similarities of material representation across different smart cities can affect our sense of place in a city that adopts corporate storytelling of a smart city. If I see pictures of control rooms from different Indonesian cities and regencies that enrolled in the *100 Smart Cities* program, I will not be able to distinguish the actual location of those pictures as all control rooms embody similar socio-technical configurations. Consequently, when a place can be mistakenly taken as any other place, then that place becomes no place at all as the place does not trigger our sense of place that supposedly exists from the place's distinctive characteristics and features.

If we look at the current policies and development of the IKN project, it will be likely that the city of IKN will be developed as a smart city. As the urban landscape of IKN evolves into a smart city, we may encounter a place that situates digital connectivity and data optimisation as the norm that is embodied in the deployment of various technologies. Working 24/7 to actively find and define urban problems, smart city technologies will also try to recognise citizens' daily behaviour that will be rendered into actionable insights. Within this process, citizens are at the risk of being mere collaborators and endorsers of smart city technologies rather than critical and active

citizens that can actually deliberate about the governance of their urban environment (Datta, 2018a, p. 137). However, can't we imagine a smart city that is sensitive to the urban dynamics that it monitors? Can't we imagine sensors and analytics that will not just gather information and proposed advanced solutions but actually can change and react to citizens' feedback? I believe we can, by mobilising community-defined problems as the foundational cause to deploy technologies for our urban governance. By starting with community-defined problems, we encourage citizens not just to be the data collaborators for smart city technologies, but as important value and knowledge contributor that comes with their situatedness and unique perspectives. By situating these citizens as important contributors to the solving of urban governance issues, we also open wider opportunities for citizens to critically engage with smart city technologies and interpret these technologies in new ways that are aligned with their interests. We should also never forget the fact that a city is made up of people who live and thrive through the 'messiness' of a city. I believe that this 'messiness' (as compared to the 'smartness' in a smart city storyline) is the very defining feature of a city and its citizens; something that shapes our sense of place in relation to our surroundings. While corporate storytelling of a smart city promises us a 'neat' order of urban governance, there are also parts of 'messiness' in the city that can teach us something about being a citizen that can actively contribute to solve urban problems. Even without any 'smart' technologies, a city already represents a machine that teaches people to be city-dwellers (Wiles, 2014).

Upon imagining alternative visions of a smart city, we should remember that it requires courage and hope for one to be able to imagine the future (Sand, 2019). However, I believe that Indonesia consists of people who are always entangled with technology to determine their identities and interests. This is further explored in Mrazek's historiography (2002) on past Indonesian engineers who continued to inscribe their own visions of modernity into technologies that the Dutch introduced. Mrazek also notes that the continuous struggle of Indonesia to invent its 'national' form in the early twentieth century was a struggle mediated by the discourse of technology (Mrazek, 2022; Kusno, 2003). In Chapter 2, I illustrate how the *100 Smart City* program constitutes a discursive network that allowed the idea of the ‘nation’ to be installed in the imagination of Indonesia, particularly the idea of Indonesia as a digital nation. The modulation and dynamics of the *100 Smart Cities* construct a like-minded network that made a certain form of nation imaginable. This historiography shows that Indonesian people have always been able to deliberate

about their future in relation to technology. Drawing from this, I now turn to offer a brief account of how the Indonesian people can deliberate in the practice of imagining IKN.

There are two concerning indications that I find upon analysing the governmental discourse of IKN. First, there is an indication that different stakeholders (outside governmental actors) have not yet comprehensively discussed the particular smart city storyline of the IKN project. This might mainly be due to the current phase of construction of the IKN project which is still in the early stage that is focused on building core infrastructures (e.g., government buildings) and not yet on the actual deployment of the claimed advanced technologies. So far, I can only identify promises and intentions from different technology companies to build and deploy smart city technologies such as big data analytics and autonomous vehicle. However, the IKN project itself is not far from controversies. The controversies that can be found are more about funding and land provision on the IKN project (BBC News Indonesia, 2022; Narasi Institute, 2022), which represent 'profane' concerns that are lacking of technological content. However, as Sand (2019, p. 104) notes, these 'profane' concerns "are anything but negligible, just because they are incommensurable with high-tech visions". It might be that these concerns illustrate contradictory desires that challenge the 'high-tech' future of the IKN project. After all, "it is not always the comprehensive, technological narratives that shape the future" (Sand, 2019, p. 104). Secondly, there is also a tendency of tokenism in the public participation opportunities on the IKN project. By analysing public engagement activities with IKN that the GoI provided (e.g., public discussion, national design contest of IKN, public voting for IKN's logo, etc.), Hamdani (2020) notes that all these formal and informal public participation in the IKN project has not been complemented by the delegation of power and decision-making authority that can actually influence the development of IKN. As Amir (2023) highlights the authoritarian symptoms in the development of the IKN project, I will proceed to suggest some ways in which Indonesian people can participate in imagining the future of a new city project that is not neutral but rather highly political and contains controversies in its development.

