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HAPPINESS IN CITIES: THE MOMENT-CENTRED CITY

Master's thesis

Technology Governance and Digital Transformation Program

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Tallinn 2022

I hereby declare that I have compiled the thesis independently and all works, important standpoints and data by other authors have been properly referenced and the same paper has not been previously presented for grading. The document length is 15,936 words from the introduction to the end of conclusion.

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ABSTRACT

Happiness has clearly been an essential factor in defining city governments' agendas. The two dominant happiness lenses that city governments use mainly focus on objective well-being and eventually lead to materialistic strategies with sub-optimal outcomes. This thesis explores a third lens, moment-centred lens, which focuses more on subjective well-being by aiming at the moments of citizens and taking 'feelings' as the means of influence. To this end, a novel conceptual framework is proposed, and exploratory empirical research is conducted to test the framework, targeting the ad-hoc applications of this lens worldwide. Drawing on the findings, a taxonomy and a preliminary repository of moment-centred lens applications are developed. The implications of the analysis show that moment-centred lens has the potential to help improve happiness in cities, and it seems worthwhile to take the literature forward on this topic, starting with elaborating the taxonomy that is presented in the thesis.

Keywords: Happiness, quality of life, liveability, moment-based happiness, citizen happiness, peak moments

INTRODUCTION

Happiness, a term with a long tradition of discourse across different scientific domains, has always been essential in shaping human life. Throughout history, it was one of the critical determinants of human expectations that shaped individual and collective human behaviour. And accordingly, governments have always promised their citizens a life of **collective happiness**, in line with the “greatest happiness for the greatest number” principle of Jeremy Bentham (Bentham 1789 cited in Veenhoven, 2010).

The history of civilizations shows us different experiments of the roles of citizens and the role of local governments where the priority of the ‘happiness’ attribute kept shifting. The industrial revolutions, which primarily stemmed from technological innovations, and the creation of new economic systems (Thorns, 2002), played an essential role in framing these experiments. The roles of citizens and governments evolved as per the economic and political events that occurred as a result of these revolutions. And this evolution had implications for the emergence and the prioritization of ‘happiness’ in cities’ agendas.

With several global trends from the late 20th century, which are explained in this thesis, a swift change can be observed in citizens’ role and expectations. Citizens are now perceived as ‘empowered social individuals’ with new traits, and they demand a happy life regardless of their economic utility to society. Consequently, we witness the changing response from governments, which are aware that happiness makes citizens more engaged (Fang *et al.*, 2018). Since we live in an urban century (Girard *et al.*, 2017), cities became the focal sphere of these changing roles. And city governments became in charge of this change.

The first popular theme that governments brought to respond to this change was the ‘citizen-oriented’ government (OECD, 2009) which cascaded into ‘citizen-centric’ municipalities on the city level. Following the introduction of smart cities, the ‘citizen-oriented’ theme evolved into ‘responsive cities’, ‘sentient cities’ and ‘happy cities’. Countries and cities tactfully embedded terms such as ‘happiness’, ‘well-being’ and ‘satisfaction’ in their agendas to promise a happy urban

life to their citizens. Yet, many initiatives that aimed to make citizens happier mostly failed to achieve what was expected. Although there are multiple reasons behind this failure, this thesis is grounded in the belief that two reasons play a crucial role. First is the lack of a single and unified goal on happiness due to the misalignment of the term ‘happiness’ among the different stakeholders of the city governments. Second, as this thesis argues, is that the two happiness lenses of city governments (**liveability-centred lens** and **service-centred lens**) and the consequent approaches pursued are inadequate, and limited to the mindset and characteristics inherited from the previous public administration paradigms.

