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Abstract (English)

One of today's megatrends is the digital transformation of cities, which represents a new challenge for the enforcement of human rights. The purpose of the thesis is to reveal the extent to which local governments take the Human Rights-Based Approach (HRBA) into account during the realization of smart city programs. The analysis is based on the framework developed by UN-Habitat titled: *"Mainstreaming human rights in the digital transformation"*. The thesis analyses the smart city programs of Amsterdam (Netherlands), Johannesburg (South-Africa), Shanghai (People's Republic of China), Pune (India) and the city-state of Singapore.

The study examines which of the core values and mechanisms included in the UN-Habitat guide apply in the case of the smart city programs, as well as the possibilities of enforcing fundamental freedoms, privacy rights and equality rights in the case of cities that do not apply the HRBA. The thesis also analyzes which smart city narratives the selected cities are developing along, and what level of development the 5 smart city governances have reached, assuming that the cities applying HRBA achieve the level of collaborative smart governance.

Abstract (Deutsch)

Einer der heutigen Megatrends ist die digitale Transformation der Städte, die eine neue Herausforderung für die Durchsetzung der Menschenrechte darstellt. Ziel der Arbeit ist es aufzuzeigen, inwieweit Kommunalverwaltungen den Human Rights-Based Approach (HRBA) bei der Umsetzung von Smart-City-Programmen berücksichtigen. Die Analyse basiert auf dem von UN-Habitat entwickelten Rahmenwerk mit dem Titel: „Mainstreaming human Rights in the digital transformation“. Die Arbeit analysiert die Komplexität des strategischen Programms von Amsterdam (Niederlande), Johannesburg (Südafrika), Shanghai (Volksrepublik China), Pune (Indien) und dem Stadtstaat Singapur.

Die Studie beleuchtet, welche der im UN-Habitat-Leitfaden enthaltenen Grundwerte und Mechanismen auf die Smart-City-Programme zutreffen und welche Möglichkeiten zur Durchsetzung von Grundfreiheiten, Datenschutzrechten und Gleichberechtigungsrechten bei Städten bestehen. Die Arbeit analysiert außerdem, welche Smart-City-Narrative die einzelnen Städte entwickeln und welchen Entwicklungsstand die 5 Smart-City-Governances erreicht haben, wobei davon ausgegangen wird, dass die Städte, die HRBA anwenden, das kollaborativer Smart Governance erreichen.

List of figures

Figure 1: Global urbanization rate, 1950-2050	10
Figure 2: Principles of the Declaration of the CCDR (Source: CCDR).....	17
Figure 3: Main values and principles of development (source:UN)	23
Figure 4: Four approaches to operationalize the main values and principles (source:UN)	24
Figure 5: Six core values of HRBA in smart cities (source: UN-Habitat).....	24
Figure 6: Levels of transformation towards smart governance (source: Praharaj et al., 2018).....	29
Figure 7: Location of Amsterdam, the Netherlands (source: Encyclopedia Britannica)	30
Figure 8: Location of Johannesburg, South-Africa (source: Encyclopedia Britannica)	36
Figure 9: Location of Shanghai, China (source: Encyclopedia Britannica).....	42
Figure 10: Location of Pune, India (source: Encyclopedia Britannica)	49
Figure 11: Location of Singapore (source: Encyclopedia Britannica)	56

Abbreviations and acronyms

ASC	Amsterdam Smart City
AEB	Amsterdam Economic Board
CCAC	Central Cyberspace Affairs Commission
CCDR	Cities' Coalition for Digital Rights
CCP	Chinese Communist Party
CCT	Central Committee for Technology
CDFC	Common Data Framework for Cities
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CEMR	Council of European Municipalities and Regions
CEO	Chief Executive Officer
CSL	Cybersecurity Law (CSL)
DDM	District Development Model
DPDP	Digital Personal Data Protection Bill
DSL	Data Security Law
EDB	Economic Development Council
e.g.	exempli gratia
e-governance	electronic-governance
EU	European Union
FRA	European Union Agency for Fundamental Rights
GDPR	General Data Protection Regulation
GovTech	Government Technology Agency of Singapore
HLRN	Housing and Land Rights Network
HPEC	High Powered Expert Committee
ICT	Information and Communication Technology
IDA	Infocommunications Development Authority
IDP	Integrated Development Plan
<i>Ibid.</i>	ibīdem
i.e.	id est

IIOC	Integrated Intelligent Operations Center
IoT	Internet of Things
IT	Information Technology
IUDF	Integrated Urban Development Framework
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
MAS	Monetary Authority of Singapore
NDB	National Data Bureau
NDP	National Development Plan
NGO	non-governmental organization
p.	page
pp.	pages
PCSC	People-Centred Smart Cities Flagship Program
PDHRE	People's Movement for Human Rights Learning
PDPA	Personal Data Protection Act
PIPL	Personal Information Protection Law
PMO	Prime Minister's Office
POPIA	Protection of Personal Information Act
SACCD	South African Council for City Data
SACN	South African Cities Network
SCM	Smart Cities Mission
SCODA	South African Cities Open Data Almanac
SDGs	Sustainable Development Goals
SN	Smart Nation
SNDGG	Smart Nation and Digital Government Group
SNDGO	Smart Nation and Digital Government Office
SPV	Special Purpose Vehicle
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNDG	United Nation's Development Group
UN-Habitat	United Nations Human Settlements Programme
US	United States

Table of Contents

Abstract (English)	1
Abstract (Deutsch).....	1
List of figures	2
Abbreviations and acronyms	3
Table of Contents	5
Chapter One: Introduction.....	8
(1) Introductory remarks	8
(2) The megatrend of smart urbanization	10
(3) The impact of smart cities on human rights	11
(i) <i>The impact of smart cities on economic, social and cultural rights</i>	12
(ii) <i>The impact of smart cities on civil rights</i>	13
(4) The impact of human rights on smart cities	14
a) <i>The right to the city</i>	14
b) <i>Human rights cities</i>	15
c) <i>Digital rights in smart cities</i>	16
(5) Statement of the problem.....	18
(6) Objectives and research questions.....	18
(7) Research methodology	19
Chapter Two: Literature review	20
(1) Narratives related to smart urban development.....	20
a) <i>The safe city narrative</i>	20
b) <i>The smart city narrative</i>	21
c) <i>The sustainable smart city narrative</i>	22
d) <i>The digital city narrative</i>	22
(2) Implementation of human rights in smart cities	23
(3) General characteristics of smart city strategies	26
a) <i>The main vision</i>	27
b) <i>Citizens' involvement in smart city strategies</i>	27
c) <i>The connectedness of the smart city strategy to the overall city plan</i>	27
d) <i>Implementation practices</i>	27

e) <i>The financial support of smart city strategies</i>	28
(4) Smart city governance	28
Chapter Three: Findings.....	30
(1) Human rights narrative in Amsterdam smart city program	30
(a) <i>The smart city strategy and its main drivers and core values</i>	30
(b) <i>Top-down or bottom-up approach</i>	31
(c) <i>Implementation practice of smart city strategy</i>	33
(d) <i>Financial support of smart city strategies</i>	34
(e) <i>The level of transition towards smart governance</i>	34
(f) <i>The prevalence of HRBA in the smart city program</i>	35
(2) Human rights narrative in the Johannesburg smart city program.....	36
(a) <i>The smart city strategy and its main drivers and core values</i>	36
(b) <i>Top-down or bottom-up approach</i>	37
(c) <i>Implementation practice of smart city strategy</i>	39
(d) <i>Financial support of smart city strategies</i>	40
(e) <i>The level of transition towards smart governance</i>	40
(f) <i>The prevalence of HRBA in the smart city program</i>	41
(3) Human rights narrative in Shanghai smart city program.....	42
(a) <i>The smart city strategy and its main drivers and core values</i>	42
(b) <i>Top-down or bottom-up approach</i>	43
(c) <i>Implementation practice of smart city strategy</i>	46
(d) <i>Financial support of smart city strategies</i>	47
(e) <i>The level of transition towards smart governance</i>	47
(f) <i>The prevalence of HRBA in the smart city program</i>	48
(4) Human rights narrative in Pune smart city program.....	49
(a) <i>The smart city strategy and its main drivers and core values</i>	49
(b) <i>Top-down or bottom-up approach</i>	50
(c) <i>Implementation practice of smart city strategy</i>	52
(d) <i>Financial support of smart city strategies</i>	53
(e) <i>The level of transition towards smart governance</i>	53
(f) <i>The prevalence of HRBA in the smart city program</i>	54
(5) Human rights narrative in Singapore smart city program	56

(a) <i>The smart city strategy and its main drivers and core values</i>	56
(b) <i>Top-down or bottom-up approach</i>	57
(c) <i>Implementation practice of smart city strategy.....</i>	59
(d) <i>Financial support of smart city strategies</i>	60
(e) <i>The level of transition towards smart governance.....</i>	60
(f) <i>The prevalence of HRBA in the smart city program</i>	61
Chapter Four: Conclusions.....	62
(1) Connection of the 5 selected cities to the HRBA	62
(2) The enforcement of fundamental freedoms, privacy rights and equality rights	64
(3) The prevalence of collaborative smart governance	66
(4) Concluding remarks.....	67
Bibliography.....	69
(1) Books	69
(2) Articles.....	69
(3) Documents and reports	71
(4) Websites.....	75

Chapter One: Introduction

“The individual is becoming a tiny chip inside a giant system that nobody really understands.”¹

(1) Introductory remarks

The emergence of smart cities is closely related to the need for transformation in urban development. The concept was brought to life by the urgent demand for more complex services fulfilled through new technological solutions, which made it possible to enrich the urban space with a new dimension, the virtual one. Nowadays due to the trend of smart transformation of cities, sensors, cameras, and smart phones add a layer of digital intelligence over the cityscape, dealing with huge amount of data extracted through monitoring traffic, air pollution, crime or energy use.² The century of data in which we are living challenges the content of citizens' human rights, as the changes contributed to modern technologies may result in considering citizens as mere data-providers rather than decision-makers. Smart city solutions in general promote the enforcement of human rights, especially the right to an adequate standard of living, however, access to digital tools and solutions is not always completely equal, thus the phenomena of digital divide may occur between certain groups of city dwellers. Additionally, privacy rights, freedom rights and equality rights can be significantly harmed as well during the process of digitalization. Cities can significantly support the enforcement of human rights with the help of soft law instruments such as memorandums of understanding, transnational city networks, or ethical charters. Thus, smart cities expand their national and international powers, while involving non-state actors, including technology companies, civil organizations and citizens themselves in city management.³

The methodology used in the city context in order to mainstream human rights is the so-called Human Rights-Based Approach (HRBA), the common understanding of which was developed in 2003 by the second UN Interagency Workshop under the auspices of the UN Development Group (UNDG).⁴ Although there have been several initiatives to enforce human rights at the city level,

¹ Harari, Y. N. (2017). *Homo Deus: A Brief History of Tomorrow*. Harper Collins., p. 224.

² Gyimesi, Á., & Somlyódyne Pfeil, E. (2021). Az adat és a kormányzás jelentősége az okos város stratégiai alapú értékteremtési folyamatában – magyar nagyvárosok összehasonlítása egy szintetizáló ökoszisztéma modell keretében. *Tér és Társadalom*, 35(3), 59–86. <https://doi.org/10.17649/tet.35.3.3339> , p. 61.

³ Swiney, C. (2020). The Urbanization of International Law and International Relations: The Rising Soft Power of Cities in Global Governance. *Michigan Journal of International Law*. 41(2), 227-278, p. 269.

⁴ Jonsson, U. (2015). A Human Rights-Based Approach to Sustainable Urbanization and the Realization of Human Rights in the City. A Think Piece for the preparation of the Habitat III Conference, 2016. Capacity Building UN-

including the creation of human rights cities and the support of the right to the city, it was the emergence of the concept of digital rights which made human rights applicable in the digital realm of smart cities. On universal level the implementation of digital rights through HRBA was developed by UN-Habitat in its guide for local governments titled: *Mainstreaming human rights in the digital transformation of cities*.⁵ Additionally, UN-Habitat's People-Centred Smart Cities (PCSC) Flagship Programme was launched in 2018 to promote the use of digital technologies in an ethical, inclusive and sustainable way.⁶ The Declaration and five principles of the Cities Coalition on Digital Rights (CCDR) was later created as a reaction to UN-Habitat PCSC policy advocacy and promotes privacy, accountability, non-discrimination, participatory democracy, and ethical digital service standards.⁷

According to scientific literature, there are different smart city narratives,⁸ but this thesis assumes that cities motivated to enforce human rights represent a separate narrative, and examines the extent to which the selected smart city programs provides space for the enforcement of HRBA and for the active involvement of citizens in the process of digital transformation.

The aim of this study is to analyse the applicability of the HRBA during the implementation of the smart city strategies in Amsterdam (Netherlands), Johannesburg (South-Africa), Shanghai (People's Republic of China), Pune (India) and the city-state of Singapore, and looks for the answers to the following questions: how is the HRBA reflected in the different smart city strategies, which smart city narrative is typical to the smart city program of the given settlement, in how far are the local authorities of the selected cities opened to include citizens in the decision-making process related to the smart city program?

The hypothesis of this thesis is that in those cities where the HRBA in the smart city program is not evident, fundamental freedoms, privacy rights and equality rights are less protected or not protected at all. The thesis also assumes that in the case of those smart city programs where HRBA prevails, the collaborative smart governance model based on the bottom-up approach applies.

Habitat. http://capacitybuildingunhabitat.org/wp-content/uploads/workshops/2013-human-rights-based-approach-to-development/reading-materials/2016_05_25_UN-Habitat_Thinkpiece%20III.pdf , p. 11.

⁵ Schaeffer Nonose, L., & Jansen, M. *Mainstreaming human rights in the digital transformation of cities -A guide for local governments*. UN-HABITAT. <https://unhabitat.org/mainstreaming-human-rights-in-the-digital-transformation-of-cities-a-guide-for-local-governments>

⁶ UN-Habitat. People-Centered Smart Cities. <https://unhabitat.org/programme/people-centered-smart-cities>

⁷ *About Us*. Cities Coalition for Digital Rights. (n.d.). <https://citiesfordigitalrights.org/thecoalition>

⁸ Beroche, H., Chubinidze, A., & Goelzer, L. (2023, March). *Geopolitics of smart cities: Expression of soft power and new order*. URBAN AI. <https://urbanai.fr/wp-content/uploads/2023/03/Geopolitics-of-Smart-Cities.pdf>

(2) The megatrend of smart urbanization

The process of urbanization started with the development of the industrial society and has now resulted in more than half of humanity living in cities. According to UN forecasts, by 2050, the proportion of the urban residents will exceed two-thirds of the world's population.

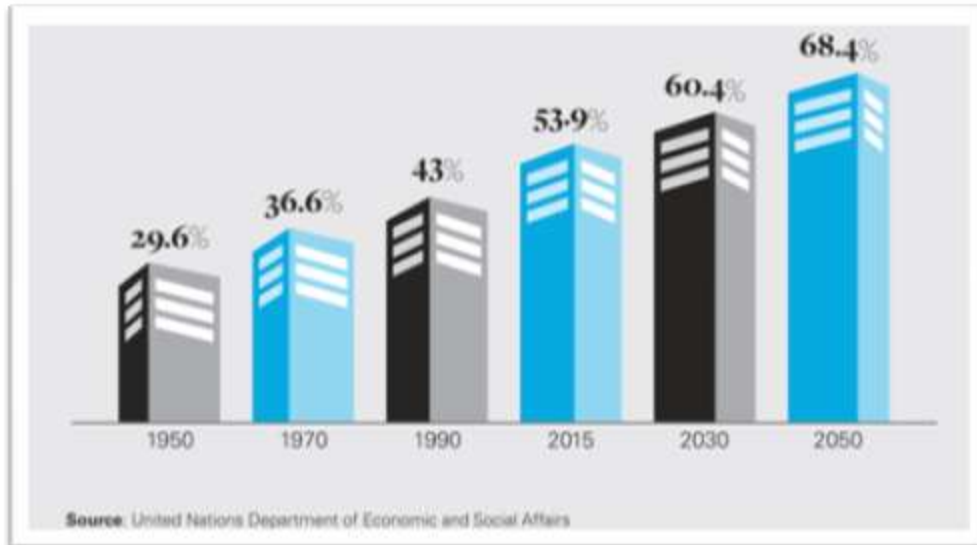


Figure 1: Global urbanization rate, 1950-2050

One of the essential characteristics of the acceleration of urbanization is the formation of large metropolises.⁹ While in 1970 only the population of Tokyo and New York exceeded 10 million people, by 2015 there were 29 such big cities. Additionally, while in 1950 there were 3 European cities among the top 5 big cities in the world, nowadays the world's biggest cities are located in the Eastern part of the globe. Tokyo with more than 37 million inhabitants is the biggest city worldwide followed by Delhi and Shanghai with a population less than 30 million.¹⁰

The term smart city was introduced as a marketing trend by IBM in 2010, arguing that as a result of accelerated urbanization processes, the use of increasingly advanced technological solutions has become necessary for the liveability of urban spaces and the manageability of urban infrastructures.¹¹ In the recent decades, through microelectronics, digital technology has integrated informatics, communication, and media technology into one system. A unified digital

⁹ Brettle, O., Greenacre, N., Hickman, T., & Liivak, A. (2020, May 28). *Accelerating change: From smart city to smart society*. JD Supra. <https://www.jdsupra.com/legalnews/accelerating-change-from-smart-city-to-83944/>

¹⁰ Kovács, K. (2018). Az okos város modelljei. In G. Sallai (Ed.), *Az Okos Város (Smart City)* (pp. 13–34). essay, Dialóg Campus., p. 47.

¹¹ *China's Smart Cities Development*. China's Smart Cities Development | US-CHINA | ECONOMIC and SECURITY REVIEW COMMISSION. (2020, April 29). <https://www.uscc.gov/research/chinas-smart-cities-development>

system encompasses the information technology (IT), the telecommunications and content sectors. This integrated system is called Information and Communication Technology (ICT). In order to process and further develop various data, the global Internet network is essential. The emergence of the Internet of Things (IoT) by connecting sensors and devices capable of communication with the Internet network enables the monitoring of various processes, like changes in health, the temperature of the apartment or office, the lighting of public areas, the traffic of the road network, air pollution, the purity of drinking water, etc.¹² Smart cities evolve through successive strategic development phases with the aim of realizing the so-called smart integration, by creating a platform in which mutually reinforcing systems enable the efficient, coordinated use of the city's resources. To this end, all relevant information related to the life of the city is collected, analyzed and a shared knowledge base is created. In practice, all the smart cities have implemented just partially the smart integration and still have more potential to develop. Even cities at the highest level of digital transformation have only created two-thirds of the technology base needed to become fully smart cities.¹³

(3) The impact of smart cities on human rights

Smart cities, although in most cases it is not part of their strategic priorities, through certain digital technologies contribute to a higher level of human rights enforcement, especially in the areas of the right to adequate standard of living. This is due to the fact that the ultimate goal of smart city strategies is the effective use of physical infrastructures with the help of information communication solutions in order to improve the quality of life of city residents. The fields most affected by smart city applications are security, healthcare, mobility, utilities, economic development, housing and community engagement.¹⁴

¹² Sallai, G. (2018). Az okos város koncepciója. In G. Sallai (Ed.), *Az Okos Város (Smart City)* (pp. 13–34). essay, Dialóg Campus., p. 15.