The first suggestion that I offer is to look at a participatory approach to technology assessment that focuses on discovering value transparency within the design of IKN. The participatory approach to technology assessment can refer to many forms of activities, ranging from horizon scanning to the Delphi method. To propose a form of dedicated anticipation on the

development of the IKN project, I specifically refer to Baibarac-Duignan and de Lange's (2021) approach of controversing. This approach is particularly relevant for the case of smart city IKN, as currently the discussion around the IKN project is mostly filled with the dissemination of visual representation material and data visualisations that mask the IKN project (and its socio-technical imaginaries) as a 'neutral' and 'controversies-free' project. While we can understand visual representations as a way to transform promises of socio-technical imaginaries into accepted agenda (and further into design requirements) (van Lente & Rip, 1998, p. 206), it also renders the intricacies of highly political projects (such as in the IKN project) that consequently affects people's understanding and behaviour towards the project. Given that the development of the IKN project already invites some controversies to it, this approach is suitable for allowing people to identify their issues, come together temporarily as a public, and imagine alternative possibilities that can trigger people's capacity development for action (Baibarac-Duignan & de Lange's, 2021).

Conceptualising controversies as vehicles for civic engagement, Baibarac-Duignan & de Lange (2021, pp. 6-7) propose three interconnected dimensions of the controversing approach. First, *recontextualisation,* which refers to the reflection upon the direct adoption of imported urban development models (such as a smart city) that can help to discover more relevant smart city applications to people's interests and their urban contexts (Baibarac-Duignan & de Lange, 2021, p. 6). This is particularly relevant in the case of the IKN project, as I have shown that there is a clear adoption of corporate narratives on smart cities in the way the GoI imagines the smart city of IKN. By doing recontextualisation, it will also trigger what Datta (2018a) "breaches". It refers to the refusal of subaltern citizens to interact and adapt to digital urban governance by 'speaking' up about their experience and thus challenging the imaginaries of digital urban governance(Datta, 2018a, pp. 409-414). We see the indication of "breaches" in the discourse of IKN, where the local tribes of Borneo island voice out their concerns about the land provision of IKN, which represent a challenge to the GoI's high-tech visions of IKN. Secondly, *meaning-making*, which refers to the uncovering of the meaning behind visual representations and generating new interpretative insights that can offer people to make sense of the represented entity (Baibarac-Duignan & de Lange, 2021, p. 6). The dimension of meaning-making can help us to identify which values matter for whom and how these values can interact with each other to be further translated into the design requirements of technology. The third dimension is *agency,* where controversies' intrinsic feature of relationality

can open up spaces for engagement and potential for collective action (Baibarac-Duignan & de Lange, 2021, p. 6).

While the IKN project bears huge stakes for various stakeholders, the formation of collective action from controversing can be strategic and crucial to determine the trajectories of IKN's development that appeal to fulfil public values and interests. In reality, the controversing approach (and its dimensions) can be translated into tangible activities such as first-hand experiences of observing the urban environment, knowledge sharing & value mapping, and visually mapping controversy between values through engaging in public dialogues (Baibarac-Duignan & de Lange, 2021, pp. 9-11). To conclude, implementing the controversing approach can help people to expose and observe tensions within socio-technical imaginaries and their underlying values (Baibarac-Duignan & de Lange, 2021, pp. 12-13). The exposure and the observation of tensions can help in shaping people's understanding and collective knowledge that eventually will lead to the emergence of people's agency. When the enactment of a smart city implies the creation of digital subjects, the agency of these subjects is crucial to challenge the dominant corporate narratives of a smart city that contains certain problematic subjectivities. The importance of subject or citizens' agency in a technologically-saturated smart city has been conceptualised and demonstrated in technological sovereignty (Lynch, 2020) or grassroots digital urbanism movements (Vadiati, 2022). Learning from these movements can inspire future citizens of IKN to anticipate the probable risks when techno-capitalist smart cities fail to identify and tackle the root structural causes that contribute to the proliferation of urban governance issues.