This thesis presents a third lens, which the author conceptualizes as ‘**moment-centred lens**’. The moment-centredness is not entirely new to the happiness literature, and citizens are not strangers to the idea of momentary happiness. In fact, many initiatives under the cities’ departments of Culture and Arts (such as city events) are already the by-products of this lens. Nevertheless, its applications in the urban context are limited to some ad-hoc efforts that are difficult to sustain due to the challenges in justifying their return on investment and a few experiential activations that private firms drive for marketing and advertising purposes. Therefore, as this thesis shows, only a handful of city governments seem to have this moment-centred lens carved in their DNA. One reason might be the ‘lacunae’ in the literature about a structured perspective for city governments to embrace, which could guide methods, attributes, and mediums to use the moment-centred lens and measure its outputs. To this end, the author aims to answer the following research question and the sub-questions to help cities:

How can city governments adopt moment-centred happiness lens to increase happiness in cities?

- Why did ‘happiness’ become an essential duty for city governments?
- What are the predominant lenses that city governments use for happiness?
- What is the moment-centred happiness lens, and how is it different than the predominant lenses?
- What are the examples of applications of moment-centred lens in the world?
Considering these examples, how can cities make the best use of moment-centred lens?

Happiness is certainly affected by numerous factors related to individuals’ personalities (e.g. seeking approval), circumstances (e.g. weather) and the socio-political fabric of the city (e.g.

equality, diversity), some of which are not directly related to city government. However, the main focus of this thesis is on **the role of city governments** in increasing citizen happiness rather than **‘making of a happy citizen’** in a broader sense.

This thesis is exploratory in nature, outlining a preliminary conceptual model for moment-based happiness and providing a data set and taxonomy that serve exploratory purposes to support future studies in this field.

As a methodology, the author undertook desktop research for the happiness initiatives worldwide, scanning the creative, playful and happiness initiatives in cities across the globe.

This thesis is structured as follows: It reviews theories about happiness and related concepts such as well-being, quality of life, liveability, life satisfaction, and moments. Next, it depicts the pattern of happiness agendas globally. Then, the predominant lenses used in the management of cities today are being introduced and challenged for their shortcomings. Consequently, an alternative happiness lens, the ‘moment-centred lens’, is introduced, with its building blocks and an empirical study on real-world examples. Lastly, discussion, criticisms, and conclusions are presented, along with several recommendations for future studies.

1. THE LITERATURE ON HAPPINESS AND WELL-BEING

1.1. The theory of happiness, life satisfaction, and well-being

Due to its complex and intangible nature, it has always been challenging to find consensus on the term ‘happiness’. Accordingly, it is often used in conjunction with other terms such as satisfaction, well-being, and quality of life (Veenhoven, 2000).

Happiness and its sources have historically received significant attention from philosophy, psychology, neuroscience and consumer research (Bhattacharjee and Mogilner, 2014). Yet, this attention has increased in recent decades with the growing body of literature in the social sciences (Ballas, 2013). And substantial gaps were found in the understanding of the social context of happiness (Pykett and Cromby, 2017) across these domains, as well as some debates about identifying the most valid and appropriate measure of happiness (Ballas, 2013).

When deep-dived into the root cause of this debate, an evident misconception can be seen in the usage of the term ‘happiness’: it is often referred to as well-being, quality of life, and satisfaction (Gim, 2021), which are distinct concepts. Moreover, the same confusion can be seen among the different stakeholders of city governments.

The origins of ‘happiness’ can be found in Aristotle’s *Nicomachean Ethics*, where he defined happiness as “the meaning and the purpose of life, and the whole aim of human existence” (Musikanski *et al.*, 2019). This definition, and the definition of many other philosophers who followed him, referred to normative concepts such as ‘living a flourishing, meaningful life’. In fact, Aristotle’s own term ‘*eudaimonia*’ is often wrongly translated as ‘happiness’ (Haybron, 2001), when it means ‘a life well lived’ (Kringelbach and Berridge, 2010).

Therefore, Aristotle and many other philosophers mainly referred to well-being rather than happiness (Haybron, 2005). This well-being concept focused on health and prosperity, and ethics (Musikanski *et al.*, 2019) rather than emotional states such as depression, joy, or pride (OECD, 2013).