¹³ *China's Smart Cities Development*. China's Smart Cities Development | US-CHINA | ECONOMIC and SECURITY REVIEW COMMISSION. (2020, April 29). <https://www.uscc.gov/research/chinas-smart-cities-development>, p. 79.

¹⁴ Woetzel, J., Remes, J., Boland, B., & Sinha, S. (2018, June). *Smart cities: Digital Solutions for a more Livable Future*. mckinsey.com. <https://www.mckinsey.com/~/media/mckinsey/industries/public%20and%20social%20sector/our%20insights/smart%20cities%20digital%20solutions%20for%20a%20more%20livable%20future/mgi-smart-cities-full-report.pdf>, p. 77.

(i) The impact of smart cities on economic, social and cultural rights

The domains covered by smart city applications have an impact mainly on the right to water and sanitation, right to health, right to adequate housing, thus contributing to a more adequate standard of living.

The right to water and sanitation can be enhanced through applications such as water consumption tracking, leakage detection and control, smart irrigation, water quality monitoring, digital waste tracking and optimization of waste collection routes. Water usage tracking provides advanced measurement and digital feedback to consumers. In the cities of the developing world, the source of water waste is leaking pipes. In these settlements, sensors created to detect losses and optimize pump pressure can result in 15-25% water savings.¹⁵

There are several smart city solutions that contribute to the enhancement of the right to health, e.g. in cities, where there are too few doctors, telemedicine provides an opportunity to treat routine health problems, as city residents can consult specialists remotely. Remote patient monitoring and care systems are successful in managing chronic diseases, while data-driven interventions such as early warning of at-risk mothers about prenatal and postnatal care could reduce significantly childhood mortality rate.¹⁶

The right to adequate housing is protected through a variety of applications, such as smart surveillance, emergency response optimization, personal alert applications, home security systems, data-driven building inspections. The affordability of housing is enhanced through smart energy solutions, like home energy automation systems, and consumption tracking or dynamic electricity pricing.¹⁷

However, in addition to the benefits associated with the smart city, certain discrepancies also appear, e.g. the access to ICT-facilities and technological tools might be very different among people and countries. In this sense, the so-called digital divide may hinder the use of the opportunities offered by the smart city. The first level digital divide is associated with the uneven access to Internet, while the second-degree digital divide is related to lack of skills required for purposeful use of the Internet. Lastly, the third-degree digital divide is associated with digital

¹⁵ *Ibid.*, p. 59.

¹⁶ *Ibid.*, p. 52.

¹⁷ *Ibid.*, pp. 25-27.

inequalities that are determined by the stratification of the society, and is affected by the status and cultural background of individuals who in this sense possess different digital capital.¹⁸

(ii) The impact of smart cities on civil rights

The technological factor, the institutional factor and the human factor that come into force in smart cities are not always in harmony with each other. Through digital solutions, the influence of certain technology companies or even of the government and the biases caused by data management can threaten significantly the enforcement of human rights.¹⁹

Equality rights may be violated e.g. through the adoption of smart policing technologies which may have lower accuracy rates when identifying individuals belonging to different racial groups, but they might exacerbate discrimination even when they appear to boast high accuracy through negative feedback loops.²⁰

Privacy rights can be violated by collecting larger amounts of personal data on residents, often without their knowledge or consent. Smart phones e.g. may share geo-location data and digital interactions with mobile applications and internet providers, which are then able to share data with other service providers.²¹ Municipalities based on the collected data which they use to optimize traffic flow or monitor waste management operations may build personal profiles that can reveal patterns of movement, political or religious affiliations, and even intimate details about a resident.²²

Smart cameras, license plate readers, and drones, can have a chilling effect on residents' freedom rights. In many cities law enforcement already uses smart city technologies to dissolve protests and to identify participants, but someone travelling to an addictions support group, or workers attempting to exercise their right to unionize may also find it difficult to realize their plans when surrounded by surveillance technology.²³ The wide-scale dataveillance and the predictive profiling confirm the recognition that the legal protection of citizens in the smart city context is not always sufficient.

¹⁸ Ranchordas, S. (2020). Connected but still excluded? Digital Exclusion Beyond Internet access. *SSRN Electronic Journal*, 1–31. <https://doi.org/10.2139/ssrn.3675360>

¹⁹ Flak, L. S., & Hofmann, S. (2020). <https://www.semanticscholar.org/paper/The-Impact-of-Smart-City-Initiatives-on-Human-Flak-Hofmann/2db161e4a869fc2d0046435fc11677207b58e579>. *EGOV-CeDEM-ePart*, 165–173., p. 167.

²⁰ *Ibid.*

²¹ *Smart cities: Dreams capable of becoming nightmares*. Amnesty International. (2019, June 28). Retrieved March 26, 2023, from <https://www.amnesty.org/en/latest/research/2019/06/smart-cities-dreams-capable-of-becoming-nightmares/>

²² Qarri, A., & Gill, L. (2022, January). *Smart cities and human rights*. opennorth.ca. https://opennorth.ca/wp-content/uploads/legacy/RB_-_Human_Rights.pdf

²³ *Ibid.*, p. 11.

(4) The impact of human rights on smart cities

As a result of globalization, urbanization, and decentralization processes within the state, cities are becoming stronger and more influential players in international law.²⁴ Based on these changes the old light of the cities may shine again following the footsteps of the Hanseatic League or the Greek city-states.²⁵ Although international law is primarily based on the legal status of states, in many cases cities gain significant influence at the international level through their worldwide networks.²⁶ The enforcement of human rights at the city level is primarily supported by voluntary transnational cooperations between cities, which provide local governments more soft power through the quasi-international legal documents concluded with each other.²⁷ Additionally, in some cases, cities have strengthened their relations with international organizations, such as UN-Habitat, thereby exerting a significant influence on international standard-setting processes. Furthermore, in some cases cities rely on international human rights treaties if they want to implement them more effectively compared to the state level enforcement. For example, the city of San Francisco has committed to local implementation of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).²⁸

Recently the concept of digital rights in the city was introduced as an incentive for the creation of new transnational alliances. Previously, as the predecessors of the digital rights in the city, the concept of the right to the city emerged and additionally, several so-called human rights cities have been formed in the last decades.

a) The right to the city

The concept of the right to the city elaborated by the French scientist Henri Lefebvre is based on the idea that residents have the right not only to access the goods provided by the city, but also have a say to shape local developments. Based on this concept, the city is a dynamic space shaped by its inhabitants.²⁹ In many countries, the rights comprising the right to the city are protected by laws, but all of them together form the concept as a whole. The three constituent

²⁴ International Law Association (2020). (rep.). *The Role of Cities in International Law* (pp. 1–6). Kyoto. p. 2.

²⁵ *Ibid.*, p. 1

²⁶ Blank, Y. (2021). International legal personality/subjectivity of cities. In H. P. Aust & J. E. Nijman (Eds.), *Research Handbook on International Law and Cities* (pp. 1–459). essay, Edward Elgar Publishing Limited. p. 103.

²⁷ Voorwinden, A., & Ranchordas, S. (2021). Soft law in city regulation and governance. *SSRN Electronic Journal*, 1–22. <https://doi.org/10.2139/ssrn.3978959>, p. 5.

²⁸ International Law Association (2020). (rep.). *The Role of Cities in International Law* (pp. 1–6). Kyoto. p. 2.

²⁹ Kempin Reuter, T. (2019). Human rights and the city: Including marginalized communities in Urban Development and smart cities. *Journal of Human Rights*, 18(4), 382–402. <https://doi.org/10.1080/14754835.2019.1629887>, p. 384.

pillars of the right to the city are: spatially just resource distribution, political agency of city residents and the prevalence of socio, economic and cultural diversity. Thus, the active involvement of residents in defining urban policies and spatial planning is of crucial importance. The role of local governments is manifested in the adoption of municipal level charters; development of local government laws enshrining human rights; establishment of a local ombudsman; and creation of a special department in order to promote the right to the city. Education and the development of local community knowledge are also key factors. Additionally, the right to the city should have a greater role among citizens, women, marginalized groups and the urban poor. Since the private sector is the engine of urban development, it should establish close cooperation with both the civil society and the local government as well.³⁰

In the recent decades, many regional documents have been created to strengthen the right to the city. The idea of the European Charter for the Safeguarding of Human Rights in the City arose in 1998 during a conference organized for the 50th anniversary of the Universal Declaration of Human Rights (UDHR), and the document was finalized in 2000. The Charter of Educating Cities ratified by more than 400 cities argues for the right to an educating city seen as a means for improving the quality of life of citizens. The movement was launched in 1990 at the first International Congress of Educating Cities in Barcelona. The European Charter on Equality between Women and Men in Local Life is a document developed by the Council of European Municipalities and Regions (CEMR) in 2006.³¹ The Global Charter-Agenda for Human Rights in the City was initiated by city mayors and was approved in 2005 with the aim to develop a framework for inclusive human rights policies. The World Charter on the Right to the City has been promoted by a coalition of NGOs, academic and professional groups, and is the product of years of discussion which started in 1992 during the Earth Summit. Additionally, there are cities which formulated in their own documents how the right to the city should be enhanced; the most famous ones among these are the Brazil City Statute and the Montreal Charter.³²

b) Human rights cities

The proliferation of human rights cities was stimulated by the decentralization trends of governmental power at the end of the 20th century, as well as by drastic population growth. The change in the self-image of the cities was a contributing factor as well. The strengthening of

³⁰ What's the right to the city? - ESCR-net. https://www.escr-net.org/sites/default/files/what_r2c_digital.pdf , p.10.

³¹ Brown, A., & Kristiansen, A. (2009). *Urban Policies and the Right to the City - Rights, responsibilities and citizenship*. Unesdoc.unesco.org. <https://unesdoc.unesco.org/ark:/48223/pf0000178090>, pp. 18-21.

³² *Ibid.*, pp. 25-26.

urban identity of cities was reflected in the increased popularity of city marketing.³³ The concept of human rights cities was elaborated by the civil organization called The People's Movement for Human Rights Learning (PDHRE). In 2008, the organization developed a framework for settlements wanting to become human rights cities. The methodology drew attention to the importance of setting up a steering committee, which brings together the main interest representation bodies and, after consultations, prepares an action plan that connects community priorities with human rights. Since the movement's inception, the PDHRE methodology has been followed by many cities around the world, one prominent example being Porte Alegre in Brazil. At the same time, many cities have adopted the title of human rights city even though their commitment is not necessarily based on the set of guidelines prescribed by the movement. The world's first human rights city was the Argentinian city of Rosario, the settlement's development area was primarily the support of women's rights.³⁴ South Korea's human rights city, Gwangju is significant as in 2012 adopted its own Human Rights Charter, and in 2014, the Gwangju Agreement was born, which contains 10 basic human rights principles related to cities. Since 2011, Gwangju promotes the exchange of experiences between cities in the field of human rights and the right to the city by organizing the World Forum of Human Rights Cities every year. On the EU level, it was the European Union Agency for Fundamental Rights (FRA) located in Vienna which published in 2021 a framework for human rights in cities. The main city coalition promoting human rights is the United Cities and Local Governments (UCLG) network, which has been joined by more than 1,000 cities. Considered to be the largest umbrella association of municipalities in the world, UCLG was founded in 2004 and is headquartered in Barcelona.³⁵

c) *Digital rights in smart cities*

With the development of digital technologies, human rights received a new dimension, as their protection should be provided in the intangible realm of smart technologies as well. Human rights in the digital context are referred to as digital rights, and “*are interpreted as existing human rights which need to be protected in the context of digital technologies, as physical and digital*

³³ Oomen, B., & Baumgärtel, M. (2014). Human rights cities. *The SAGE Handbook of Human Rights*, 709–730. <https://doi.org/10.4135/9781473909335.n39>

³⁴ *Ibid.*, pp. 714–715.

³⁵ *Human rights cities in the EU: A framework for reinforcing rights locally*. European Union Agency for Fundamental Rights. (2021). <https://fra.europa.eu/en/publication/2021/human-rights-cities-framework>

spaces are increasingly intertwined. Digital rights assess how digital technology affects previously recognized rights – i.e., civil, political, economic, social and cultural rights.”³⁶

In order to promote digital human rights in smart cities the People-Centred Smart Cities (PCSC) Flagship Programme of the UN-Habitat was launched in 2020. The programme provides support for digital transformation on regional, national and local governance level.³⁷ The aim of Cities Coalition for Digital Rights (CCDR) formed in 2018 by the city councils of Barcelona, Amsterdam, and New York City is to build data infrastructures and institutions alongside policy recommendations of PCSC and to promote citizens’ digital rights on a global scale. CCDR has joined UCLG and the movement includes over 50 cities worldwide. The Declaration of CCDR was inspired by the Internet Rights and Principles Coalition based at the UN Internet Governance Forum and ensures the enforcement of 5 digital principles.³⁸

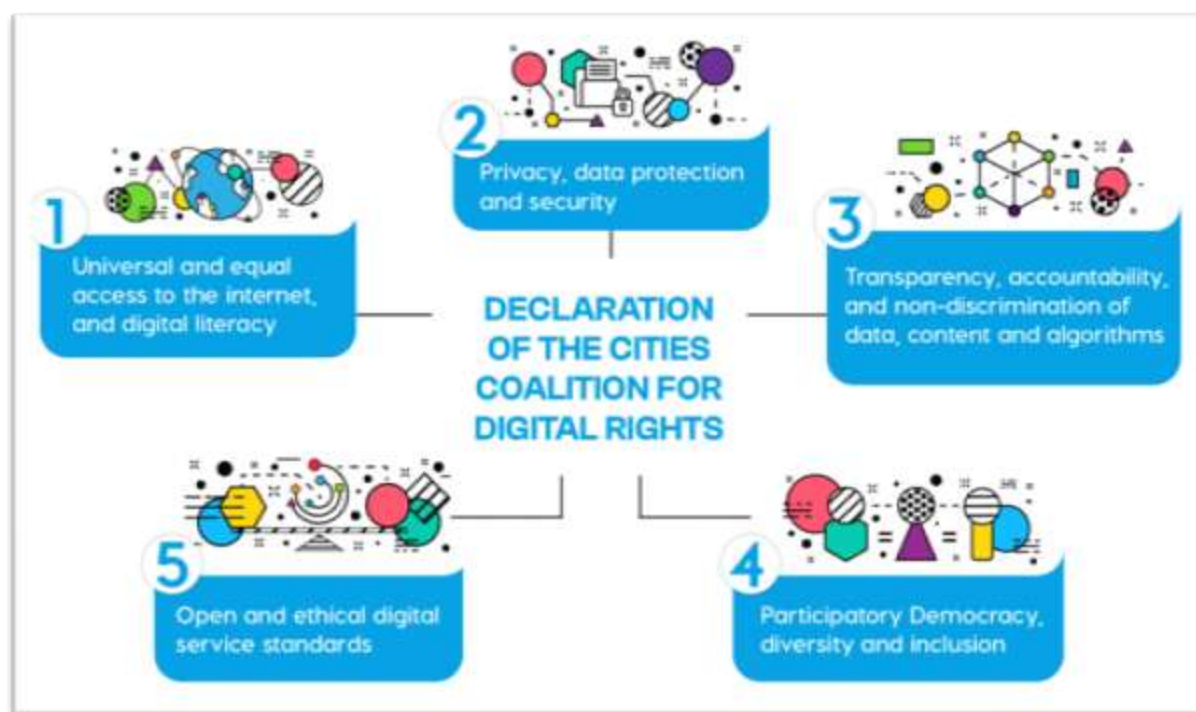


Figure 2: Principles of the Declaration of the CCDR (Source: CCDR)

³⁶ Schaeffer Nonose, L., & Jansen, M. (n.d.). *Mainstreaming human rights in the digital transformation of cities -A guide for local governments*. UN-HABITAT. <https://unhabitat.org/mainstreaming-human-rights-in-the-digital-transformation-of-cities-a-guide-for-local-governments>, p. 5.

³⁷ UN-Habitat. *People-Centered Smart Cities*. <https://unhabitat.org/programme/people-centered-smart-cities>

³⁸ Calzada, I., Pérez-Batlle, M., & Batlle-Montserrat, J. (2021). People-centered smart cities: An exploratory action research on the cities’ coalition for digital rights. *Journal of Urban Affairs*, 1–26. <https://doi.org/10.1080/07352166.2021.1994861> , p. 2.

However, the concept of digital rights is still interpreted differently even among the cities taking part in the CCDDR. Despite the fragmentary nature of these rights, the long-term aim of the CCDDR is the codification of digital rights.³⁹

(5) Statement of the problem

Human rights may have an effect on horizontal and vertical level on the development of smart cities. On the horizontal level, smart city technologies can support the enforcement of certain human rights, while in some cases may cause violations of human rights. On the vertical level, human rights can determine the policy of local governments committed to digital transformation, thereby ultimately encouraging citizens to be involved in decision-making. In order to avoid human rights violations on horizontal level, it is important to make changes on governmental level, providing more inclusive policy-making possibilities. Since the governance of smart cities requires a complete organizational and attitudinal transformation, the interests and creative contribution of local residents to city management are essential in the process of digital transformation.

(6) Objectives and research questions

The aim of the study is to provide an overview on how certain patterns of HRBA promoted by UN-Habitat through its guide for local governments is reflected in different smart city strategies. Additionally, the study aims to highlight what narratives do the given smart city programs reflect and how compatible are they with the human rights narrative? How are certain smart governances of the selected cities structured, how these structures allow city residents to have a participative role during the digital transformation? For this purpose, 5 smart city programs are examined, having a closer look on the general characteristics of the smart city programs in the light of HRBA, and the level of development of smart governance.

The aim of the study is to answer the following questions:

1. How is the HRBA reflected in the different smart city strategies?
2. Which smart city narrative is typical to the smart city program of the given settlement, and how much space does it allow for the implementation of the HRBA?