4. CONCLUSION

This thesis starts by posing the question: ***How do socio-technical imaginaries within the governmental discourse of the smart city IKN project reflect a certain form of seeing the city and citizenship*?** To answer this question, I propose several interlinked arguments. First, I show that the socio-technical imaginaries within the governmental discourse of IKN reflect a certain way of seeing city and citizenship, where digital citizenship that is 'given' as a result of one's digital literacy competence, is highly valued in urban life of a city that relies on technological solutions to solve its urban governance issues. Secondly, I illustrate that such imaginaries that depict the relations between citizenship and city are historically linked with previous GoI projects on smart city (i.e., *100 Smart Cities* program) and digital citizenship (i.e., *Siberkreasi* movement), in which these projects' influence are present in the development of IKN. By analysing the history of these projects, I find that there is a big influence of corporate narratives of a smart city in shaping the GoI's conceptualisation of what a smart city is. Realising that these corporate narratives are not neutral and contain interest, I proceed to call for wider public participation to produce alternative future visions of smart city IKN by offering some reflections and suggestions for the practice of imagining the future of IKN. The complexity of the argument here is further laid out in the following elaboration of each chapter.

The first chapter aims to present a nuanced understanding of the socio-technical imaginaries that are embedded within the governmental discourse of the IKN project. By mobilising multimodal discourse analysis on policy documents and the GoI's official public address, I show that the GoI performs two entangled dominant visions about the future of IKN, namely the imaginaries of techno-solutionist logic for sustainable urban governance and the imaginaries of digitally-literate citizens. The techno-solutionist logic refers to the tendency to propose technological solutions for urban governance problems, particularly the one that is related to environmental sustainability. The expectations that situate technology as the solution for urban problems then affect the way citizens are seen in these imaginaries. The link between techno-solutionist and digital citizenship imaginaries is captured in the way the GoI situates digitally-literate citizens as one of the core prerequisites in building a smart city IKN. Consequently, there are policy agendas that are aimed at transforming its citizens into digitally literate citizens, such as the implementation of agile methodology in the state bureaucracy and the digital literacy

assessment to decide which civil state apparatus can move to IKN. This embodies the underlying assumption of linking technological advancement with human progress which is measured by how well a person can profess digital literacy skills in order to adapt to digitalisation.

To illustrate that these imaginaries are not given and embody certain legacies from the past, Chapter Two is provided to present the genealogy of the governmental imaginaries of IKN. It does so by tracing this genealogy of imaginaries through different national projects in Indonesia. I situate these previous GoI projects as frames of reference for the governmental imaginaries of IKN. By looking at these frames of reference, I present a historical analysis of these imaginaries in a way that uncovers their complex and often contested origins and transformations. As a result. I find that there is a clear adoption of the corporate narratives of a smart city in the GoI's conceptualisation of smart cities in Indonesia. These corporate narratives produce a problem-solution definition for urban governance that puts technological intervention as the valid universal solution. However, I also find that the GoI mobilise its corporate-influenced smart city narratives also to create a sense of techno-nationalism. In the case of digital citizenship, *Siberkreasi* proliferates the idea of digital citizenship by providing various training workshops on digital literacy skills. These competencies are intertwined with the use technologies in a smart city, and both mutually constitute the agenda of making Indonesia a *digital* nation.

Upon knowing that there are unneutral corporate visions in the way the GoI envisions smart cities in Indonesia, I move to encourage the readers, particularly Indonesian society, to engage in the practice of collectively imagining the future of IKN. In Chapter Three, I start my suggestion by giving a brief account of how these imaginaries can actually materialise into real-world socio-technical arrangements. By using the concept of 'performativity of expectation' from van Lente & Rip (1998), I illustrate the ways in which the promises embedded within socio-technical imaginaries can transform into accepted agenda and design requirements of technology. By illustrating this, I hope to highlight the importance of engaging with the practice of collectively imagining the future, as this may result in the emergence of alternative visions that can challenge the seemingly neutral and dominant visions about the future. To further emphasise the importance of future visions, I also offer an account that elaborates on the possible implications of governmental imaginaries of IKN, particularly in regard to the urban governance in IKN and Indonesia's informal citizenship. Concluding the chapter, I elaborate on the account of participatory

dedicated anticipation called 'controversing' that serves as a tangible suggestion from this thesis on the methods of imagining the future of IKN.