Another happiness concept that went hand in hand with eudaimonia was hedonia (Kringelbach and Berridge, 2010) which defines happiness as pleasure (Haybron, 2006). Some scholars, like Schopenhauer, embedded ‘hedonism’ in their definition of happiness, suggesting: “Happiness consists in frequent repetition of pleasure.” (Schopenhauer 1851 cited in *The Essays of Arthur Schopenhauer: Wisdom of Life – Volume Seven*, 2005, 27). Yet, two critiques were made by philosophers such as Daniel Haybron: First, hedonism does not describe any causal depth, and instead skims the surface of our emotional states to define happiness (Haybron, 2001). Second, the hedonistic perspective excludes two other theories of happiness: life satisfaction and a more recent one; the emotional state theory (having a favourable overall emotional condition) (*Ibid.*), which, unlike hedonism, renders ‘happiness’ sensitive to sudden mood changes (Vermunt *et al.*, 1989).

Lastly, some scholars like Paul Dolan blended eudaimonia and hedonia. Dolan defines happiness as “experiences of pleasure and purpose over time” (Dolan, 2014, 3). He suggests that people should use their time in ways that create the greatest overall pleasure and purpose (*Ibid.*).

Today, it is still difficult to mention a clear consensus on the definition of happiness and well-being. Some view them as independent concepts, happiness being a concept of a state of mind, where well-being is a concept that denotes value (Happiness and Well-being, n.d.). Others place happiness under ‘subjective well-being’, which is the internal perspective for well-being, where objective well-being covers the external perspective. Using different frameworks from the literature, a new framework was formulated in this thesis (shown in Figure 1) for simplicity when depicting all these terms.

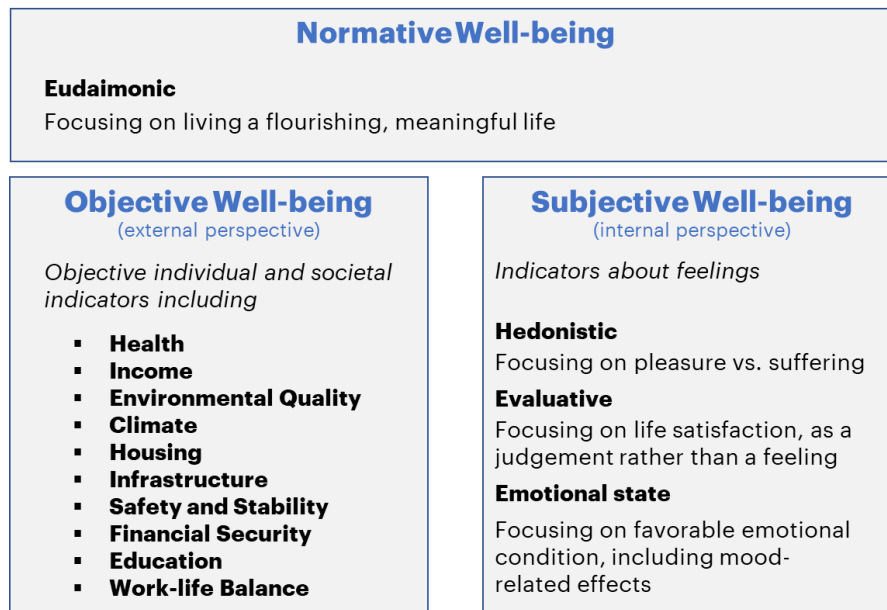


Figure 1. Well-being and Happiness Framework

Source: Author’s framework – built on the frameworks of Okulicz-Kozaryn (2011), Graham and Nikolova (2015), the Stanford Encyclopedia of Philosophy (2011) and Happiness and Well-Being Project, led by Professor Dan Haybron (Happiness and Well-being, n.d.)

Although Eudaimonic theories are taken under the subjective well-being by some scholars, it is separated in this framework, following a similar approach to Okulicz-Kozaryn (Okulicz-Kozaryn, 2011). The reason is that the scope of this thesis will not involve philosophical discussions which require broader inquiries but rather psychological and economic ones. Thus, the focus will be on objective well-being and subjective well-being (Brulé and Munier, 2021), and **happiness is derived from subjective well-being**. As the hedonistic theory is already explained in the previous paragraphs, it may be helpful to zoom in on the two other theories of happiness - evaluative theory and emotional state theory:

1.1.1. Life satisfaction – derived from evaluative theory

Life satisfaction has a problematic nature since it is open to different interpretations (Dolan, 2014). As per Ruut Veenhoven, life satisfaction is “the degree to which a person positively evaluates the overall quality of his/her life as-a-whole.” (Veenhoven, 1996, 6). On the other hand, many people include ‘experiencing the life’ in the meaning of satisfaction, and the difference between experience vs. evaluation of life triggers confusion. Dolan finds a distinction between evaluation and experience similar to the difference between having a photograph taken (evaluation) vs. being filmed (experience) (Dolan, 2014). According to this distinction, one can describe the daily ‘film’

as miserable while describing the snapshot of his life as satisfying (*Ibid.*). Hence, due to the **evaluative**, rather than **experiencing** nature of the notion of life satisfaction, it is argued that satisfaction measurements cannot capture our feelings accurately (*Ibid.*).

1.1.2. Moment-based happiness – derived from emotional state theory

Emotional state theory, recently developed by Dan Haybron, presented an alternative to hedonistic and life satisfaction theories: It identifies happiness with an emotional condition, emphasizing mood propensity, unlike hedonism, which identifies happiness with a pleasant experience (Stanford University, 2011) and life satisfaction, which takes a more cognitive perspective rather than an emotional one. Haybron mentions a sharp divergence between life satisfaction and emotional state, arguing that one person can be satisfied with her life even if she is depressed (Haybron, 2005).

A novelty that emotional state theory brought into the happiness literature is the greater emphasis on the linkage of happiness with feelings, which originally started in the eighteenth century (Mc. Mahon, 2006), and the mood. Since this form of happiness includes the notions of feelings and mood, it naturally brings a debate on the **source** and the **ability to intervene**, which are critical to explore for this thesis. In terms of **source**, some scholars posit that circumstantial aspects of one's life play a role in determining happiness levels (Argyle, 1999). For instance, the subjective attributes, such as histories of individuals' traumas and rewards, and the objective attributes, such as income and marital status, are all examples of circumstantial aspects which affect the happiness levels (Lyubomirsky *et al.*, 2005). And some other studies show the effects of genetics on happiness (Lykken and Tellegen, 1996).

Another debate is on the **ability to intervene**. Voltaire allegedly said, "The most important decision you make is to be in a good mood.". This suggests that mood can be 'decided' by individuals. In parallel, scientific studies show that physical interventions to oneself, such as smiling, can make individuals happier (Coles *et al.*, 2019). Also, some other studies show that stimulation of cognitive attitudes such as gratitude can also be part of happiness interventions as they lead to positive emotions (Emmons and McCullough, 2003).

On the other hand, emotions can be changed by outside interventions. Dolan explains this fact by giving examples in his book "Happiness by Design" (Dolan, 2014): For instance, with exposure

to light, the circadian rhythm, body temperature and stress hormones can be changed. Blue light can be used to improve alertness. Music can be used to treat trauma, as it is already used by the British Armed Forces. Also, watching a comedy show can reduce stress by about the same amount as the same duration on a treadmill.

Yet, just as circumstantial factors (Lyubomirsky *et al.*, 2005), these interventions can also be affected by the constraints of hedonic adaptation. Hence, adaptations and other factors that reduce the activity's effectiveness through overuse should be tackled (*Ibid.*). And to do that, the timing of interactions should be designed smartly to consistently keep the engagement meaningful for each audience (*Ibid.*).

As the emotional factors vary based on experiencing different moments and life events, the author proposes to use the term **moments-based happiness** to describe the happiness form that the emotional state theory implies, encompassing moods, feelings, and emotions. Here, the term 'moment' refers to the sub-component of an **experience** rather than a time unit.

1.2. The theory of quality of life and liveability

Quality of life (QoL) is another term with multiple definitions: WHO defines QoL as "An individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." ¹ (WHO), and Hajiran defines QoL as the "product of the interaction between an individual's personality and the continuous episodes of life events" (Hajiran, 2006, 33). And as per Gim (Gim, 2021), QoL consists of subjective and objective well-being. Perhaps a new definition for QoL can be created, merging these three definitions: A product of the interaction between an individual's personality, position, perception, and the life events he encountered, which leads to the individual's objective and subjective well-being.