³⁹ Wernick, A., & Artyushina, A. (2023). Future-proofing the city: A human rights-based approach to governing algorithmic, biometric and Smart City Technologies. *Internet Policy Review*, 12(1). <https://doi.org/10.14763/2023.1.1695>, pp. 10-11.

3. Are fundamental freedoms, equality rights, and rights to privacy less protected in those smart cities where HRBA is not applied?
4. Are the local authorities of the selected cities opened to include citizens in the decision-making process related to the smart city program?
5. If the HRBA is applied in the smart city strategy, does the collaborative form of governance come into effect?

(7) Research methodology

The study is a qualitative research based on the analyses of selected smart city programs. For this purpose, information provided on the websites of the given smart city programs and additionally, available researches, studies, reports and newspaper articles related to the implementation of selected smart city strategies were analyzed.

In the next chapter, as part of the literature review, the aspects on which the analysis of the smart city programs is based are elaborated. First, the most important smart city narratives currently in existence are summarized, and then the *Mainstreaming human rights in the digital transformation of cities* is presented as part of the human rights narrative.

The scheme developed by the Future Cities Catapult is considered to be the guide related to the structure of smart city strategies, which takes into account the extent to which city residents are involved in the creation of strategies, the extent to which smart city strategies are part of the city's overall strategy, the extent to which public and private partnerships prevail during implementation, as well as what kind of funding the smart city programs receive.

The thesis also examines the degree to which smart governance undergoes a transformation process compared to the traditional government structure, taking into account that according to research, the most advanced level of transformation is represented by smart city governance which actively involves residents in the digital transformation process.⁴⁰

⁴⁰ Praharaj, S., Hoon Han, J., & Hawken, S. (2018). Towards the right model of Smart City Governance in India. *International Journal of Sustainable Development and Planning*, 13(02), 171–186. <https://doi.org/10.2495/sdp-v13-n2-171-186>, p. 173.

Chapter Two: Literature review

(1) Narratives related to smart urban development

At the level of society, narratives are sociolinguistic constructions that have an identity-forming role, thus determining the place of groups of people in the world. The concept of strategic narrative as a communication tool of states and transnational organizations used to define their own interests and values, provides the opportunity to examine the different possibilities of smart city developments.⁴¹ According to geopolitical experts, nowadays smart cities have become a battleground between the US and China, and the EU is trying to find its own place in this confrontational situation.⁴² However, HRBA in the context of smart urban development provides the possibility to formulate the fourth narrative of digital human rights cities.

a) The safe city narrative

The strategic narrative of safe cities promoted by China focuses on political order and social harmony providing safety and security. In order to achieve these goals, the Chinese central government uses a top-down approach for smart city planning. The legal environment, the massive government investment, the large surveillance system, and the huge amount of data collected about citizens, provides China the opportunity to gain a leadership position related to the security dimension of smart cities.⁴³ Although the Chinese government does not acknowledge the fact of mass surveillance in smart cities, in regions such as Xinjiang a variety of technological tools are used to increase surveillance of the local Uyghur minority group. *“Xinjiang’s Integrated Joint Operations Platform gathers data on residents using iris scanners, CCTV cameras with face and voice recognition, and DNA sampling. It links this data with residents’ online activity, banking information, phone calls and text messages to identify behaviour the government regards as threatening.”*⁴⁴ In general, the established technological system and the introduction of social credit scores serve to discipline citizens, and significantly limit action against political power and

⁴¹ *Ibid.*, pp. 26-27.

⁴² Beroche, H., Chubinidze, A., & Goelzer, L. (2023, May). *Geopolitics of smart cities: Expression of soft power and new order*. Geopolitics of Smart Cities: Expression of Soft Power and New Order. <https://urbanai.fr/wp-content/uploads/2023/03/Geopolitics-of-Smart-Cities.pdf>

⁴³ Ekman, A. (2019, December). *China’s smart cities - ifri*. French Institute of International Relations. https://www.ifri.org/sites/default/files/atoms/files/ekman_smart_cites_battleground_2019.pdf, pp. 27-29.

⁴⁴ Habib, J. *In Xinjiang, China, surveillance technology is used to help the state control its citizens*. CBCnews. <https://www.cbc.ca/passionateeye/features/in-xinjiang-china-surveillance-technology-is-used-to-help-the-state-control>

state authorities.⁴⁵ China's foreign policy program, the Belt and Road Initiative, attaches great importance to smart cities as a tool for foreign expansion. Through the Digital Silk Road initiative, China has achieved remarkable success in developing countries, especially in Africa and Brazil, where crime problems overshadow privacy concerns.⁴⁶

b) *The smart city narrative*

US smart city ambitions are different, in this narrative the enhancement of the quality of life is a key driving factor, which is considered to be achievable through accelerated technological development and a large variety of urban services and goods that citizens can access. These entrepreneurial smart city strategies provide advantage for technology companies like IBM and Cisco rooted in Silicon Valley. In this smart city narrative a bottom-up approach prevails, thus smart city programs are often initiated by the private sector or are based on public-private partnerships. In this context data is considered to be the new oil and tech companies' main goal is to extract as much data as possible through tracking, classifying and recording people's behaviour. This development direction gave rise to the phenomena of surveillance capitalism. The essence of the concept consists in the accumulation of information generated from behavioural patterns in order to forecast future behaviour, the quality of which depends on the amount of data collected.⁴⁷ As Zuboff (2019) stated, "*Behavioral data that were once discarded or ignored were rediscovered as what I call behavioral surplus; ...this new market exchange was not an exchange with users but rather with companies who understood how to make money from bets on users' future behavior*" (p. 13.). This kind of smart city approach received a strong international response, but also deep criticism, when an urban development project initiated by the Google-affiliated Sidewalk Labs in the city of Toronto, Canada, was suspended due to residents' protests. The reason for the project's stalling was that the data collected about the residents was not anonymized, and there were no adequate information provided about what the collected data was used for.⁴⁸

⁴⁵ Beroche, H., Chubinidze, A., & Goelzer, L. (2023, May). *Geopolitics of smart cities: Expression of soft power and new order*. Geopolitics of Smart Cities: Expression of Soft Power and New Order. <https://urbanai.fr/wp-content/uploads/2023/03/Geopolitics-of-Smart-Cities.pdf>

⁴⁶ *Ibid.*, pp. 30-31.

⁴⁷ Zuboff, S. (2019). Surveillance capitalism and the challenge of collective action. *New Labor Forum*, 28(1), 10–29. <https://doi.org/10.1177/1095796018819461>, p. 15.

⁴⁸ Ekman, A. (2019, December). *China's smart cities - ifri*. French Institute of International Relations. https://www.ifri.org/sites/default/files/atoms/files/ekman_smart_cities_battleground_2019.pdf, p. 12.

Overall, smart city initiatives strive to facilitate local context and community needs. However, in order for the people-centered smart city to be created, local governments have an increased role in guaranteeing public values.

c) *The sustainable smart city narrative*

The third data powerhouse is the EU. Even though its strategic narrative related to smart cities is still under evolution, it strives for technological and ideological independence. However, according to Beroche et al. (2023) “*European technological solutions are currently not as tech-savvy as in China, south-east Asia, and the USA. A lot is invested in European research and development projects to fill the gap*” (p. 39). The EU's own strategic narrative is built around data protection and transparency and is embodied in the General Data Protection Regulation (GDPR), encouraging many cities in Europe to introduce similar regulations at the local level. Moreover, the EU aims to create a single digital market in the future. In addition to the GDPR, the European Green Deal is another cornerstone of the European smart city narrative, as it supports sustainable infrastructure and its development. Sustainable urban development is a central paradigm in the EU model, which is also reflected in the New European Bauhaus project launched in 2020.⁴⁹ The sustainable smart city narrative builds on citizen participation and aims to foster collaboration between scientists, political decision-makers and society in an effective way. Initiatives for citizens’ engagement are e.g. the Telraam project⁵⁰ and the EU-citizen.science⁵¹.

d) *The digital city narrative*

Although there are different strategic narratives of smart cities, they are all tied to geographic location and serve geostrategic interests. This study promotes the articulation of a fourth approach: the human rights narrative in smart cities which is independent of geographic boundaries and puts city dwellers at the center. However, as human rights gain a new interpretation in the context of digital rights, the smart city narrative in the context of digital rights looks beyond the concepts of the right to the city and the human rights cities, even though it is based on the principles and values characteristic to these two developmental trends. The digital city narrative is linked to the right to the city movement in the sense that the active initiative of citizens is necessary to assert their human rights, both in the context of the city and

⁴⁹ Beroche, H., Chubinidze, A., & Goelzer, L. (2023, May). *Geopolitics of smart cities: Expression of soft power and new order*. Geopolitics of Smart Cities: Expression of Soft Power and New Order. <https://urbanai.fr/wp-content/uploads/2023/03/Geopolitics-of-Smart-Cities.pdf> , pp. 41-42.

⁵⁰ Telraam. <https://telraam.net/#9/47.4977/19.0791>

⁵¹ EU-citizen.science. <https://eu-citizen.science/>

the digital transformation. At the same time, the digital city narrative is also linked to the concept of human rights cities, in the framework of which the restructuring of local governments was encouraged in order to create more human-centered cities.

Barcelona is a good example of how these three concepts are combined during the development of a city. Its current smart city program is also called Barcelona Digital City⁵², and additionally, the Spanish provincial capital is the site of the creation of many conventions that are linked to the right to the city movement, and it is also the headquarters of the most extensive network of human rights cities, the UCLG.

The use of HRBA in the context of the digital city was anticipated by the fact that, before UN-Habitat created its framework to provide a guide for city governments in the process of digital transformation, the Vienna-based FRA also created its own framework, which is also aimed at local governments, so that they have appropriate guidelines to create human rights cities. Both the FRA and UN-Habitat frameworks distinguish core values, structures and mechanisms and tools in their frameworks for creating people-centred cities.

(2) Implementation of human rights in smart cities

The UN-Habitat has developed further the concept of HRBA and provided a guide for local governments worldwide on how to mainstream digital human rights in smart cities. However, the overall development process envisaged by the UN is fostered by the 2030 Agenda for Sustainable Development the goals of which were developed based on human rights norms. The empowerment of people according to the Agenda is supported by three universal values, one of them being the HRBA.⁵³

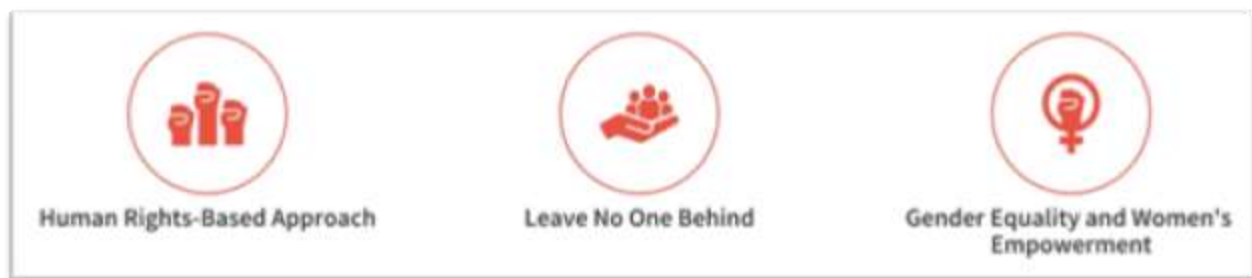


Figure 3: Main values and principles of development (source: UN)

⁵² Barcelona Digital City. <https://ajuntament.barcelona.cat/digital/en>

⁵³ United Nations. (2023). *UNSDG | 2030 agenda - universal values*. United Nations. <https://unsdg.un.org/2030-agenda/universal-values>

The UN has adopted four approaches which should be followed in order to operationalize HRBA and the other main values and principles as well.⁵⁴ These approaches are as follows:



Figure 4: Four approaches to operationalize the main values and principles (source:UN)

Based on the universal values and the approaches which contribute to their operationalization, the UN-Habitat in its guide for local governments to mainstream human rights in the digital transformation of cities, exemplified within the first dimension of the framework six core values in the context of smart cities.⁵⁵



Figure 5: Six core values of HRBA in smart cities (source: UN-Habitat)

These core values consists the foundations based on which several mechanisms help to integrate human rights into the city's development. The first two mechanisms mentioned by UN-Habitat prescribe to assign a digital human rights mandate to political representatives and to mainstream human rights in the realm of digitalisation at all policy levels of city administration. Additionally,

⁵⁴ United Nations. (2023). *UNSDG | 2030 agenda - universal values*. United Nations. <https://unsdg.un.org/2030-agenda/universal-values>

⁵⁵ Schaeffer Nonose, L., & Jansen, M. *Mainstreaming human rights in the digital transformation of cities -A guide for local governments*. UN-HABITAT. <https://unhabitat.org/mainstreaming-human-rights-in-the-digital-transformation-of-cities-a-guide-for-local-governments>., p.11.

it is advocated to up-skill public servants in order to contribute more effectively to the implementation of inclusive and democratic uses of technology. It is prescribed in the 6th mechanism that city residents should take part in the decision-making process of the city. The 7th mechanism promotes experimentation of digital innovations through test beds and living labs with the inclusion of city residents in technology development. The appointment of external advisory councils is also of key importance as civil society organisations, vulnerable social groups and businesses can speak out their opinion as well. According to the 9th mechanism transparency of city operations and service delivery should be provided through publishing registries, or by setting up quality control measures. The next mechanism emphasizes the importance to create a ‘human rights and digital technology’ municipal office, an anti-discrimination or Ombuds institution focusing on the relation between human rights and digital technologies providing the opportunity to legal remedy for victims of cyber crimes. The 11th mechanism advocates for human rights impacts assessment, while the 12th mechanism prescribes to apply a human rights lens to procurement and funding of smart city projects. The next mechanism advocates for the establishment of a regulatory reporting mechanism related to human rights issues in digital context. It is also advised to organize annually a Digital Human Rights day supporting advocacy and reinforcing the city’s commitment. According to the last mechanism national and international partnerships should be formed to lobby for forward looking strategies.⁵⁶

Finally, the regulatory framework exemplifies through different tools how to operationalize structures and mechanisms clustered around the six core values. In order to achieve the first core value, namely digital inclusion and equality, it is important to assure the affordability of services and enhance the involvement of marginalized and disadvantaged groups in the city’s decision-making process, to reduce the digital divide in the community. The second core value which is freedom, autonomy and self-determination of the population is supported by local governments when they provide more opportunities for the residents to control the use of personal data collected by the city, and when education is provided for people about when and what types of personal data are created. Transparency and accountability of local governments being the third core value will be realized when automated decision-making processes become more transparent, and governments can be held accountable for the consequences of technology used in cities. To

⁵⁶ *Ibid.*, pp. 17-20.

this end, it is important to publicly publish guidelines and data sets, to ensure access to the algorithm codes when necessary. The fourth core value, namely public involvement and community participation can be ensured by involving NGOs in representing marginalized groups of society or by creating working groups made up of representatives of NGOs, experts, and groups particularly affected by technological solutions. It is also important to create mechanisms that allow the population to inform the municipalities about their reservations regarding technologies, and it is also necessary to map the digital spaces of the city that are vulnerable from a human rights point of view.⁵⁷ Data protection, privacy and security is the fifth core value mentioned by the framework. In this regard it is necessary to protect individual data, and in parallel, people should be aware of data management practices, including information related to surveillance. Finally, the sixth value is to ensure open infrastructures, open governance, open data and interoperability thus, preventing group discrimination and promoting inclusion.⁵⁸

However, the HRBA is not the only tool for mitigating harms suffered by residents living in smart cities. HRBA is criticized among others, because ignores collective dimensions and the inherent characteristics of smart city technologies, they represent Western way of thinking, they do not provide enough legal remedies, and they fail to properly identify the nature of rights violated. People centred smart cities can also be developed based on alternative normative standards such as welfare and democracy, justice-based approaches and consumer privacy.⁵⁹ Several cities argue in favour of slow governance, which aims the development of people independent of the digital world, as opposed to the technological solutions of smart cities. This view has significant potential where the implementation of HRBA failed or met with resistance.⁶⁰

(3) General characteristics of smart city strategies

The process of becoming a smart city is decisively determined by the country's institutional set-up, the spatial and social structure of the settlement, the general standard of living, the tendency to do business, and the intention of the residents to participate in politics.⁶¹ This complexity

⁵⁷ *Ibid.*, pp. 24-27.

⁵⁸ *Ibid.*, pp. 30-32.

⁵⁹ Wernick, A., & Artyushina, A. (2023). Future-proofing the city: A human rights-based approach to governing algorithmic, biometric and Smart City Technologies. *Internet Policy Review*, 12(1). <https://doi.org/10.14763/2023.1.1695> , pp. 11-12.

⁶⁰ Sanfilippo, M. R., & Frischmann, B. (2023). Slow-governance in smart cities: An empirical study of smart intersection implementation in four US college towns. *Internet Policy Review*, 12(1). <https://doi.org/10.14763/2023.1.1703>

⁶¹ *Ibid.*, pp. 103-104.

means that one size fits all smart city strategies cannot be applied. Smart city strategies or programs are based on a multi-stage development concept and are determined by several factors.

a) The main vision

The vision of smart cities can serve a variety of interests, including the maintenance of political power, the development of technology and the stimulation of the digital technology market, but at the same time, citizen empowerment and environmental protection can also be among its goals.

b) Citizens' involvement in smart city strategies

City residents are involved in the creation of the smart city programs to varying degrees. When the collaborative approach is applied, public sector organizations, the private sector, academia and citizens themselves are involved in decision making. This approach requires longer time and more resources to develop the smart city strategies. In contrast, the top-down approach limits consultation primarily to relevant ministries, and is suitable for meeting immediate, short-term needs.⁶²

c) The connectedness of the smart city strategy to the overall city plan

Smart city strategies are usually created in three different forms. The stand-alone smart city strategy is generally forward-looking, but at the same time it might not fit with the other initiatives or the comprehensive vision of the city. The embedded smart city strategy is aligned with the overall vision of the city and is actually one of the sub-strategies within the overall city strategy. As the strategies become more elaborate, they are often integrated into the overall vision of the city. There are unwritten smart city strategies as well in such cases when cities simply develop projects instead of a comprehensive smart strategy.⁶³

d) Implementation practices

The smart city strategies are usually implemented in partnership between the public and private sector when they are created based on the collaborative approach. Nevertheless, the implementation of smart city strategies can be done through offices created for this purpose as well, which operate within the city hall and are connected with the departments that can help the implementation.⁶⁴

⁶² *Smart City Strategies: A global review*. Arup. (2017).