Socio-technical imaginaries are visions of desirable futures that contain certain socio-technical configurations. Such desirable futures are not limited to what each of us individuals desires but also include what networks of corporations, governments, citizens, scientists, and a myriad of other actors promote as desirable. Reflecting upon this network, socio-technical imaginaries allow us to understand science and technology as social practices rather than isolated fields. When science and technology are conceptualised as social practices, it paves new ways for us to identify problematic aspects in the relationship between science, technology, and society. In the case of the IKN project, it is worth noting that IKN is not only about constructing an *ex-novo* smart city, but beyond it lies a historical 'lock-in' that drives the urge to move the capital city from Jakarta to another city. From President Soekarno to former President Susilo Bambang Yudhoyono; all tried to reconfigure the urban governance of Indonesia's capital city by trying to move the capital city out from Jakarta (Amir, 2023). This shows that the decision to move the capital city to Borneo island, led under the regime of President Jokowi, is a politically laden project that bears a lot of stakes for different stakeholders in Indonesia. As Soderstrom et al. (2014, p. 317) highlight the apparent political neutrality of the dominant smart city narrative, I sincerely hope that the decision to transform the capital city of IKN as a smart city is not part of an effort to depoliticise the highly political nature and its stake of moving the capital city of Indonesia.

If IKN is to be constructed as a 'smart' city', then responsible 'smartification' of cities cannot start by only implementing digital solutions into urban environments (Sepehr & Felt, 2023, p. 17). Instead, we need to practice a critical examination of imaginaries crafted and deployed through policy documents, with attention paid to the actors that can(not) participate in developing them (Sepehr & Felt, 2023, p. 17). In the end, if the goal is to nurture the flourishing of human development, we should not hastily consider human development as a guaranteed implication of technological and economic progress. While this paradigm is highly relevant in the development of smart city projects, it strongly calls for a more nuanced understanding of the way we think of and develop what we consider a ‘smart’ urban environment.

4.1 RESEARCH LIMITATIONS & SUGGESTIONS FOR FUTURE RESEARCH

This thesis possesses several limitations, particularly on the limited methodological choice that I can mobilise during the research. First, it only focuses on materials and data that are available for public online access, as the writing process takes place outside of Indonesia. This already filters an abundance of materials that might influence the finding and arguments of this thesis. Secondly, it also lacks primary sources that can be taken from formal interviews, *focus group discussions* (FGD), etc. This is due to the fact of the logistical problem throughout the research (e.g., different time zones with stakeholders that are planned to be interviewed in Indonesia). As this thesis only focuses its analysis on the governmental discourse of IKN, it opens several lines of future research. First, there needs to be a study that researches the emergence of socio-technical imaginaries about IKN in Indonesian communities. This can follow the line of empirical studies on the practice of participatory approach in technology assessment, where Indonesian communities can deliberate to produce alternative future visions of a smart city IKN. Second, the findings from this thesis can be followed up with ethnography research that studies the circulation of the identified governmental imaginaries of IKN in Indonesian communities, and how such communities respond to these imaginaries. The result of this research can help to answer whether the grassroots digital urbanism or technological sovereignty movement can thrive in Indonesia similarly (or differently) to the ways other communities have demonstrated. Third, in the context of IKN, I find it interesting to study the role of NNCA in the performativity of governmental imaginaries of IKN. As a special agency that is appointed to oversee a city project that is highly political-laden, it will be interesting to study the inner dynamics of this agency in managing the diversity of visions about the IKN project, and how it incorporates these values into its design policy of the IKN project.

LIST OF ILLUSTRATIONS

Figure 7: Indonesian Cabinet Secretariat. (2022c). 'Sambutan Presiden Jokowi pada IKN: Sejarah Baru Peradaban Baru'. Available from: <https://www.youtube.com/watch?v=8WiPsEliVn8&list=PLk-iaC80TviixlHEZyctA4DYC7DKkXdHF&index=3&ab_channel=SekretariatPresiden>. Accessed on: July 9th, 2023.