Liveability, on the other hand, is a multidimensional term created recently to measure the standard of living, which is a dimension of QoL (Okulicz-Kozaryn, 2011). Webster dictionary defines liveability as 'suitability for human living'. It mainly focuses on objective well-being, and usually ignores subjective well-being. Therefore, it is conventionally measured by objective variables such

¹ World Health Organization (WHO) - www.who.int/tools/whoqol

as life expectancy, educational attainment, number of amenities (Ballas, 2013), environment cleanliness, access to healthcare units, access to parking lots etc.

And lastly, the ‘utility of life’ is a term used to evaluate a person’s life based on the extent to which he or she gets more of what he or she desires (Brulé and Munier, 2021), which can be associated with objective well-being.

Taking all the terms mentioned above and using the literature, the author formed Table 1 to guide readers by clearly showing the linkages and the differences between the different terminologies of happiness.

Table 1. QoL Matrix

	Outer qualities of life	Inner qualities of life
Life chances <i>(Access-oriented)</i>	Liveability (standard of living)	Life-ability (how well we are equipped to cope with the problems of life) <i>(out of scope)</i>
Life results <i>(Interaction and Outcome-oriented)</i>	Utility of life (Measured to analyse Objective well-being)	Happiness (Life satisfaction, hedonism and moment-based happiness) (Measured to analyse Subjective well-being)

Source: Brulé and Munier (2021) – adapted originally from Veenhoven (2000) - updated by the author

1.3. The theoretical framework for moments

While the literature is full of happiness studies, significantly fewer studies can be found on the ‘moments’, which are the foundational units of moments-based happiness. In line with the emotional-state theories, moments are strong determinants of happiness as they are the sub-component of an experience. However, this does not mean that all moments are equally crucial for happiness. There are multiple factors that one should consider for the importance of moments. An important one is their effect on our **memories**. This originates from the distinction that Kahneman made between the “remembering self” and the “experiencing self” (Kahneman and Riis, 2005) and the power of the ‘remembering self’ in making decisions. Perhaps thanks to this power, reflecting

the memory of happy moments in the present increases well-being (Kimura and Nakajima, 2020). In line with this fact, as per Dolan, inaccurate memories and mistakes in predicting our future experiences prevent us from making decisions that maximize future happiness (Dolan, 2014). And as we often tend to misremember our past experience in its completeness and fail to predict the future, these sub-optimal decisions become repetitive. Eventually, they lead to an unhappy life.

Studies show that people focus on a few specific moments when recalling an experience and ignore the majority of what happened (Heath and Heath, 2017). And as per Frederickson and Kahneman (1993), the model that people use when evaluating the overall experience is a weighted average model rather than the summation of the moments of pleasure (Frederickson and Kahneman, 1993).

Hence, we do a selection between the memories of experiences, and two theories play an essential role in this selection:

- 1) Duration neglect: It is a principle that argues that there is little or no effect of **duration** on the evaluation of affective experience (Frederickson and Kahneman, 1993). In other words, the overall evaluation of an experience pays only a little attention to how long it lasted (Dolan, 2014).
- 2) Peak-end rule: Combined with the duration neglect, Kahneman and Frederickson proposed a principle out of their study (Frederickson and Kahneman, 1993) which demonstrated that people evaluate their experience based on their feelings (whether positive or negative) **in the most extreme episode** (the peak) **and the terminal episode** (the end). Dolan summarizes this as follows: “Memories are etched by extremity and recency at the expense of duration” (Dolan, 2014, 89).

Adding to these two theories, Chip Heath and Dan Heath, in their book ‘The Power of Moments’ (Heath and Heath, 2017), explain the peaks, the pits, and the transitions as the ‘flagship moments’, which are the moments people tend to remember when they assess their experiences.