<https://www.arup.com/perspectives/publications/research/section/smart-city-strategies-a-global-review>, p. 20.

⁶³ *Ibid.*, pp. 23-24.

⁶⁴ *Ibid.*, p. 25.

e) *The financial support of smart city strategies*

The implementation of the smart city strategy can be financially supported by local governments, national governments, and the private sector. In Europe smart cities are supported by a supranational entity, the European Commission. In North America and Africa besides national support, the implementation of smart city strategies is largely sponsored by private investments.⁶⁵

(4) Smart city governance

Smart governance is one constituting element of the smart city wheel developed by Boyd Cohen in 2012. The theory examines the areas in which technological innovations help the development of smart cities. The model, taking into account around 400 smart city characteristics, consists of strategic areas such as economy, environment, lifestyle, transport and citizens, governance being the sixth constituting element.⁶⁶

The advancement of smart cities takes huge resources, puts the most modern technologies at the service of the urban community, and requires complex cooperation between different stakeholders. A strong city government is needed to coordinate the process of change, which is a challenging task, especially in the light of the fact that the process of digital transition requires the transformation of classic government roles and responsibilities. Although local governments are the lowest administrative units, they have a more complex role than their predecessors. Smart city governments play the role of commissioners when they use a top-down approach that emphasizes authority, but they can play the role of facilitators as well when they promote a bottom-up approach that focuses on public-private cooperation. Additionally, smart city governments may act as co-producers of a hybrid approach, when they advocate public-private-civilian cooperation.⁶⁷ According to conservative views, the creation of smart cities can be achieved with traditional institutional solutions, but experience shows that the local government itself must be transformed in order to create a smart city.⁶⁸

⁶⁵ *Ibid.*, pp. 26-27.

⁶⁶ Kovács, K. (2018). Az okos város modelljei. In G. Sallai (Ed.), *Az Okos Város (Smart City)* (pp. 13–34). essay, Dialóg Campus., p. 47., p. 43.

⁶⁷ Bolívar, M. P. (2016). Mapping dimensions of governance in Smart Cities. *Proceedings of the 17th International Digital Government Research Conference on Digital Government Research*, 312–324. <https://doi.org/10.1145/2912160.2912176>

⁶⁸ Praharaj, S., Hoon Han, J., & Hawken, S. (2018). Towards the right model of Smart City Governance in India. *International Journal of Sustainable Development and Planning*, 13(02), 171–186. <https://doi.org/10.2495/sdp-v13-n2-171-186>, p. 173.

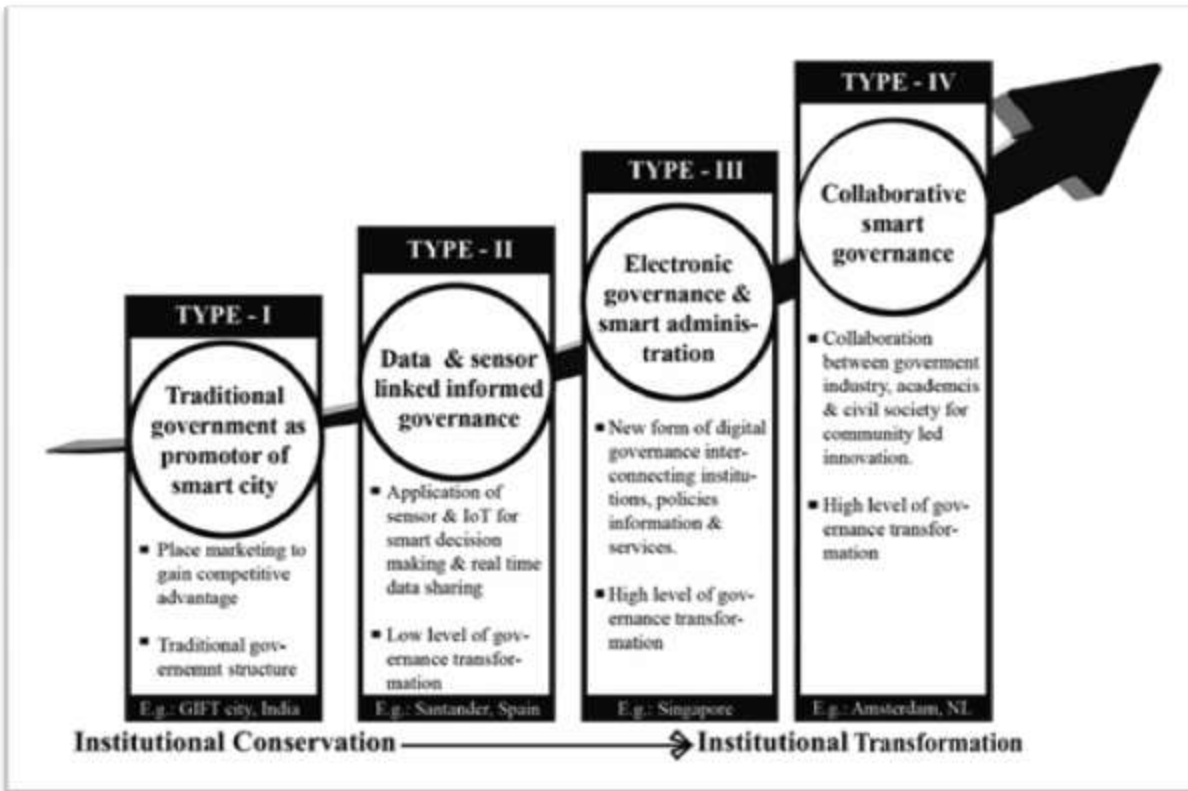


Figure 6: Levels of transformation towards smart governance (source: Praharaj et al., 2018)

In most of the cases, the digital urban transformation implemented with traditional government tools is only a semblance solution. In contrast, it represents a higher level of development, when the local government implements urban development relying on technology and the power of information from big data. The subsequent level of smart governance is assumed to be the introduction of electronic governance tools, using the most modern information technologies. The aim of smart administration is to break silos among agencies within the government structure in order to serve citizens more efficiently. All of this presupposes a comprehensive transformation of the government's internal institutional system. The collaborative concept of smart city management represents another stepping stone. The level of governance transformation at this stage is particularly advanced, as it assumes not only internal governmental transformation, but also the creation of partnerships with industry, universities, civil organizations and, above all, with the people. This human-centred city management model builds on the intelligence of local citizens. The creation of innovation hubs is of crucial importance, and the creativity of stakeholders including city residents, comes to the fore.⁶⁹

⁶⁹*Ibid.*, pp. 174-176.

Chapter Three: Findings

(1) Human rights narrative in Amsterdam smart city program

(a) The smart city strategy and its main drivers and core values

Amsterdam, the capital city of the Netherlands thanks to its busy ports, land and air routes, has maintained its cosmopolitan profile in the 21st century as well. With a population of 2,5 million people the port city on the North Sea coast of the country is a smaller settlement compared to other national capitals.⁷⁰

Amsterdam's transformation into a smart city began in 1994 with the civil society-initiated Digital City project. In the later years, the Dutch capital took on the role of facilitator in smart city development promoting public-private cooperation in the pursuit of energy efficiency



Figure 7: Location of Amsterdam, the Netherlands (source: Encyclopedia Britannica)

and lower CO2 emissions. The city-wide Amsterdam Smart City (ASC) program was launched in 2009, with the aim of realizing a sustainable city based on technological innovations. For this purpose, 5 priority areas have been selected: housing, mobility, public institutions, open data and development of the world of work.⁷¹ In 2021, the city council adopted the Comprehensive Vision Amsterdam 2050 Program for a Humane Metropolis. The five strategic focal points this time are: polycentric development; growth within limits; sustainable mobility; greening; and making the city together.⁷²

Even though the priorities of the ASC program were less related to digital human rights, the promotion of open data already enhanced the core value of transparency and accountability mentioned by UN-Habitat in its guide for local governments. The Algorithm Register⁷³ is an

⁷⁰ Encyclopædia Britannica, inc. (2023, July 21). *Amsterdam*. Encyclopædia Britannica.

<https://www.britannica.com/place/Amsterdam>

⁷¹ Danielou, J. (2014). *Smart City and sustainable city: The case of Amsterdam*. Cities - Territories - Governance.

https://www.citego.org/bdf_fiche-document-2429_en.html

⁷² Policy: Urban development - city of Amsterdam. City of Amsterdam. <https://www.amsterdam.nl/en/policy/urban-development/>

⁷³ Algorithm Register. Amsterdam. <https://algoritmeregister.amsterdam.nl/en/ai-register/>

outstanding example how the city provides the opportunity for citizens to check or give feedback on the algorithmic system of Amsterdam in order to make it more human-centric. Open data also contributes to the fulfilment of the core value of public goods and open infrastructures mentioned in the UN-Habitat's guide.

The second smart city program of Amsterdam adopted in 2021 reflects the core values of the Sustainable Development Goals (SDGs) and the European Green Deal, prioritizing growth within limits, sustainable mobility and greening. Additionally, the principle of polycentric development and the aim to making the city together enhance the core values of equality, equity and inclusion, as well as community participation and public engagement mentioned by UN-Habitat in its guide for local governments.

(b) Top-down or bottom-up approach

In the case of Amsterdam the bottom-up approach prevails and the local government takes the role of a co-producer in the sense that promotes the hybrid form of public-private-civilian partnerships. This type of approach enhances the core values supported by UN-Habitat, especially digital inclusion and public engagement as citizens' participation is encouraged and supported throughout the creation and implementation of projects. Amsterdam smart city projects are put together based on hundreds of individual initiatives, which are evolving, changing and developing until they reach the stage of implementation. ASC's online platform⁷⁴ as a kind of centralized marketplace, helps stakeholders interested in digital transformation find each other more easily. The ASC merely coordinates the initiatives, but at the same time it primarily helps to facilitate communication and does not strive for a leadership role. The organized partnership of public and private companies, universities and research centres and their collaboration helps turn ideas into projects. The ASC submits initiatives deemed feasible to its network of innovators for evaluation, and if the project was successful on a small-scale test, it is upgraded based on its functionality.⁷⁵ The way how projects are created and selected for implementation shows that in the case of Amsterdam the 7th mechanism promoted by UN-Habitat's guide is realized, in the sense that as it is advised an environment to experiment and test digital solutions is provided. The

⁷⁴ Amsterdam Smart City. <https://amsterdamsmartcity.com/>

⁷⁵ Smith, L. (2023, April 20). *Amsterdam smart city: A world leader in Smart City Development*. The Global Smart City Knowledge Center. https://www.beesmart.city/city-portraits/smart-city-portrait-amsterdam?utm_source=adwords&utm_term=&utm_campaign=Tender%2BPremium%2BSale&utm_medium=ppc&hsa_mt=&hsa_ad=555090605488&hsa_net=adwords&hsa_src=g&hsa_kw=&hsa_tgt=aud-605511866534%3Adsa-582290258836&hsa_cam=14540885728&hsa_acc=5253661978&hsa_ver=3&hsa_grp=137359523028&gclid=EAiaIQobChMitu2T9- RgAMVQ J3Ch2vOQCDEAAAYASAAEgJeo D BwE

creation and functioning of the open ASC online platform is in accordance with the requirements prescribed in the 9th mechanism of the UN-Habitat's guide for local governments which promotes the strengthening of open government architecture and open data sharing, the platform also contributes to the realization of transparency and accountability promoted by the UN-Habitat guide as a core value.

An exceptional example of the bottom-up approach related to ASC is the development of the Tada manifesto, which was created at the initiative of civil society after several criticisms regarding smart city technologies were formulated. The manifesto includes, among others, the principles of inclusivity, transparency, and legitimacy in order to make data collection, data processing, and data use more secure within the city.⁷⁶ The Tada manifesto exemplifies how the smart city program of Amsterdam fulfils the requirements prescribed in the 1st mechanism of the UN-Habitat's guide for local governments which promotes the creation of charters, principles and declarations in order to formalize the city's commitment to human rights. Additionally, Amsterdam as a member of the CCDR has also expressed its commitment to the Declaration of Cities Coalition for digital Rights, which highlights the importance of human rights principles such as privacy, freedom of expression and democracy. Thus, the city's commitment to human rights is expressed on transnational level as well, in this sense the last, 15th mechanism of the UN-Habitat's guide is also fulfilled, which emphasizes the importance of cooperation between the cities in order for the digital transformation to take place respecting human rights.

Beyond the ASC's online platform citizens' participation is enhanced through several applications and websites that provide the opportunity for community engagement. The DataLab⁷⁷ application aims to ensure traceability and accountability of technological solutions used in the smart city of Amsterdam. With the use of the application, up to 250,000 problems occurring in city per year can be reported, which are then sent to the specialist who solves the problem with the help of an algorithm. In order to ensure the neutrality of the technology, it is constantly audited whether the algorithm distorts the data in certain cases. DataLab is a good example how the ASC program promotes the core value of public goods and open infrastructures elaborated in the UN-Habitat's guide, and additionally through this application the 11th

⁷⁶ Tada Principles - Innovation - Gemeente Amsterdam. <https://www.amsterdam.nl/innovation/digitalisation-technology/data/tada-principles/>

⁷⁷ DataLab Amsterdam. <https://www.amsterdam.nl/bestuur-organisatie/organisatie/overige/datalab-amsterdam/>

mechanism of the guide is also fulfilled, as the auditing of technologies implemented is provided to the citizens through a repository, which in this case is DataLab.

The Amsterdam Smart Citizens Lab⁷⁸ encourages people to engage in scientific discussions and observe their environment. The availability of this application demonstrates that the core value of community participation and public engagement highlighted in the UN-Habitat's guide is fostered by the fulfilment of the 6th mechanism which prescribes to promote participation of citizens in the decision-making process of the city.

In order to overcome the digital divide among the residents, Amsterdam's Cyberbank⁷⁹ was created, through which used laptops are redistributed to those who need such tools the most. Moreover, the digital skills of citizens are developed by Codam, which provides anyone the opportunity to become familiar with programming.⁸⁰ These opportunities show that digital inclusion is fostered through different means contributing to the fulfilment of the core value of digital inclusion, and ASC seeks to fulfil the requirements prescribed in the 5th mechanism of the UN-Habitat's guide as well promoting training programs in order to make the urban digital transformation easier to citizens.

(c) Implementation practice of smart city strategy

The development of ASC is realized through a multitude of diverse projects grouped around different topics, such as the circular economy, energy, mobility or the digital city. Initiatives showing appropriate maturity are usually not implemented in a pre-calculated manner, but in the circumstances of the given situation. Therefore, Amsterdam's smart city strategy is not the imprint of a pre-planned process, rather the strategy itself is adapted to the projects ripe for implementation. This way of implementing the smart city projects supports the bottom-up, inclusive realisation of the ASC.

Since the projects concerning various topics affected the work of different local government departments, in order to remedy the problem the mandate of Chief Technology Officer (CTO) was created in 2014, whose responsibility is to strengthen cooperation between offices and make fragmented realization of technological innovations more transparent. The office strengthens the cohesion between municipal departments and contributes to the municipality being able to interact with the stakeholders participating in the ASC program. Over the years, the CTO has

⁷⁸ Amsterdam Smart Citizens Lab. <https://waag.org/en/project/amsterdam-smart-citizens-lab/>

⁷⁹ Cyberbank. <https://decyberbank.nl/>

⁸⁰ Codam. <https://www.codam.nl/en/>

grown into a team of 80 people.⁸¹ The creation of CTO shows that the 3rd mechanism mentioned in the UN-Habitat's guide – creation of the position of chief officer for technology in order to avoid working in silos and enhance collaboration to support governance of ICTs aligned with human rights – is fulfilled.

(d) Financial support of smart city strategies

Amsterdam's smart city projects are primarily managed by the municipality and a network of private organizations. The ASC program is funded through the Amsterdam Economic Board (AEB), which is a non-profit foundation, but the city government has a decisive role in the organization. The ASC is outlined as a program of the AEB, as the ASC specifically wanted to be operated outside the local government system. Since the ASC projects are experimental and smart city development is not based on traditional local government development policies, it is necessary to find much more flexible procurement methods for their implementation. There is no central supervision during the implementation of the projects, the responsibility being assigned to the creating partners, who have different experiences and background knowledge.⁸² The municipality can only support projects up to a certain amount, and above that, EU competition rules apply. However, the EU itself is trying to create more flexible competition rules in the form of innovation partnerships and competition dialogues.⁸³ The flexibility of the financial support of smart city projects enhances the use of a human rights lens to procurement of digital solutions. For example, in order to gain insights into the technical operation of the algorithms ASC uses contractual terms for the procurement of algorithms, thus fulfilling the 12th mechanism mentioned in the UN-Habitat's guide for local government.

(e) The level of transition towards smart governance

The transition towards collaborative smart governance is shown by the fact that the municipality of Amsterdam in relation to the digital transformation of the city insists less on the exercise of its formal power, and it does not seek to enforce the implementation of smart city projects by virtue of its own official power. Instead, it encourages the participation of citizens and the business sector. By supporting the public-private-civic cooperation, it implements a hybrid form of governance in relation to ASC, and additionally, the local government of Amsterdam itself

⁸¹ Voorwinden, A. (2022). Regulating the smart city in European municipalities: A case study of Amsterdam. *European Public Law*, 28(Issue 1), 155–180. <https://doi.org/10.54648/euro2022008>, pp. 169-171.

⁸² *Ibid.*, p. 176-179.

⁸³ *Ibid.*, pp. 171-173.

became more involved in private legal transactions creating foundations, associations, and various companies, or stepping out as actor in such organizations.

Beyond these internal structural changes the local municipal council uses its norm-making power related to smart city development in favour of its citizens. The council of Amsterdam has created among others a reporting obligation for sensors which shows compatibility with the 13th mechanism of UN-Habitats guide that prescribes to establish annual reporting on digital technologies. Moreover, the local government of Amsterdam established the Personal Data Commission, which coordinates the handling of personal data within the city administration and provides advises on data protection policies. This measure can be linked to the 10th mechanism of the UN-Habitat guide which promotes the establishment of a human rights and digital technology municipal office and further strengthens the core value of privacy, safety and security of citizens through the enhancement of data protection.

Additionally, the city of Amsterdam creates soft law instruments through alliances with other cities. In cooperation with the municipality of Barcelona, Amsterdam developed the platform called DECODE in order to put individuals in control of whether they keep their personal data private or share it for the public good.⁸⁴ This initiative contributed to the fulfilment of the 15th mechanism promoted by the UN-Habitat's guide which was created to foster partnerships and cooperation on national and international level as well and additionally strengthened the core value of freedom, autonomy and self-determination through providing the possibility for citizens to control their own personal data.