Figure 8: Secretariat of Bandung Region. (2021). 'Bandung Command Center'. Available from: <https://adbang.bandung.go.id/2021/11/29/bandung-command-center/>. Accessed on: July 9th, 2023.

Figure 9: Secretariat of Bandung Region. (n.d.). 'Data Dashboard of Bandung'. Available from: <http://data.bandung.go.id/dashboard/>. Accessed on: July 9th, 2023.

Figure 10 & 11: Indonesian Ministry of Public Works and Public Housing. (2015). 'Kajian Pengembangan Smart City di Indonesia'. Available from: <https://simantu.pu.go.id/personal/img-post/autocover/b05c3e845a595b61d80bfe832e20b26b.pdf>. Accessed on: July 9th, 2023.

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Figure 13: van Lente, H., & Rip, A. (1998). 'Expectations in Technological Developments: an Example of Prospective Structures to be Filled in by Agency'. In: Disco C., Meulen van der B.J.R. (Eds.), *Getting New Technologies Together: Studies in Making Sociotechnical Order*. p. 223. Walter de Gruyter.

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APPENDIX

1. "Bapak ibu anggota Dewan yang terhormat, para sesepuh dan tokoh bangsa terutama dari seluruh rakyat Indonesia, dengan ini saya mohon izin untuk memindahkan Ibu Kota negara kita ke Pulau Kalimantan,"
2. "Kota cerdas akan kita wujudkan dalam bentuk kota yang memiliki kecanggihan teknologi yang bisa membantu kita dalam kehidupan sehari-hari,"
3. "Ada sistem transportasi cerdas, sistem manajemen gedung cerdas, energi cerdas, kendaraan tanpa awak, dan pertukaran data secara elektronik,"
4. Undang-Undang Ibu Kota Negara/UU Nomor 3 tahun 2022.
5. "Mari kita rancang IKN baru di Kalimantan Timur menjadi kota dan kawasan yang benar-benar smart desain-nya, yang menjadi pionir kota rujukan dunia."
6. "Tata kelola di IKN ini perlu kerja lincah atau agile, efektif, dan efisien. Walau bentuk pemerintah khusus, harus konstitusional, harus tetap berdasarkan Undang-Undang Dasar 1945, tapi tetap mengadopsi kebutuhan dalam rangka mewujudkan IKN,"
7. "Saat ini di era distrupsi, semua harus memahami bahwa digitalisasi merupakan sebuah kebutuhan dan tidak bisa dihindarkan. Tidak ada lagi orang yang bisa menghindar dari pengaruh digitalisasi, pilihannya adalah berkawan, memahami dan memanfaatkan kondisi ini."
8. "Smart city sendiri pada intinya merupakan konsep pengelolaan kota yang berbasis Teknologi Informasi dan Komunikasi (TIK) agar kota menjadi lebih cerdas dan efisien didalam pemanfaatan berbagai sumberdaya yang ada, serta meningkatkan pelayanan dan kualitas kehidupan masyarakat kota dengan tetap mengedepankan keberlanjutan lingkungan hidup."
9. "Terkait berbagai permasalahan perkotaan tersebut, kemudian memunculkan kebutuhan yang mendesak dan sekaligus tantangan untuk menemukan cara-cara yang "cerdas" dan strategi yang tepat untuk menyelesaikan permasalahan yang terjadi dan meningkatkan kesejahteraan penduduk perkotaan."
10. "Pemanfaatan teknologi informasi dan transaksi elektronik dilaksanakan dengan tujuan meningkatkan efektivitas dan efisiensi pelayanan publik."
11. "Mudah-mudahan smart city ini, kita perlihatkan ke dunia bahwa ada akselerasi percepatan pelayanan birokrasi berbasis teknologi."

12. “Saya melihat Gerakan Menuju 100 Smart City merupakan awal yang baik untuk mewujudkan mimpi bangsa ini menjadi digital nation.”
13. "Kalau pemerintah sudah bilang hoaks, ya dia hoaks, kenapa membantah?"
14. "Tanggung jawab kita hanyalah mempertahankan tempat tinggal kami. Tempat kami bercocok tanam. Jangan sampai anak cucu saya itu tidak punya tempat tinggal.. jika itu tak diindahkan, maka ini akan mengundang keributan."