In the context of this thesis, the ‘remembering self’ of Kahneman is prioritized over ‘experiencing self’ when building the theoretical framework for two pragmatic reasons: the strong influence of ‘remembering self’ in making decisions and the inadequacy of studies on the measurement of the ‘experiencing self’. In line with this perspective, city governments are suggested to be the

architects who spot the opportunities for creating **positive** flagship moments (**peak moments**) and invest in them accordingly. Therefore, the moments that are not memorable, which are called in this thesis ‘ordinary moments’, and the negative moments will be out of scope.

According to Heath and Heath, peak moments possess at least one of these four attributes - elevation, insight, pride, or connection, which are explained in Table 2:

Table 2. Elements for Flagship Moments

Moment Category	Type of Moment	Description
1.1. Moments of Elevation	1.1.1. Break the script	Delivering a strategic surprise - defying people's expectations of how an experience will unfold.
Moments that transcend the normal course of events; they are literally extraordinary and lift people above the everyday.	1.1.2. Raise the stakes	Adding an element of productive pressure: a competition, a game, a performance, a deadline, a public commitment.
	1.1.3. Boost sensory appeal	"Turning up the volume" on reality: Things look better or taste better or sound better or feel better than they usually do.
1.2. Moments of Insight	1.2.1. Trip over truth	Having an insight that packs an emotional wallop (When someone has a sudden realization, one that was not seen coming, and one that is viscerally known that it is right) which can instantly change the way one sees the world.
Moments that are meaningful and that deliver realizations and transformations, sparking discoveries about oneself.	1.2.2. Stretch for insight	Placing ourselves in situations that expose us to the risk of failure.
1.3. Moments of Pride	1.3.1. Multiply milestones	Reframing a long journey so that it features many "finish lines", using the principles of gaming to multiply the number of defining moments to experience en route to destination.
Moments that capture us at our best—showing courage, earning recognition, conquering challenges.	1.3.2. Recognize others	A universal expectation, and an effective recognition that is personal, not programmatic, and that leads to pride.
	1.3.3. Practice courage	Out of scope of this research.
1.4. Moments of Connection	1.4.1. Create a synchronized moment	Creating shared meaning—highlighting the mission that binds people together and supersedes their differences, bringing them into the same moment and making them feel united.
Moments that deepen our relationship with others.	1.4.2. Invite shared struggle	The bonding that emerges among people who struggle together at a task that is meaningful and purposeful.
	1.4.3. Connect to meaning	Reconnecting people by reminding them the purpose of their efforts.
	1.4.4. Deepen the ties via responsiveness	Deepening the relationships (which reached plateaus) through "responsiveness": mutual understanding, validation, and caring.

Source: Heath and Heath (2017) – with minor changes by the author

Looking at the examples given in the book, Heath and Heath seemingly tailored their framework for the needs of the private sector. Nevertheless, the same framework can be conceptually applied to the needs of city governments (perhaps within several constraints derived from the nature of public service delivery and public entities' responsibilities towards citizens, which include, but not

limited to, public accountability, transparency, fairness (Rhee and Rha, 2007), accessibility, responsiveness, inclusiveness etc.) since the underlying principles of ‘delivering an experience’ generally remain the same between the private sector and public sector. Therefore, this framework is selected as the basis for evaluating moment-centred lens applications across the world.

2. HAPPINESS IN CITIES

2.1. Happiness Drivers

The emergence of ‘happiness’ in cities’ agendas has occurred in a gradual manner. When looking at history, many experiments can be found regarding changing the role of citizens and the role of governments on the provision of happiness. One of the significant triggers of these changes was the industrial revolutions.

During the 19th century, cities became the **sites of industrial activity** (Meller, 1995) due to heavy industrialization. The urban design discipline was professionalized as a reaction to the new machine era and the increasing number of citizens who lived in poverty and with no housing (Hall, 1988). In this phase, the concept of **QoL** started to become important in the post-Darwinian evolutionary sense, indicating that environmental degeneration may lead to the degeneration of the inhabitants living within (Meller, 1995). However, this drive was far from prioritizing the individuals’ happiness. Instead, it focused on social harmony.