(f) The prevalence of HRBA in the smart city program

Amsterdam's urban strategy manifests the EU's narrative, which supports the creation of people-centred and sustainable smart cities. As one of the founding members of the CCDR, Amsterdam is committed to the application of the HRBA, which is clearly manifested in the measures taken during the implementation of the ASC. The core values of digital inclusion, equality and equity as well as public engagement and community participation promoted by the UN-Habitat's guide are supported through various tools, a significant example being the ASC online platform. Bias assessment related to data management is also important for the realization of digital inclusion, this requirement is fulfilled in the case of DataLab application through algorithmic auditing. The problem of digital divide is addressed through the Cyberbank program. The core values of

⁸⁴ DECODE. <https://decodeproject.eu/index.html>

freedom, autonomy, control and self-determination, as well as privacy, safety and security promoted by the UN-Habitat guide are protected through the establishment of Personal Data Commission and the online platform called DECODE. The core value of transparency and accountability is promoted through the Tada manifesto and the Algorithm Register, while the last core value of public goods and open infrastructures was already embodied through the 2009 ASC program, which among its priorities mentions the importance of the open data governance.

(2) Human rights narrative in the Johannesburg smart city program

(a) The smart city strategy and its main drivers and core values

Johannesburg is the main industrial and financial centre of South Africa and the capital of the Gauteng province; it has a population of more than 4 million people.⁸⁵

Johannesburg first began to consider the possibility of developing a smart city program as the host of the 2010 FIFA World Cup. The first smart city plans appeared in the city's 2013 Integrated Development Plan (IDP). The IDP



Figure 8: Location of Johannesburg, South-Africa (source: Encyclopedia Britannica)

established in 2000 is a tool applicable to local governments, which was created in order to end the territorial fragmentation generated by the apartheid. If a city in South Africa decides to embark on the path of digital transformation, it must embed the smart city program in the IDP, which is renewed every five years.⁸⁶

The 2017 IDP of Johannesburg described a more detailed smart city program compared to the previous one in which the use of digital data to improve governance plays a prominent role. Under this IDP the Integrated Intelligent Operations Center (IIOC) was created functioning under

⁸⁵ Bwalya, K. J. (2019). The smart city of Johannesburg, South Africa. In L. Anthopoulos (Ed.), *Smart city emergence* (pp. 407–419). essay, Elsevier. <https://doi.org/10.1016/b978-0-12-816169-2.00020-1>, p. 411.

⁸⁶ *Smart Cities Paper Series*. SA Cities. (2020, June). <https://www.sacities.net/publication/smart-cities-paper-series/>, p. 29.

the Public Safety department of the municipality. IIOC⁸⁷ demonstrates that the city strives to fulfil the core values of public goods and open infrastructures, as well as transparency and accountability mentioned in the UN-Habitat's guidelines, by creating a platform that integrate all municipal data on a single platform. Interoperability at least on the city level is thus enhanced. However, the establishment of this organization proves that Johannesburg follows the principles of the safe city concept during the implementation of its smart city program, IIOC being its surveillance nerve centre through which the city manage and police public spaces.⁸⁸

In the 2017 IDP, the development of smart city was a strategic priority and so it is in the current IDP starting from 2022. The smart city program being the 7th priority of the IDP is based on 8 pillars which constitute the core values of the strategy. Thus, smart citizens; smart services; smart governance; smart institutions; smart economy; a safe city; liveable, sustainable and resilient city; as well as the creation of a connected city are the main pillars of the smart city program of Johannesburg.⁸⁹

(b) Top-down or bottom-up approach

During the creation and implementation of Johannesburg's smart city strategy the bottom-up approach prevails, as the creation of smart cities is primarily a local government responsibility. However, the digital transformation of the city should support the intentions of the National Development Plan 2030 (NDP), the Integrated Urban Development Framework (IUDF) and the District Development Model (DDM). Internationally, Johannesburg's city strategy aims to comply with the SDGs and the *Agenda 2063 – The Africa we want*, which supports a prosperous, integrated and peaceful Pan-African vision.⁹⁰ Additionally, Johannesburg's smart city program fits within a broader framework of the Johannesburg 2040 growth and development strategy.⁹¹ Developing Johannesburg into a smart city is the responsibility of the mayor's office, and the

⁸⁷ Integrated Intelligence Operations Centre.

https://www.joburg.org.za/media_/Newsroom/Pages/2018%20News%20Articles/Intelligence-operation-centre-to-enhance-service-delivery.aspx

⁸⁸ Kwet, M. (2021). *The city surveillance state: Inside Johannesburg's Safe City Initiative*. South African Institute of International Affairs. <https://saiia.org.za/wp-content/uploads/2021/03/Policy-Briefing-231-kwet-FINAL.pdf>, p. 2.

⁸⁹ City of Johannesburg. Draft Integrated Development Plan 2022/2027. Building a city of golden opportunities. https://www.joburg.org.za/documents_/Documents/2022-27%20Draft%20IDP/2022-27%20Draft%20Integrated%20Development%20Plan.pdf

⁹⁰ Bwalya, K. J. (2019). The smart city of Johannesburg, South Africa. In L. Anthopoulos (Ed.), *Smart city emergence* (pp. 407–419). essay, Elsevier. <https://doi.org/10.1016/b978-0-12-816169-2.00020-1>, p. 411.

⁹¹ *A South African smart cities framework – A decision-making framework to guide the development of Smart Cities in South Africa*. The South African Council for Planners. (2021). <https://sacplan.org.za/research/a-south-african-smart-cities-framework-a-decision-making-framework-to-guide-the-development-of-smart-cities-in-south-africa/>, p. 15.

smart city program is an extension of the mayor's executive duties.⁹² Even though the smart city program outlined in Johannesburg's IDP is human-centric in the sense that more of its pillars have the aim to improve the quality of life of its residents, and under the pillar of smart citizen even the participation of people in the governance of the city is encouraged, in practice the creation and implementation of the smart city program is still rather centralized, due to the deficiencies in Internet coverage and the weakness of citizens' digital skills.⁹³ Thus, the realization of public engagement mentioned as a core value in UN-Habitat's guide is not yet fulfilled but supported e.g. through the program called Co-Production Innovation Pipeline, which encourages citizens' participation in the creation of smart city projects. If this program would be realized in the upcoming years as part of the current IDP, the 6th mechanism of the UN-Habitat's guide for local governments would be realised, which promotes the involvement of citizens in the decision-making process of the city municipality.

One of the major obstacles to realize the bottom-up approach based on public-private-civic partnerships is the digital divide existing among city residents. Both municipal officials and residents could use the opportunities offered by the smart city more effectively if their skills related to digital technology were more developed.⁹⁴ In order to mitigate the digital divide, the city has initiated some important measures that lead to the conclusion that the main value of digital inclusion, equality and equity prescribed by the UN-Habitat guide is also supported by the IDP of Johannesburg. E.g., the program called Digital Literacy, Data & Device Access seeks to engage residents in smart city governance through education, awareness raising and interactive platform creation. Additionally, the 4th Industrial Revolution (4IR) Citywide Skills Development Programmes aim to educate the future employees of Johannesburg to keep the city on the path of digital transformation.⁹⁵ Through these programs outlined in the last IDP of the city the 5th mechanism of the UN-Habitat's guide could be realized, which promotes to up-skill stakeholders and communities to manage inclusive and democratic use of technology.

According to the IDP, Johannesburg plans to overcome the problem of digital divide through expansion of fibre networks and Internet availability. In the recent years more than 400 Wi-Fi

⁹² *Smart Cities Paper Series*. SA Cities. (2020, June). Smart Governance is South African Cities. <https://www.sacities.net/publication/smart-cities-paper-series/>, p. 31.

⁹³ Bwalya, K. J. (2019). The smart city of Johannesburg, South Africa. In L. Anthopoulos (Ed.), *Smart city emergence* (pp. 407–419). essay, Elsevier. <https://doi.org/10.1016/b978-0-12-816169-2.00020-1>, p. 417.

⁹⁴ *Ibid.*, pp. 412-417.

⁹⁵ City of Johannesburg. Draft Integrated Development Plan 2022/2027. Building a city of golden opportunities. https://www.joburg.org.za/documents/_Documents/2022-27%20Draft%20IDP/2022-27%20Draft%20Integrated%20Development%20Plan.pdf, p. 159.

hotspots were created in various public places, and there are plans to install more than 1000 hotspots, thus strengthening equality among residents in the digital sphere. These measures are significantly important as due to disintegrated urbanism in South-Africa, and as a result of unequal distribution of advanced technological solutions, people continue to live in closed communities. The well-off residents in the more developed northern part of Johannesburg enjoy the benefits of digital transformation to a greater extent, and can choose from various types of applications. Namola and Cell 411, e.g., contribute to crime-prevention and security-enhancement.⁹⁶ The social divide in Johannesburg hinders the enforcement of the core value of digital inclusion and equity highlighted in the UN-Habitat's guide. In order to realize this value, the city of Johannesburg has to overcome a double obstacle, on the one hand, social inclusion must be realized, and on the other hand, digital inclusion by providing full internet.

(c) Implementation practice of smart city strategy

Johannesburg's transformation into a smart city is taking place in two phases. Between 2014 and 2030/40, the transformation of the city's infrastructure is planned with the help of various technological solutions. In the second phase, the Modderfontein smart city would be built within Johannesburg with the financial and technical support of the Chinese company Shanghai Zendai. The construction works have started already in 2015 and although it was planned to finish the project until 2040, now the municipality is counting with a 20 years delay.⁹⁷ The goal is that this new part of the city will be a territory freed from the historical past of apartheid, and will represent a technology-based new city model.

Even though the partnership with Shanghai Zendai might be successful, the local government of Johannesburg did not succeed yet to actively involve citizens in the digital transformation process of the city. However, it is mentioned in the current smart city program that Johannesburg aims to become an urban lab, which means that wide opportunity is given to students, citizens and businesses for innovation and experimentation. If this initiative could be realized the 7th mechanism of the UN-Habitats guide for local governments would be realized, that promotes the creation of test beds and living labs in order to involve local community in technology development.

⁹⁶ Bwalya, K. J. (2019). The smart city of Johannesburg, South Africa. In L. Anthopoulos (Ed.), *Smart city emergence* (pp. 407–419). essay, Elsevier. <https://doi.org/10.1016/b978-0-12-816169-2.00020-1>, pp. 412-413.

⁹⁷ *Ibid.*, pp. 413-414.

(d) Financial support of smart city strategies

The smart city program implemented in the first phase is realized from public expenditures made available by the mayor's office. The second phase will be implemented in the framework of a public-private partnership, during which the Chinese-based Shanghai-Zendai group will play a key role, participating in the developments as an investor with 8 billion dollars. At the same time, with lower costs, the local government also participates in the implementation. Although the smart city strategy of Johannesburg names several programs that promote citizen participation and inclusion, according to forecasts, the municipal funding required for the implementation of the programs will decrease.⁹⁸

There is no evidence that the enforcement of human rights during procurement is an important aspect in case of Johannesburg, and thus the 12th mechanism prescribed by the UN-Habitat guide, according to which it is necessary to apply a human rights lens during procurement, does not prevail. Additionally, Shanghai-Zendai as a Chinese investor promoting the safe city narrative does not foster either the prevalence of human rights during the procurement process. The smart city strategy related to the construction of Modderfontein is evidently technology-driven and may contribute to the expansion of Chinese interests for creating more safe cities with the help of surveillance digital tools. Even though the opportunities provided by Modderfontein could improve significantly the quality of life of the citizens, it seems that the government's goal is still much more about safety and crime prevention. The project of creating Modderfontein is far from being realized, however, it poses significant threat to the realisation of freedom, autonomy and privacy which are highlighted as core values in the UN-Habitat's guide.

(e) The level of transition towards smart governance

Although the smart city strategy is embedded in the urban development program, for the time being, the local government has not changed its internal structure; rather it tries to solve the challenges associated with the smart city program maintaining the traditional way of functioning. The local government fulfils the task of a facilitator promoting public-private partnerships. With the spread of Internet access, the use of sensors and the centralized management of data, a lower-level government transformation will definitely become necessary. Nowadays, the data processing in Johannesburg is managed by the IIOC, however, in the current IDP it is planned that a Unified Data & Information Portal will be created in order to develop a centralized data

⁹⁸ *Ibid.*, pp. 410-413.

governance system. When this will be realized the 9th mechanism of UN-Habitat's guide would be fulfilled as this mechanism promotes transparency through open government and open data approaches.

Until now the city of Johannesburg joined the South African Cities Network (SACN) that created the Common Data Framework for Cities (CDFC), which includes a codebook of common indicators to be used across cities, an open source information system called South African Cities Open Data Almanac (SCODA), and established the South African Council for City Data (SACCD) to implement the framework.⁹⁹ Even though it is not yet possible to talk about big data processing due to the shortcomings of Internet coverage, being a partner of SACN the city of Johannesburg is close to fulfil the 9th mechanism of the UN-Habitat's guide which highlights the importance of data transparency and it is on a good way to adapt the smart city program to the core values of public goods, open infrastructures, transparency and accountability elaborated in the UN-Habitat's guide.

(f) The prevalence of HRBA in the smart city program

Although Johannesburg's latest IDP seems to support the core values set forth in the UN-Habitat guidelines with a number of programs, the digital divide is still a big disadvantage for the city, as Internet coverage is incomplete, thus, participation in the digital transformation could not be ensured for all residents. Involving citizens in smart governance would probably be difficult even if they all had internet access, as digital literacy might be very different due to the still existing social divide. Considering the current IDP, huge progress in the digital transformation is expected, however, the program started in 2022 and there are still almost four years until its completion. The announced priorities and programs lead to the conclusion that increased consideration of human rights is important for the city governance, but considering that local government support for smart city programs decreases, additional support through public and private partnerships would be needed to implement all the programs envisioned.

Considering the already existing programs and those which are planned to be implemented, among the core values promoted by the UN-Habitat guide for local governments, freedom, autonomy, control and self-determination of citizens, and additionally, the core value of protection of privacy are not enhanced.

⁹⁹ *Smart Cities Paper Series*. SA Cities. (2020, June). Smart Governance is South African Cities. <https://www.sacities.net/publication/smart-cities-paper-series/>, p. 17.

(3) Human rights narrative in Shanghai smart city program

(a) The smart city strategy and its main drivers and core values

Built on the coast of the East China Sea, Shanghai is one of the largest sea and river ports in the world and one of China's main commercial, industrial, financial and higher education centres. It is the second most populous mega-city in the country, counting more than 20 million inhabitants.¹⁰⁰



Figure 9: Location of Shanghai, China (source: Encyclopædia Britannica)

It was at the Shanghai World Expo in 2010 that IBM introduced the concept of smart city into general usage, and in the upcoming years Shanghai embarked on the path of smart urbanization. In its action plan formulated between 2011 and 2013, the city government focused on the development of the ICT industry and the expansion of digital technology coverage in the city, while the aim of the action plan between 2014 and 2016 was to consolidate the information infrastructure. Shanghai's 13th Five-Year plan between 2016 and 2020 prioritized the development of smart life, smart economy, and smart governance.¹⁰¹ Moreover, it was emphasized that the aim of the city is to develop a data reserve center and to achieve the status of global data economy hub.¹⁰² With regard to the development of data management, on the surface it may even seem that the city of Shanghai has implemented the recommendations of the 9th mechanism included in the UN-Habitat guide, which aims to promote the implementation of transparency through the support of open data and open government. However, in the light of the fact that China's data management regulations are much more permissive regarding personal data protection compared e.g. to the European legislation, respect for the right to privacy is given negligible emphasis in the country's regulatory system, and considering that the technology companies involved in digital developments are

¹⁰⁰ Encyclopædia Britannica. *History of Shanghai*. Encyclopædia Britannica. <https://www.britannica.com/place/Shanghai/History>

¹⁰¹ Cui, Q., Chen, R., Wei, R., Hu, X., & Wang, G. (2023). Smart Mega-City Development in practice: A case of Shanghai, China. *Sustainability*, 15(2), 1591. <https://doi.org/10.3390/su15021591>, p. 3.

¹⁰² *Ibid.*

under state influence,¹⁰³ it becomes clear that Shanghai did not have the aim to implement what is proposed in the UN-Habitat's 9th mechanism. In contrary, data is under strict state control, or in this case under the control of the city, which as a provincial-level administrative unit is under the supervision of the central government in Beijing. Data management is at the same time supervised by the political regime dominated by the Communist Party of China (CPC), and in this sense the control of the digital system gains more importance than the transparency of data management.¹⁰⁴

It is the 14th Five-Year Plan which includes the current smart city program of Shanghai. The plan launched in 2021, titled Building a Globally Influential Science and Technology Innovation Center emphasizes the importance of the acceleration of efficiency improvement in the field of digital transformation related to smart city development in order to increase the economic performance of the city, increase the standard of living and strengthen the efficiency of city governance.¹⁰⁵ Even though the main purposes of the action plan does not emphasize any aim which may be related to the core values highlighted in the guide of UN-Habitat, however the increased efficiency of the city governance through the realization of open government and interoperability may lead to the fulfilment of the core value of public good and public infrastructures highlighted in the UN-Habitat guide.

(b) Top-down or bottom-up approach

In China, since 2012, when the first smart city pilot list was compiled, many national ministries have initiated smart city projects, encouraging local governments to follow a top-down approach.¹⁰⁶ Currently, more than 800 smart city plans are being implemented in China, producing the highest level of development in the world, which is at the same time inseparable from strong central leadership. The unprecedented development has offered new market opportunities to Chinese companies such as Huawei, Alibaba and Tencent, and due to the rapid development nowadays China has the second largest digital economy in the world.¹⁰⁷

¹⁰³ *The impact of Chinese Technologies on Human Rights – Part 2*. Masaar - Technology and Law Community. (2023, January 16). <https://masaar.net/en/the-impact-of-chinese-technologies-on-human-rights-part-2/>

¹⁰⁴ Huang, K., Luo, W., Zhang, W., & Li, J. (2021). Characteristics and problems of Smart City development in China. *Smart Cities*, 4(4), 1403–1419. <https://doi.org/10.3390/smartcities4040074>, pp. 1407-1409.

¹⁰⁵ Cui, Q., Chen, R., Wei, R., Hu, X., & Wang, G. (2023). Smart Mega-City Development in practice: A case of Shanghai, China. *Sustainability*, 15(2), 1591. <https://doi.org/10.3390/su15021591>, p. 6.

¹⁰⁶ Han, Y., Cai, J., Ma, E., Du, S., & Lin, J. (2023). Understanding smart city practice in urban China: A governance perspective. *Sustainability*, 15(9). <https://doi.org/10.3390/su15097034>, p. 2.

¹⁰⁷ Huang, K., Luo, W., Zhang, W., & Li, J. (2021). Characteristics and problems of Smart City development in China. *Smart Cities*, 4(4), 1403–1419. <https://doi.org/10.3390/smartcities4040074>, p. 1409.

Shanghai implements a centrally managed state will, which represents the narrative of the safe city,¹⁰⁸ but at the same time urban planning is still characterized by a kind of people-centeredness. The city administration gradually reduced the digital divide, supported the construction of information platforms for community services in order to help the sick, the elderly, and the disabled. Examples of such applications are the smart meteorology solutions or the smart taxi-hailing devices which allow the elderly to call taxis more easily by pointing the destinations on a screen.¹⁰⁹ Continuous efficiency improvement is ongoing in order to better serve vulnerable groups living in the city.¹¹⁰ In November 2020, Shanghai won the World Smart City Award at Smart City Expo World Congress for its ‘Smart Shanghai – People-Oriented Smart City’ digital infrastructure project, through which the city achieved to realize full 5G coverage in the downtown area and fibre coverage across 99% of the city, thus becoming the first dual gigabit city in the world, featuring both wired and wireless gigabit broadband.¹¹¹ In case of Shanghai reducing the digital divide and becoming a dual gigabit city suggest that the city complies with the core value of digital inclusion and equity highlighted in UN-Habitat’s guide, as in the light of this core value the improvement of access to services and the allocation of resources for digital inclusion are crucial.

In Shanghai, however, urban life takes place under the watchful eyes of surveillance cameras, including facial recognition technologies. According to researches, the number of surveillance cameras worldwide is one billion, 50% of which are located in China today, and a significant number of them monitor the security of Chinese megacities.¹¹² In Shanghai, more than 1,100 biometric facial recognition cameras, as well as satellites and drones, have been placed in the city’s public spaces as part of the City Brain, a public surveillance nerve system developed by the technology company Alibaba. City Brain can be used to check, among others, the public transport habits of local residents, and public safety, the processed data also contributes to the city planning. City Brain stores a large amount of potentially sensitive data, and there would be an

¹⁰⁸ Ekman, A. (2019, December). *China’s smart cities - ifri*. French Institute of International Relations. https://www.ifri.org/sites/default/files/atoms/files/ekman_smart_cities_battleground_2019.pdf, p. 10-11.

¹⁰⁹ *Ibid.*, p. 12.

¹¹⁰ Cui, Q., Chen, R., Wei, R., Hu, X., & Wang, G. (2023). Smart Mega-City Development in practice: A case of Shanghai, China. *Sustainability*, 15(2), 1591. <https://doi.org/10.3390/su15021591>, p. 11.

¹¹¹ Wray, S. (2022, January 24). *Shanghai earns top Smart City Ranking for Citizen Services Platform - Cities Today*. Cities Today - Connecting the world’s urban leaders. <https://cities-today.com/shanghai-earns-top-smart-city-ranking-for-citizen-services-platform/>

¹¹² *The impact of Chinese Technologies on Human Rights – Part 2*. Masaar - Technology and Law Community. (2023, January 16). <https://masaar.net/en/the-impact-of-chinese-technologies-on-human-rights-part-2/>

increased need for transparency regarding data management and the possibility of enforcing the right to privacy.¹¹³ The way how City Brain is used does not contribute to the fulfilment of the main value of freedom, autonomy and self-determination prescribed by the UN-Habitat guide, as residents are not capable to control the personal data collected about them. However, the system relieves the city from congestion without major infrastructural transformation, so this technological solution may seem to be a solution for many cities worldwide that are struggling with overpopulation. According to Alibaba the company is working with 120,000 developers and 2,700 academic institutes in 77 countries to deploy City Brain abroad. However, from a human rights perspective, there is a risk that the Chinese state will use its influence over the companies deploying City Brain to obtain the same level of access to data in the cities where China's smart city technology is used. The top-down approach is enforced not only through the politicized administrative system responsible for the implementation of the smart city program, but also through the close relationship between the CPC and China's technology giants responsible for the digital transformation of Shanghai and other Chinese cities. The state provides extensive research opportunities for the testing and development of surveillance systems, technological companies are not bound by data protection and ethical rules, but at the same time, according to domestic rules, the state can also keep them under increased surveillance.¹¹⁴ Even though the 15th mechanism of UN-Habitat's guide for local governments highlights the importance of partnerships and cooperation between smart cities, it cannot be stated that the distribution of the City Brain system by Alibaba would help the enforcement of human rights through transnational partnerships, on the one hand, because the data collection is not transparent, and on the other hand, because the system itself and the technology company that produces it are under the influence or at least in close relation with the Chinese central power.

Shanghai places great emphasis on the development of AI technologies responsible for analyzing data collected by surveillance systems. In 2017, Shanghai integrated AI into the city's operations and government, and in 2018, it put forward 22 policies to strengthen AI technologies and established the city's big data center. In 2019, the second Shanghai AI Development Zone after Beijing was established as a national experimental zone for new generation AI innovative

¹¹³ Wagner Givens, J., & Lam, D. (2020). Smarter Cities or Bigger Brother? How the Race for Smart Cities Could Determine the Future of China, Democracy, and Privacy. *Fordham Urban Law Journal*, 47(4), 829–882., pp. 851-858.

¹¹⁴ *The impact of Chinese Technologies on Human Rights – Part 2*. Masaar - Technology and Law Community. (2023, January 16). <https://masaar.net/en/the-impact-of-chinese-technologies-on-human-rights-part-2/>

developments. The aim of the initiative is to transform the city's economy and public services along defined socio-political and spatial priorities.¹¹⁵ The 7th mechanism of the UN-Habitat's guide promotes experimentation related to digital solutions and fosters the participation of citizens in technology development, however, in this case the innovations related to AI solutions are made to strengthen the surveillance system, but at the same time, the general protection of personal data or helping city residents to dispose of their personal data seem to have much less relevance.

(c) Implementation practice of smart city strategy

The implementation of smart city programs is primarily a local government task, as a result of the decentralization process that took place in the 1990s. However, since the Cultural Revolution of 1967, *"China's administrative apparatus at all levels of the hierarchy has been in a process of readjustment so as to bring governmental organization in line with political reality."*¹¹⁶

Since experimentation with smart city technologies is supported, in addition to large companies such as Huawei, Alibaba, and Tencent, the participation of universities in smart city programs is also encouraged. At the same time, local government and university positions are usually held by party functionaries. Thus, although a kind of decentralization can be observed in the public administration, the country strives to remain unified on an ideological level.¹¹⁷ The implementation of smart city programs in order to support the ideology represented by the CPC hinders the realization of digital transformation in the spirit of human rights, as all other interests are ignored due to party political interests.

Within Shanghai's city government, a narrow management group is responsible for the smart city projects, and the office operating under the supervision of the group makes the coordination. In addition, an expert committee and a promotion center operate as part of the city government system. Additionally, Shanghai's districts have also developed mechanisms for the continuous development of the smart city.¹¹⁸ It seems that in the case of Shanghai the 2nd, 3rd and 4th mechanisms promoted by UN Habitats guide are fulfilled, however, in reality this does not

¹¹⁵ Marvin, S., While, A., Chen, B., & Kovacic, M. (2022). Urban AI in China: Social control or hyper-capitalist development in the post-smart city? *Frontiers in Sustainable Cities*, 4. <https://doi.org/10.3389/frsc.2022.1030318>, p. 4.

¹¹⁶ Encyclopædia Britannica. *History of Shanghai*. Encyclopædia Britannica. <https://www.britannica.com/place/Shanghai/History>

¹¹⁷ Gil, O., & Zheng, T.-C. (2015). Smart cities through the lenses of public policy: the case of Shanghai. *Revista Española de Ciencia Política*, 63–84., p. 75.

¹¹⁸ Gil, O., & Zheng, T.-C. (2015). Smart cities through the lenses of public policy: the case of Shanghai. *Revista Española de Ciencia Política*, 63–84., p. 76.

happen as even though digital technologies' mandate is assigned to political representatives, digitalisation is mainstreamed in all policy areas, and there are teams within the local government with suitable skills to execute the smart city programs, - all these measures are not taken in order to have any positive impact on the enforcement of human rights.

(d) Financial support of smart city strategies

In the early stages of transformation into a smart city, Shanghai relied primarily on government funding, later the city supported the digital transformation by creating special funds. In recent years, Shanghai has become open to public-private partnerships, while still taking advantage of special government funds and benefits from fiscal and tax policies.¹¹⁹ The increased state support of smart city projects and the decisive influence of the state on technology companies do not allow the implementation of the 12th mechanism proposed by UN-Habitat, which stipulates that it is important to apply a human rights perspective during the process of procurement. This approach would provide opportunity for acquisitions through which, e.g., the right to privacy could be better enforced when using digital technology.

(e) The level of transition towards smart governance

The municipality of Shanghai has undergone a significant transformation in the process of becoming a smart city. In 2018, the big data center was created, which facilitates the coordinated operation of the city of nearly 25 million people, and at the same time, the municipality also uses advanced smart governance tools in order to provide better services. In a new study by Juniper Research Shanghai has been ranked first among smart cities in Asia in 2023 thanks to the application called Citizen Cloud. This digital tool offers more than 1000 services to residents related to marriage, education, tourism, social security, transport, health, legal services and senior care. This type of development requires a certain level of transparency of data, as well as interoperability among different types of data.¹²⁰ Through Citizen Cloud it seems that the municipality of Shanghai realized the 9th mechanism of the UN-Habitat's guide which promotes transparency through open governance and interoperability of data. Additionally, the implementation of Citizen Cloud also meets the requirement of transparency and open infrastructures elaborated in the UN-Habitat's guide, as the data is published in an open format,

¹¹⁹ Cui, Q., Chen, R., Wei, R., Hu, X., & Wang, G. (2023). Smart Mega-City Development in practice: A case of Shanghai, China. *Sustainability*, 15(2), 1591. <https://doi.org/10.3390/su15021591>, p. 12.

¹²⁰ Templeman, V.-B. (2022, January 26). *Juniper Research Names shanghai the world's no. 1 smart city*. Digital Nation. <https://www.digitalnationaus.com.au/news/juniper-research-names-shanghai-the-worlds-no-1-smart-city-575086>

and there is a certain level of interoperability between the different data. Moreover, digital inclusion and equity related to smart governance is also enhanced through the Citizen Cloud, as an improved access to services is provided. However, the level of collaborative governance providing the possibility of co-creation of policies, thus contributing to the realization of public engagement and community participation is not yet realized.

(f) The prevalence of HRBA in the smart city program

Considering the main values defined by UN-Habitat, Shanghai mainly shows shortcomings in terms of freedom, autonomy and self-determination, as well as related to the core value of privacy, safety, security and protection. Control over personal data seems to be less important compared to the safety and high quality of life provided by the city. Security and protection seem to have a different interpretation in the Chinese cities compared to the human rights perspective, as these concepts are rather related to public safety and protection against crime and less to the protection of the private sphere.

The core value of public engagement and community participation is supported to a certain extent in the smart city of Shanghai, and is mainly promoted in the context of e-governance through Citizen Cloud. Anyhow, information about public engagement with the aim to create opportunities for consultations or involve citizens in the creation of smart city projects is not yet known. The core value of digital inclusion and equity is promoted through different measures, as the smart city program of Shanghai aims to reduce the digital divide, and promotes digital inclusion mainly through the enhancement of the efficiency of technological solutions. An example of this is the implementation of dual gigabit city.¹²¹

The core values of transparency and accountability as well as public goods and open infrastructures on the one hand are clearly supported through the Citizen Cloud, but on the other hand, from a human rights perspective there are huge concerns whether the management of the data collected violates the right to privacy, or whether it serves central political power interests, despite the fact that it significantly contributes to improving the standard of living. Not only does City Brain collect enormous amounts of data about residents, but the same possibility of data collection is provided through the virtual clone or digital twin of Shanghai which was created to

¹²¹ Arumugam, N. (2022, February 10). *What made Shanghai the world's No.1 Smart City?* citiesforum.org. <https://www.citiesforum.org/news/what-made-shanghai-the-worlds-no-1-smart-city/>

improve services and optimize the system through collecting and analyzing data from satellites, drones and sensors with the purpose to mirror the everyday reality of the city.¹²²

(4) Human rights narrative in Pune smart city program

(a) The smart city strategy and its main drivers and core values

The city of Pune in the Indian state of Maharashtra is home to many universities, it is also called the "*Oxford of the East*".¹²³ Pune is the headquarter of many IT companies, and a popular location for foreign direct investment. With a population of over 3 million people, it has been voted the most livable city for several times.¹²⁴



Figure 10: Location of Pune, India (source: Encyclopædia Britannica)

Today, more than 400 million people live in India's cities, which account for half of the world's most polluted cities. According to forecasts, the number of city residents in the country will double by 2050.¹²⁵ The report of Housing and Land Rights Network (HLRN) from 2017 highlighted that India has the largest number of people living in multidimensional poverty, "*one in six urban residents lives in an inadequate settlement ('slum'), a third of India's urban population does not have access to tap water, and 84% of urban Indians still do not have access to a toilet.*"¹²⁶ In order to address the problem of accelerated urbanization, in 2015 the urban development program called Smart Cities Mission (SCM) was launched by the prime minister of India. SCM aims to create 100 smart cities across the country with the support of the government. Cities were selected through a competition

¹²² Weir-McCall, D. (2020, September 15). *51World creates digital twin of the entire city of Shanghai*. Unreal Engine. <https://www.unrealengine.com/en-US/spotlights/51world-creates-digital-twin-of-the-entire-city-of-shanghai>

¹²³ Encyclopædia Britannica, inc. (2023, August 12). *Pune*. Encyclopædia Britannica. <https://www.britannica.com/place/Pune>

¹²⁴ Rehena, Z., & Janssen, M. (2019). The smart city of Pune. *Smart City Emergence*, 261–282. <https://doi.org/10.1016/b978-0-12-816169-2.00012-2>, p. 268.

¹²⁵ Praharaj, S., Hoon Han, J., & Hawken, S. (2018). Towards the right model of Smart City Governance in India. *International Journal of Sustainable Development and Planning*, 13(02), 171–186. <https://doi.org/10.2495/sdp-v13-n2-171-186>, p. 171.

¹²⁶ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., p. 4.

lasting from January 2015 to June 2018, financial aid will be given until June 2024.¹²⁷ Pune was among the first 22 cities selected to participate in the mission.¹²⁸ The city does not have an individual smart city program but rather it aligns to SCM expectations. The smart city proposal was developed by the Pune Municipal Corporation (PMC)¹²⁹ according to the SCM guidelines, which indicates that the proposal should include a retrofitting or redevelopment plan for an existing urban area, a greenfield development plan for a vacant area and a pan-city development plan for the citywide area.¹³⁰ Housing of low income city residents was mentioned as a huge concern in the smart city proposal of Pune, however, the smart city program does not necessarily contribute to the elimination of slums, because although it may support inclusion, but primarily at the digital level. In this regard, it can be concluded that digital transformation is not necessarily the most adequate solution to achieve the vision of slum-free cities in India, especially in light of the fact that the implementation of some smart city projects may involve displacements and forced evictions, which may further increase the size of segregated areas.¹³¹

Nevertheless, in general terms, aligned to the SCM's expectations the smart city proposal of Pune focuses on the interests of the local community, tries to achieve greater results using fewer resources, it is able to adapt to the conditions offered by the competition, supports integration, innovation and sustainability, considers technology as a tool and not a goal, and strives for sectoral and financial convergence.¹³² In this sense it can be stated that among the core values highlighted in UN-Habitats guide the core value of digital inclusion and equity is the most supported, however, neither SCM nor Pune's smart city program reflects a holistic application of HRBA.

(b) Top-down or bottom-up approach

Implementation of smart city programs in India follows a clear top-down approach. The national government provides the framework through the SCM, and the local government of the selected

¹²⁷ Centre decides to extend smart cities mission deadline till June 2024. The Economic Times. (2023a, May 1). <https://economictimes.indiatimes.com/news/india/centre-decides-to-extend-smart-cities-mission-deadline-till-june-2024/articleshow/99915443.cms?from=mdr>

¹²⁸ Smart cities mission: First 22 cities to be ready by Next Month. The Economic Times. (2023, February 12). <https://economictimes.indiatimes.com/news/india/smart-cities-mission-first-22-cities-to-be-ready-by-next-month/articleshow/97844582.cms>

¹²⁹ Pune Municipal Corporation. Home | Pune Municipal Corporation. (2023, August 4). <https://www.pmc.gov.in/en?main=english>

¹³⁰ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., p. 5.

¹³¹ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., pp. 21–22.

¹³² About smart cities. smartcities.gov.in. <https://smartcities.gov.in/about-the-mission>

city supervises the implementation of the smart city projects, however, the responsibility of planning, approving, releasing of funds, managing and monitoring of smart city projects is related to the so-called Special Purpose Vehicles (SPVs) which are formed in every selected city under SCM. SPVs operate as business associations, in which the state government and the local government have a 50-50% share. The SPV dedicated to implementing Pune's smart city program called Pune Smart City Development Corporation Ltd (PSCDCL) is led by a Chief Executive Officer (CEO), backed by the board of directors, and the organization also includes a group of independent experts, academics, engineers, and technical experts.¹³³ Considering the mechanisms enumerated in the UN-Habitat's guide for local governments, even though PSCDCL represents a municipal level unit with the mandate to coordinate digital transformation, its existence does not support HRBA, as it strengthens the central governmental power and not the enforcement of human rights on local governmental level.

Among the mechanisms articulated in the UN-Habitat guide the 13th one promotes the establishment of a reporting and monitoring mechanism, which in the case of Pune and other smart cities in India is fulfilled in the sense that there is a certain mechanism through which the implementation of the smart city program is monitored, however, the process is centralized, as on the national level the so-called Apex Committee, while on the state level a High Powered Steering Committee monitors the whole SCM and the implementation of Pune's smart city program as well. On local level the monitoring body related to SCM in Pune is the Smart City Advisory Forum consisting of state officials, including the CEO of the SPV, members of parliament, the mayor of the city, as well as scientific and technological experts, members of civil organizations, and leaders of associations representing slums.¹³⁴ The establishment of this forum is close to fulfil the requirements of the 13th mechanism elaborated in the UN-Habitat's guide as it provides the opportunity for citizens to be engaged in the co-creation of the smart city. Thus, on local level, the core value of public engagement and community participation is fulfilled in the sense that the opportunity for public consultation is provided. However, according to critiques, the representation of civil society during the implementation of smart city programs is only

¹³³ Rehena, Z., & Janssen, M. (2019). The smart city of Pune. *Smart City Emergence*, 261–282. <https://doi.org/10.1016/b978-0-12-816169-2.00012-2>, pp. 168-178.

¹³⁴ Praharaj, S., Hoon Han, J., & Hawken, S. (2018). Towards the right model of Smart City Governance in India. *International Journal of Sustainable Development and Planning*, 13(02), 171–186. <https://doi.org/10.2495/sdp-v13-n2-171-186>, p. 182.

possible within the forum, therefore there is no mechanism that would allow people's opinions to be included in the various implementation stages of SCM.¹³⁵

Nevertheless, the participation of city residents is required by the SCM before the smart city proposal is submitted, and citizens' observations and needs should be included in the proposal. According to the Catapult Future Cities 2017 report, Pune's application to SCM involved local citizens to a large extent: *"3.5 million people were engaged through an innovative campaign over 45 days. Multiple channels were used, including online platforms for voting and door-to-door engagement with citizens."*¹³⁶ Thus, the core value of public engagement and community participation established in the UN-Habitat's guide is promoted by the city of Pune and the SCM by two distinct tools, on the one hand citizens are involved in the initial phase when the smart city program is created, on the other hand, they may participate in the forum which monitors the implementation of the program. However, the smart city program is not a process of constant evolution and co-creation, it is rather part of a nation-wide project, having a start and an end, in this sense the citizens have the chance to influence the input and the outcome of the smart city program, but they are not able to form it during its process of realization.

(c) Implementation practice of smart city strategy

Implementation of smart city programs is done through SPVs, even though since the 1992 constitutional amendment, city governments in India can act independently in the area of urban planning. Although the 74th constitutional amendment initiated certain decentralization processes, the creation of SPVs curtails the greater autonomy intended for local governments. As the PSCDCL in case of Pune is a company belonging to the corporate sector the privatization of governance is observable, which represents a threatening factor to the democratic functioning of local governments. The Special Rapporteur on adequate housing, in her India mission report from 2017 mentioned *"some local authorities suggested that the guidelines for the scheme reduce their decision-making powers, including by creating a body to establish and implement the scheme."*¹³⁷ Pune is the headquarter of many IT companies, thus many technological solutions can be developed in place. In this sense the city can be considered an experimental hub, which is also promoted by the 7th mechanism of the UN-Habitat's guide, however, the technocratic governance

¹³⁵ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., p. 27.

¹³⁶ *Smart City Strategies: A global review*. Arup. (2017).

<https://www.arup.com/perspectives/publications/research/section/smart-city-strategies-a-global-review>, p. 20.

¹³⁷ Paragraph 33, Report of the Special Rapporteur on Adequate Housing, Mission to India, January 2017, A/HRC/34/51/Add.1. http://ap.ohchr.org/documents/dpage_e.aspx?si=A/HRC/34/51/Add.1

promoted also by the SPVs could lead to discrimination against certain groups or local communities. Although technological solutions can promote economical energy consumption or the use of renewable energy sources, at the same time, the interests of profit-based technology companies can hinder the realization of social inclusion, deepening not only the social but also the digital divide.¹³⁸ Initially, neither the SCM nor the smart city program of Pune emphasized the protection of the rights of marginalized individuals and communities, including the elderly, women, sexual and religious minorities, children, and the disabled, nor did they support the reduction of caste discrimination.¹³⁹ However, on Pune's current smart city website there are some programs that support social inclusion. These are the Women's Multipurpose Hall, the Specially Abled Farm or the Smart Clinic.¹⁴⁰ Thus it seems that the core value of digital inclusion and equity is recently better promoted through different projects than earlier

(d) Financial support of smart city strategies

In India, SPVs have been specifically created to raise financial resources either through central government grants or through public-private partnerships. This represents a new form of corporate city management in India. At the same time, as the procurement of funds was removed from the competence of the city governments, the implementation of smart city programs became fragmented at the local government level. Since it is important for PSCDCL to get a steady stream of income, it generally prefers projects that have high market feasibility.¹⁴¹ The involvement of the private sector through the SPV reduces the state's responsibility to enforce human rights and fulfil its welfare function as mandated by the Indian Constitution.¹⁴² The financing conditions created in the case of Pune smart city program do not help the enforcement of the 12th mechanism of UN-Habitat, which stipulates that it is important to enforce human rights aspects during the application of new models of technology acquisition.

(e) The level of transition towards smart governance

The process of governance transformation has already started under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), launched in 2005. The program supported, among

¹³⁸ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., p. 26.

¹³⁹ *Ibid.*, p. 20.

¹⁴⁰ Pune Smart City. Smart City Project. <https://www.punesmartcity.in/smart-city/project>

¹⁴¹ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., p. 19.

¹⁴² *Ibid.*, p. 25.

others, the introduction of e-governance on the level of city municipalities.¹⁴³ Under the JNNURM apart from Mumbai, it was given to Pune the highest amount of funds in Maharashtra, thus the possibility to develop e-governance was ensured. However, an open data system was not created, and interoperability was not realized. According to an article from 2018, different e-governance services are not provided through a single platform, but through different means, like applications, whatsapp groups or social media surfaces.¹⁴⁴ Thus, the institutional transformation required for the realization of e-governance was realized just partially, and the core value of public goods and open infrastructures promoted by the UN-Habitat's guide could not be fulfilled. Even if the implementation of the e-governance level would have been fully achieved, the collaborative smart governance level in case of Pune could not be realized as the role of smart governance is taken by the SPVs which do not have the mandate from the SMC to collaborate with people. The fragmented implementation of the missions announced by the government points to a lack of accountability, especially in the case of JNNURM, but at the same time, the tension arising from the division of tasks between local governments and SPVs also predicts a kind of incomplete, fragmented implementation in the case of SMC, which also leads to the problem of transparency and accountability.

(f) The prevalence of HRBA in the smart city program

Since the SMC announced by India does not apply a holistic HRBA, none of the core values announced by UN-Habitat can be fully implemented. At the same time in case of Pune the core value of public engagement and community participation applies in two ways. On the one hand, even though citizens are not the co-creators of the smart city programs, their opinion was asked when the smart city proposal was created, and on the other hand, they have the chance to take part on the meetings of the Smart City Advisory Forums and express their views on the implementation of the smart city program. However, they do not have the power to shape the program which was previously approved by the SMC.

In the light of the fact that the realization of the smart city program is heavily reliant on technology companies, data protection might become a secondary issue compared to the profit that comes with the implementation of smart city projects. In this sense, the core values of

¹⁴³ Praharaj, S., Hoon Han, J., & Hawken, S. (2018). Towards the right model of Smart City Governance in India. *International Journal of Sustainable Development and Planning*, 13(02), 171–186. <https://doi.org/10.2495/sdp-v13-n2-171-186>, pp. 177-178.

¹⁴⁴ Chowdhury, A. (2018, April 5). *E-governance in the streets of Pune*. BlogURK. <https://theblogurk.wordpress.com/2018/04/05/e-governance-in-the-streets-of-pune/>

privacy, safety, freedom and self-determination are less important compared to the expected success of the smart city program.

The core values of transparency, accountability and open infrastructures could not be fulfilled either as the coordinated city level data management in the smart city of Pune is not yet on the level of interoperability. However, city level data management should be realized also as part of the SCM.

Although digital inclusion and equity can be considered as the core value of SMC, since according to the number one principle of the mission communities are at the core of planning and implementation, at the same time, as noted by HLRN in its 2017 report: *“Since the problems of inadequate housing, absence of basic services, tenure insecurity and forced evictions, poor health and nutritional levels, unemployment, and stark levels of inequality are ubiquitous across India, a more holistic approach aimed at country-wide development would have been more equitable.”*¹⁴⁵ According to the SMC, a 100 smart cities program will be implemented, however, during the selection of proposals, the cities that most served or was most in need did not necessarily win the opportunity to become a smart city. As a result of the competition, some cities are often chosen at the expense of others on the basis of promising proposals developed by consulting companies such as Deloitte or McKinsey, but the implementation of city programs does not necessarily help to solve structural problems such as the eradication of poverty. According to the report from 2017 of the Special Rapporteur on Adequate Housing: *“some cities with high poverty rates and few resources would have no competitive advantage, and there are fears that the scheme would broaden the gap between wealthier cities and cities with the most need for housing and infrastructure. Concern was also expressed that modernizing only parts of cities, or that a particular focus on technological responses, would result in the construction of unaffordable housing or infrastructure that is not targeted at the poorest.”*¹⁴⁶

¹⁴⁵ Chaudhry, S. (2017). (rep.). *India's Smart Cities Mission: Smart for Whom? Cities for Whom?* (pp. 1–84). New Delhi., p. 17.

¹⁴⁶ Report of the Special Rapporteur on Adequate Housing, Mission to India, January 2017, A/HRC/34/51/Add.1. http://ap.ohchr.org/documents/dpage_e.aspx?si=A/HRC/34/51/Add.1

(5) Human rights narrative in Singapore smart city program

(a) The smart city strategy and its main drivers and core values

Singapore is a city-state located on an island at the tip of the Malay Peninsula. With more than 5 million inhabitants in an area of 700 square kilometres, it is one of the most densely populated countries worldwide. Singapore has no natural resources, but at the same time it is located at the crossroads of international air and sea routes. Singapore owes its success to a development strategy supporting foreign direct investment and strong state intervention in the economy.



Figure 11: Location of Singapore (source: Encyclopedia Britannica)

The island nation recognized among the first that the development of information technology has a crucial importance in maintaining international competitive advantage, and started its transition to the information age at the end of the 20th century. The main goal of the country was to develop its e-government system through the IT2000 strategic plan, the iGov 2010 initiative and the 2015 eGov Masterplan.¹⁴⁷ While e-government was introduced to increase the efficiency of public services, later the Smart Nation (SN) initiative called for the digital transition of the entire city-state. The Smart Nation initiative relies on three pillars: first, digital society is promoted through inclusive digital services and widespread digital literacy; second, the development of digital economy and third, the further enhancement of digital governance is targeted.¹⁴⁸

Although in the case of Singapore, the importance of economic competitive advantage overrides the need to use HRBA, certain measures coincide with the core values defined in the UN-Habitat's guide and may contribute to the fulfilment of certain mechanisms enumerated in the guide. In the light of the development of the smart city program in Singapore, most of the values elaborated in the UN-Habitat's guide, namely digital inclusion, accountability, public engagement and open infrastructures, are aimed to be fulfilled, even though based on the main

¹⁴⁷ *Singapore's smart nation initiative A policy and organisational perspective*. Lee Kuan Yew - School of Public Policy. https://lkyspp.nus.edu.sg/docs/default-source/case-studies/singapores_smart_nation_initiative, p. 2.

¹⁴⁸ *Pillars of a Smart Nation*. Smart Nation Singapore. <https://www.smartnation.gov.sg/about-smart-nation/pillars-of-smart-nation>

principles and aims emphasized in the certain stages of the digital transition there is no reference to develop a strict data protection system in favour of the residents, or to provide control for the citizens over their previously collected personal data. In this sense, it cannot be stated that the core value of privacy, safety, security and protection or the core value of freedom, autonomy, control and self-determination would have been given importance. The SN promotes the digital transition of the entire city-state, thus the smart city program of Singapore adheres to the 3rd mechanism elaborated in the UN-Habitat's guide which argues for a whole of government approach to digital transition, however, the initiative does not highlight the importance of human rights beside digital transition, rather emphasizes the importance of competitive advantage.

(b) Top-down or bottom-up approach

The island nation's desire to develop into a smart nation is based on a city-state-wide narrative in which the top-down approach prevails as the co-creation of smart city programs involving the citizens should be realized according to the state interest. The success of Singapore's digital transformation is due to its strong central leadership and constant technological advancement.

The complexity of digital platforms has encouraged the government to establish the Smart Nation and Digital Government Group (SNDGG) in 2017 under the Prime Minister's Office (PMO) in order to coordinate the various units promoting Singapore's digital transformation.¹⁴⁹ UN-Habitats 4th mechanism also highlights the importance to form a team with suitable competences to foster the digital transition, but this mechanism also emphasizes that the promotion of human rights through diversity in teams may contribute to mitigate bias. It is often mentioned related to Singapore that racial hierarchy is one of its defining characteristics, as the city-state is multi-ethnic, and the post-colonial state, borrowing the race-based regulation from the British model, carried it forward, on the basis of which the population is classified into Chinese, Malay, Indian and others. The four racial categories determine housing options, participation in education, and employment. Southeast Asian immigrants are often disadvantaged; this ethnic group usually performs manual labor and is subject to increased surveillance.¹⁵⁰ Additionally, another problem in Singapore is related to its aging population, as older citizens are rather resistant to smart technologies, despite digital solutions enabling a more cost-effective form of aged care. Research on intelligent care for the elderly revealed that digital technologies can increase self-confidence

¹⁴⁹ *Singapore's Smart Nation Initiative – A Policy and Organisational Perspective*. Lkyspp.nus.edu.sg. (2017). https://lkyspp.nus.edu.sg/docs/default-source/case-studies/singapores_smart_nation_initiative, p. 6.

¹⁵⁰ *Ibid.*, p. 8.

and a sense of security, but at the same time they can also induce apathy and fear, and elderly people may be afraid of being ridiculed under the supervision of surveillance cameras.¹⁵¹ Thus, the team within Singapore's government which is responsible for the digital transition should provide more opportunity for inclusion to the citizens in vulnerable situations in order to contribute more effectively to the fulfilment of digital inclusion and equity mentioned as a core value in the UN-Habitat guide.

The integrated data management of the city-state was realized through the Infocommunications Development Authority (IDA) functioning under the Prime Minister's Smart Nations Program, which has developed basic IoT standards to promote information and service interoperability. The integrated data system enabled the creation of Virtual Singapore, the city's 3D platform, which provides the opportunity to detect problems in real time and manage them remotely.¹⁵² The integrated data management, interoperability and the use of open data platforms contribute to the realization of the 6th core value elaborated in the UN-Habitats guide which highlights the importance of open digital infrastructures. Additionally, these measures contribute to the fulfilment of the 9th mechanism which prescribes the importance of transparency promoting open government and open data approaches.

In order to maintain its advantage in international competition, Singapore involves its citizens in digital economic development, awakening a commitment in people to perform as well as possible for the development of the country and their own better livelihood. Thus, within the framework of a meritocratic system, the state encourages its citizens to promote digital transformation.¹⁵³ The implementation of data-driven policies based on social participation is supported through several platforms and applications. The data.gov.sg open data platform e.g., shares datasets from 70 government agencies, enabling citizens to make more informed decisions, mobile applications such as OneService and eCitizen Ideas collect feedbacks from the residents in order to provide more efficient public services.¹⁵⁴ The citizens' involvement through different applications and online platforms contributes to the fulfilment of the 6th mechanism of the UN-Habitat's guide which promotes the participation of citizens in the decision-making process of the city.

¹⁵¹ Kong, L., & Woods, O. (2018). The ideological alignment of Smart Urbanism in Singapore: Critical reflections on a political paradox. *Urban Studies*, 55(4), 679–701. <https://doi.org/10.1177/0042098017746528>, pp. 10-11.

¹⁵² *Ibid.*, pp. 175-176.

¹⁵³ Sobey, A. (2023). Obligated smart freedom: The Singaporean experience of advanced neoliberal-developmental governance. *Urban Studies*, 1(17), 004209802311692. <https://doi.org/10.1177/00420980231169206>, p. 9-11.

¹⁵⁴ *Ibid.*, pp. 4-5.

The constant development of digital skills and continued education is a strict requirement towards the citizens in order to become part of the smart nation.¹⁵⁵ Digital government, digital economy and digital society are mutually supportive factors, and in the process of transition towards a digital economy, the city-state provides significant financial support for the development of residents' digital skills. Among others, the government has partnered with Google as part of the Skills Ignition SG initiative to provide education to those seeking digital careers.¹⁵⁶ In this sense, Singapore's intention to educate its citizens corresponds to the 5th mechanism of the UN-Habitat's guide which indicates that it is important to build skills and organize trainings for citizens, however, this mechanism also emphasizes the importance to educate human rights as well, thus, in case of Singapore the mechanism is partly fulfilled. Nevertheless, in certain cases proves to be problematic to keep up with technological advances, especially for those who have lower English language or tech literacy skills, or bear a disproportionate cost burden.¹⁵⁷ In this sense digital divide may appear among citizens.

(c) Implementation practice of smart city strategy

Currently Smart Nation and Digital Government Office (SNDGO) and GovTech are the two main governmental institutions responsible for the implementation of the SN, the former being responsible for the digital transformation of the government, and promoting public and industrial participation, and the latter working with public agencies to deploy secure digital services and applied technology.¹⁵⁸ At the same time, during the implementation of the SN, partnerships between the public and private sectors also gain importance, since co-creation of smart city projects with citizens and enterprises is one of the main objectives of the digital government.¹⁵⁹ This contributes significantly to the fulfilment of the core value of public engagement and community participation highlighted in the UN-Habitat's guide.

Training and research centers also play an important role in the implementation of digital transformation mainly under the core principle of profit maximization. The realization of a smart

¹⁵⁵ Sobey, A. (2023). Obligated *smart* freedom: The Singaporean experience of advanced neoliberal-developmental governance. *Urban Studies*, I(17), 004209802311692. <https://doi.org/10.1177/00420980231169206>, p. 10.

¹⁵⁶ Bala, S. (2021, June 28). *Singapore wants to be an e-commerce hub as Asia's Digital Economy Grows*. CNBC. <https://www.cnbc.com/2021/06/28/singapore-wants-to-be-global-e-commerce-hub-amid-asia-digital-adoption-spurt.html>

¹⁵⁷ Sobey, A. (2023). Obligated *smart* freedom: The Singaporean experience of advanced neoliberal-developmental governance. *Urban Studies*, I(17), 004209802311692. <https://doi.org/10.1177/00420980231169206>, p. 11.

¹⁵⁸ *About Us*. Prime Minister's Office Singapore. (2023, August 14). <https://www.pmo.gov.sg/About-Us>

¹⁵⁹ Sobey, A. (2023). Obligated *smart* freedom: The Singaporean experience of advanced neoliberal-developmental governance. *Urban Studies*, I(17), 004209802311692. <https://doi.org/10.1177/00420980231169206>, p. 9.

nation is primarily based on trust in the digital system built by the technological companies under the supervision of the government. This approach creates a privileged position for the creators of digital systems, who enjoy a high degree of freedom in data collection and data management.¹⁶⁰ According to Sobey (2023): *“Drawing on trust, this implies the population needs to accept the truthfulness and benevolence of the system without evidence or investigation. With minimal ways to opt out of the system, inhabitants must defer to the government or corporate expert, making choices within confined systems which prioritise capital accumulation and production”* (p.12). Even though the support of training and research coincides with the 7th mechanism of the UN-Habitat’s guide, the technologies developed to support the digital transformation may harm the privacy rights of the citizens through the lack of appropriate data protection.

(d) Financial support of smart city strategies

In order to support the realization of the SN Singapore makes effort to strengthen its position as a smart financial center. In addition to digital society and digital government, one of the main goals of the SN is the further enhancement of the digital economy, and in the spirit of competition, Singapore wants to play a leading role in the e-economy and become one of the most important e-economy hubs in the world.¹⁶¹ Singapore’s position as a smart financial center is also strengthened by the Monetary Authority of Singapore (MAS) through the policy tool called Fintech regulatory sandbox,¹⁶² which refers *“to live testing of new products or services in a controlled regulatory environment. It acts as a “safe space” for business as the regulators may or may not permit certain relaxations for the limited purpose of testing.”*¹⁶³ Even though the development of new models of technology acquisition is promoted by the UN-Habitat’s guide for local governments, it is highlighted as well that during the process of procurement a human rights lens should be applied, thus, in case of Singapore this mechanism is just partly fulfilled.

(e) The level of transition towards smart governance

Singapore is most often mentioned as a model of e-governance and smart administration. In technical terms, the reorganization for the implementation of the digital transformation at the

¹⁶⁰ *Ibid.*, p. 12.

¹⁶¹ Bala, S. (2021, June 28). *Singapore wants to be an e-commerce hub as Asia’s Digital Economy Grows*. CNBC. <https://www.cnbc.com/2021/06/28/singapore-wants-to-be-global-e-commerce-hub-amid-asia-digital-adoption-spurt.html>

¹⁶² *Singapore’s Smart Nation Initiative – A Policy and Organisational Perspective*. Lkyspp.nus.edu.sg. (2017). https://lkyspp.nus.edu.sg/docs/default-source/case-studies/singapores_smart_nation_initiative, p. 3.

¹⁶³ Veera Vanamali, K. (2022, November 8). *What is a regulatory sandbox?*. Business Standard. https://www.business-standard.com/podcast/economy-policy/what-is-a-regulatory-sandbox-122110800137_1.html

governmental level has been achieved. In the current phase Singapore is on its way to achieve the collaborative governance level, thus contributing to the fulfilment of the core value of digital inclusion and equity, as well as the core value of public engagement and participation. However, in Singapore's meritocratic system¹⁶⁴ it is a requirement that the citizens should contribute to the economic competitive advantage of the city-state. Due to the firm technological basis there is no significant digital divide in Singapore, but there is no evidence that the promotion of digital inclusion would be a priority in the eyes of the government. In the case of Singapore, inclusion is subject to conditions, citizens must meet the expectations set by the state.

In order to increase its foreign trade reach, Singapore decided to export its urban model to other countries. To this end, international engineering and urban development companies established under Singaporean leadership sell their expertise in the market and offer the construction of urban industrial and residential parks for export to Asia, the Middle East and Africa.¹⁶⁵

(f) The prevalence of HRBA in the smart city program

Even though there are several applications, platforms and tools provided through SN which seem to support the fulfillment of most of the mechanisms mentioned in the UN-Habitat's guide, the fact that Singapore does not consider HRBA in its smart city program becomes evident through the neglect of freedom and autonomy of its residents, as well as the neglect of their privacy rights. The name Smart Nation suggests an inclusive approach to digital transformation, however, the smartness in this case is an obligation towards the citizens to uplift the country through their digital skills mainly in an economic sense.¹⁶⁶ However, it is up to people to decide how much trust they place in government and how much leeway they allow for access to their private spheres.¹⁶⁷

¹⁶⁴ Sobey, A. (2023). Obligated *smart* freedom: The Singaporean experience of advanced neoliberal-developmental governance. *Urban Studies*, I(17), 004209802311692. <https://doi.org/10.1177/00420980231169206>, p. 10.

¹⁶⁵ Curien, R. (2017). Singapore, a model for (sustainable?) Urban Development in China. *China Perspectives*, 2017(1), 25–35. <https://doi.org/10.4000/chinaperspectives.7183>, p. 26.

¹⁶⁶ *Ibid.*, pp. 10-11.

¹⁶⁷ Poon, L. (2017, April 21). *Singapore, City of Sensors*. Bloomberg.com. <https://www.bloomberg.com/news/articles/2017-04-21/privacy-takes-a-backseat-in-singapore-s-vision-of-a-smart-nation>

Chapter Four: Conclusions

(1) Connection of the 5 selected cities to the HRBA

During the analysis of the 5 cities, it was researched how far the 6 core values elaborated in the UN-Habitat guide are fulfilled in the smart city programs. It was also examined which of the 15 mechanisms enumerated in the UN-Habitat guide were followed in order to create a more human centric smart city program considering the technological challenges as well. Additionally, in each case some tools, e.g. applications and websites, were exemplified through which the fulfilment of certain core values or mechanisms have been realized. The examination was made based on the main characteristics of the smart city strategies, considering that they all follow different narratives.

Amsterdam represents the EU's sustainable smart city narrative, which is the closest to the human rights narrative based on the UN-Habitat guide and the CCDR Declaration. In the case of Johannesburg, the safe city narrative prevails in practice, although according to the currently valid IDP, the smart city program is much more people-oriented and tries to meet the expectations set by the HRBA. In the case of Pune, public-private partnerships are strongly emphasized, but at the same time, the central control of SCM does not allow the US smart city to prevail. Shanghai represents the safe narrative through its mass surveillance tools, while Singapore relies on a hybrid public-private-civic partnership supported by the HRBA as well, but with the SN the aim is to encourage the islanders to stand up in the market competition.

A holistic HRBA was used only in the case of Amsterdam. The projects and measures of the Amsterdam Smart City program have been created taking into account all the core values prescribed by UN-Habitat and comply with a number of mechanisms elaborated in the guide. However, as a member of the CCDR, Amsterdam is among the cities which took the responsibility to implement the principles enshrined in the Declaration of the Coalition. The 5 main principles of the Declaration show close similarity with the core values elaborated in the UN-Habitat's guide.

In the case of the other four cities a holistic HRBA was not applied. Thus, all 6 of the core values highlighted by UN-Habitat are just partially fulfilled, and the smart city programs just partially meet the requirements of the 15 mechanisms, since their human rights aspects are not intentionally considered even though in some cases they are fulfilled.

In the case of Johannesburg, based on the programs and objectives listed in the IDP, it seems that HRBA and the human rights aspects of the mechanisms mentioned in the UN-Habitat guide are taken into account, yet scarce financial resources and the digital under-skilling of the residents may further deepen the digital divide which emerged as a spill-over effect of social divisions built on the legacy of apartheid. At the same time, another outstanding problem is the presence of urban crime. The totality of circumstances may lead the city governance of Johannesburg to continue to develop along the narrative of a safe city supported by China, which prefers full-scale surveillance and does not place sufficient emphasis on the core values of freedom, self-determination and privacy.

In the case of Shanghai, although smart urban development is implemented in a decentralized manner, as political advocacy pervades the entire public administration system, the smart city program takes a strongly centralized form, which leaves little room for HRBA. In the case of China, the robustness of the digital economy provides a firm basis for the fulfilment of most of the core values included in the UN-Habitat guide, however, just as in the case of Johannesburg, in Shanghai the core values of freedom, autonomy and privacy are rather neglected.

In the Indian city of Pune, the smart city program is implemented in a clearly centralized form through the SCM. In this way, human rights aspects and the HRBA should already appear on the level of SCM. However, there is not enough reference to this despite the fact that SCM emphasizes the importance of people-centeredness among its principles. In the case of Indian cities, the unsolved social problems, such as multidimensional poverty or the presence of slums, are exacerbated by increased urbanization. Even though the solution to the problems is expected from the smart city program, the problem of social division can also appear in the virtual space in the form of the digital divide, which is further strengthened by the competitive selection of cities for SCM.

In the case of Singapore, it can be assumed that the HRBA is formally implemented, as in the name of the smart city program the nation is put in the centre. In order to maintain the competitive advantage of the island country, the governance encourages the islanders to acquire the best possible skills and help the country during the digital transformation to stay at the forefront. All this inevitably leads to the exclusion of certain social groups, including some immigrant communities and the older generation.

(2) The enforcement of fundamental freedoms, privacy rights and equality rights

According to the hypothesis of the thesis, in those cities where the prevalence of HRBA in the smart city program is not evident, fundamental freedoms, privacy rights and equality rights are less or are not protected at all.

According to the UN-Habitat's guide the core value of freedom, autonomy and self-determination is fulfilled when the citizens have adequate control over the personal data collected related to them, and additionally, there are training programs provided for people in order to make them aware when and what types of personal data are created related to them. In the cities of Johannesburg, Shanghai, Pune and Singapore based on the fact that the personal data management is not traceable by citizens, freedom rights such as freedom of expression and freedom of assembly are not adequately protected, even though the right to education and the right to engage in work due to the technological advancement may be enhanced, especially in the case of Shanghai and Singapore which are strong economic hubs. However, in the case of Pune and Johannesburg, social differences may negatively affect the digital transformation of the city, and the existing digital divide can make it difficult for the right to education and the right to work to be properly enforced.

According to the UN-Habitat's guide the core value of privacy, safety, security and protection could be fulfilled through strict data protection. Even though in four cities the HRBA was not applied within the framework of the smart city programs, a certain level of data protection has been achieved. In South Africa the right to privacy is protected in the Bill of Rights of the Constitution and by the common law, additionally, the Protection of Personal Information Act (POPIA) regulates the processing of personal information.¹⁶⁸ However, in Johannesburg it is the IIOC functioning under the Public Safety department of the municipality that integrates all municipal data. The platform is the surveillance nerve centre through which the city controls public spaces. Additionally, the city of Johannesburg is in partnership with the Shanghai based Zendai company, which may contribute to the export of surveillance technology promoted by China. Thus, even though data protection law exists mass surveillance also prevails in Johannesburg.

¹⁶⁸ Law in South Africa - DLA piper global data protection laws of the world.
<https://www.dlapiperdataprotection.com/index.html?t=law&c=ZA>

In China the three main pillars of the personal data protection are the Personal Information Protection Law (PIPL), the Cybersecurity Law (CSL), and the Data Security Law (DSL).¹⁶⁹ At the same time, according to critics, the courts ignore these laws in many cases.¹⁷⁰ In smart cities, public security cameras are used to strengthen social control, suppressing dissent and preventing potential social discontent.¹⁷¹ In this sense, the protection of security of citizens and the central ruling power take precedence over the right to privacy.

In India it is the Digital Personal Data Protection Bill (DPDP) which provides rules to personal data management,¹⁷² but additionally, there was a landmark decision of the Supreme Court in the case Justice K.S. Puttaswamy vs. Union of India in which it was articulated that *“In an age where information technology governs virtually every aspect of our lives, the Courts must impart meaning to the concept of individual liberty (...). Every individual irrespective of social or economic status is entitled to the intimacy and autonomy which privacy protects.”*¹⁷³ Thus, it can be assumed that even though in the case of the smart city program of the city of Pune HRBA was not applied, data protection is ensured by court practice and the law as well.

In Singapore the Personal Data Protection Act (PDPA) in force is less stringent in individual rights and legal enforcement measures, but at the same time some penalties may be quite strict and harsh.¹⁷⁴ In this sense community interests of the Smart Nation are privileged compared to certain individual rights. In case of Singapore the collective obligation towards the smart city program is promoted, and in this communitarian rhetoric, the importance of the SN as a public good is emphasized.¹⁷⁵

Thus, privacy rights in those cities which have not applied HRBA are protected on different levels. The protection of individual privacy rights is evident in the smart city program of Pune. In the case of Johannesburg and Shanghai even though data protection law exists, in practice mass

¹⁶⁹ Law in China - DLA Piper Global Data Protection Laws of the World.

<https://www.dlapiperdataprotection.com/index.html?t=law&c=CN&c2=>

¹⁷⁰ McGregor, G. (2020, November 3). *The world's biggest surveillance system is growing-and so is the backlash*. Fortune. <https://fortune.com/2020/11/03/china-surveillance-system-backlash-worlds-largest/>

¹⁷¹ Warrell, H., Kynge, J., Hopkins, V., & Hille, K. (2021, June 9). *Exporting Chinese surveillance: The Security Risks of “Smart Cities.”* Financial Times. <https://www.ft.com/content/76fdac7c-7076-47a4-bcb0-7e75af0aadab>

¹⁷² Law in India - DLA Piper Global Data Protection Laws of the World..

<https://www.dlapiperdataprotection.com/index.html?t=law&c=IN&c2=>

¹⁷³ *Judgment of the court in plain english (I)*. Supreme Court Observer. (2022, August 23). <https://www.scobserver.in/reports/k-s-puttaswamy-right-to-privacy-judgment-of-the-court-in-plain-english-i/>

¹⁷⁴ Lapidot, S. (2023, June 6). *Singapore PDPA vs. GDPR: Understanding the key differences*. PieEye. <https://pii.ai/singapore-pdpa-vs-gdpr-understanding-the-key-differences/>

¹⁷⁵ Sobey, A. (2023). *Obligated smart freedom: The Singaporean experience of advanced neoliberal-developmental governance*. *Urban Studies*, I(17), 004209802311692. <https://doi.org/10.1177/00420980231169206>, p. 11.

surveillance prevails. In the case of Singapore, there is not as big gap between reality and the standard required by law as in the case of the previous two cities, although the data protection law places less emphasis on individual rights than, for example, the European GDPR.¹⁷⁶

In those cities where HRBA does not prevail, equality rights are not or are less fulfilled. According to the UN-Habitat guide digital inclusion and equality can be improved through the access to services and through the promotion of digital inclusion. The equal opportunities in the digital sphere regardless of race, religion and other characteristics can be realized mainly in those cities where the Internet coverage is high (e.g. Shanghai and Singapore). In the case of Johannesburg and Pune, social inequality was a problem even before the smart city programs were launched. Thus, there is a risk that the social divide will deepen further with the digital transformation. In Johannesburg, the existence of a gap between different social strata is a legacy of apartheid, and in the city of Pune, the poverty typical of the country causes housing problems, but the elimination of slums is not necessarily helped by smart city programs. Thus, in the case of Shanghai and Singapore, equality rights could be enforced much more strongly, while in the case of Pune and Johannesburg, the elimination of social inequalities is problematic even if the central will exists.

(3) The prevalence of collaborative smart governance

Part of the hypothesis of the thesis was also that in the case of smart city programs where HRBA prevails, the collaborative smart governance model is based on the bottom-up approach.

Amsterdam's municipal system is the closest to fulfil this presupposition, in the framework of which the development and implementation of smart city projects are done with the involvement of citizens through the ASC platform and some other applications and websites. In those cities where the top-down approach prevails, collaborative governance is less likely to be realized, but at the same time a high degree of e-governance may be experienced, examples are the cities of Shanghai and Singapore. Even though in case of Johannesburg the bottom-up approach prevails, the realization of collaborative governance is not possible because of the lack of Internet coverage throughout the city. The smart city programs of Amsterdam and Singapore show high similarities in many aspects, e.g., both are citizen-centered and support a bottom-up approach, in this sense both promote the hybrid public-private-civic partnership-based smart city concept.

¹⁷⁶ Lapidot, S. (2023, June 6). *Singapore PDPA vs. GDPR: Understanding the key differences*. PieEye. <https://pii.ai/singapore-pdpa-vs-gdpr-understanding-the-key-differences/>

Thus, Singapore achieved as well the level of collaborative smart governance, but at the same time, as during the creation of the smart city program HRBA does not apply, the collaborative governance is not realized in order to enhance the enforcement of human rights. Instead, Singapore encourages its residents to continuously compete, develop, and learn, and at the same time to comply with the state will, so that the city-state can remain at the forefront of the global economy in the age of digital transformation as well.

In cities with high level smart governance, the core values of transparency and accountability and open infrastructures are usually fulfilled to a certain extent, but this can usually be stated primarily in relation to public administration services. The data collected by surveillance cameras is less transparent in the case of cities that do not apply HRBA.

The fulfilment of the core value of public engagement and community participation elaborated in the UN-Habitat guide is necessary for the realization of collaborative governance. However, its implementation shows great differences. Due to the lack of Internet coverage and digital capabilities, these values are less prevalent in Johannesburg, and at the same time, in the case of Pune, the population's opportunity to participate in the digital transformation is limited, as the way to involve the city dwellers is centrally determined by the national SCM. In the case of the residents of Shanghai and Singapore, a subjective factor, the trust in the central power, enables them to accept the government's decisive role in the digital transformation. Due to the prevailing narrative of the safe city in China, public involvement in urban planning of Shanghai's citizens is less promoted. In the case of Singapore, community participation is supported, and the development of digital skills is one of the key conditions for becoming a smart nation.

(4) Concluding remarks

Certain elements of the various smart city narratives were observable in all cities, while the application of HRBA was clearly detectable only in the case of Amsterdam. Smart city narratives in their clear form were recognizable in the case of two cities. Amsterdam follows both the narrative of the European sustainable smart city and the narrative of the digital city based on human rights standards, while Shanghai embodies how a Chinese safe city functions. In the case of the other three cities, a mixture of narratives can be observed, among these settlements Singapore, based on its transnational influence, is trying to export its own smart city concept. By doing so, the city-state is working on creating a separate narrative.

Despite the fact that in the case of the selected smart city programs, among the core values of the HRBA, the enforcement of freedom, privacy and equality was less ensured, the hypothesis of the thesis was only partially fulfilled, since in those cities where the HRBA was not applied, it cannot be stated that fundamental freedom, privacy rights and equality rights were neglected. At the same time, the claim that the form of collaborative governance prevails in those cities where the HRBA applies has been confirmed. However, it also turned out that even though in the case of Singapore the collaborative governance level is realized, the city does not seek to apply HRBA. The internationalization of cities and their growing role in international law favors representative democracy and greater accountability. At the same time, in the age of digital transformation, it is of increasing importance how much influence people have on shaping the urban environment around them. Although local governments have a strong responsibility for the realisation of HRBA, the city residents themselves should actively exercise their right to the city so that they can equally enjoy the benefits provided by the city and have the opportunity for co-creation of smart city programs.

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