Then, in the 20th century, with the **stimulated demand** (through Fordism and Taylorism) and the **welfarism** that started in the post-war period, the economic and state activities increasingly produced the pattern of mass consumption (Thorns, 2002). Citizens were increasingly seen as ‘**consumers**’. Hence, cities were typically designed as **markets**, and citizens were ‘**customers to be served**’. This helped citizen happiness find a place in government agendas, but mainly from the ‘customer satisfaction’ standpoint.

Today, we are at a turning point. In the last few decades, we have been witnessing a group of emerging mega-trends that marked society, pushing cities to adopt happiness agendas. These trends are shown in Figure 2:

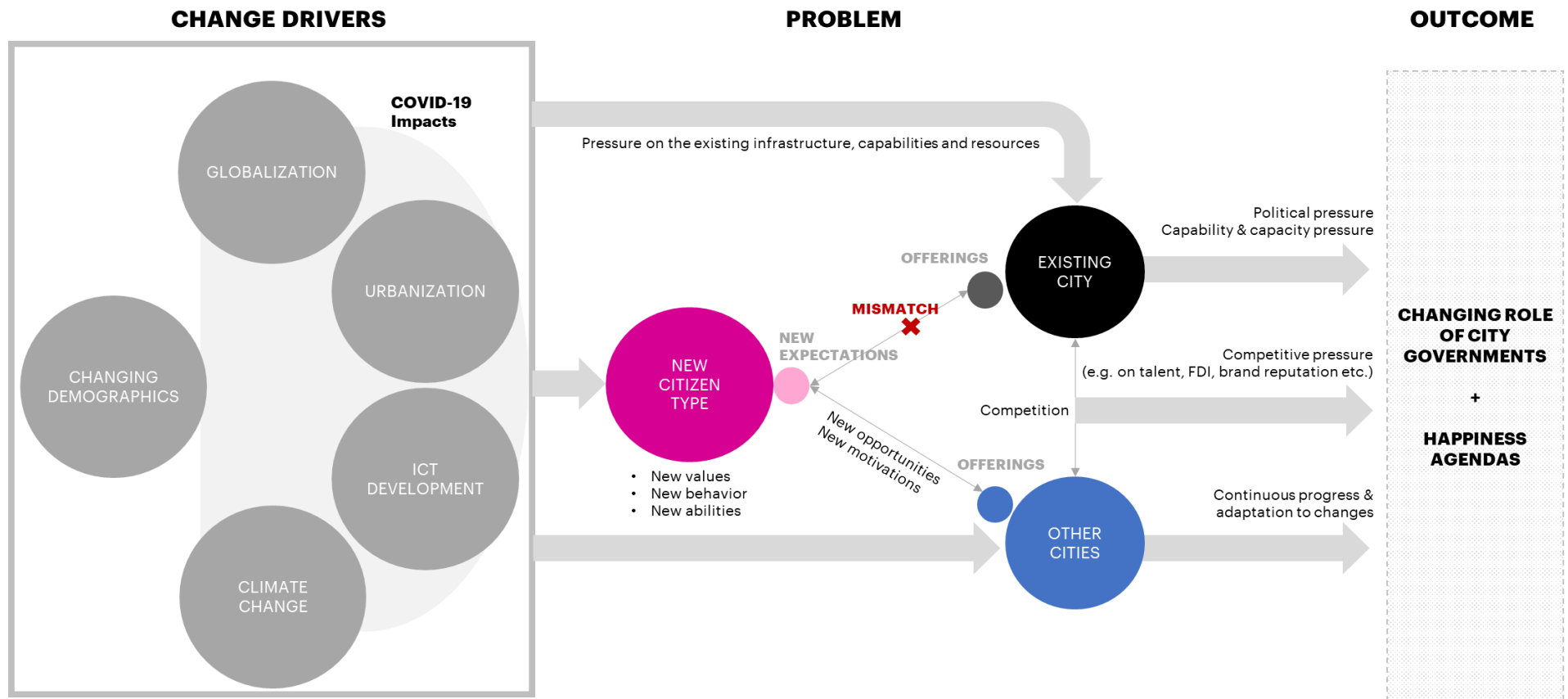


Figure 2. Change Drivers and Changing Role of City Governments
Source: Author

One key driver was **globalization**: With the global crisis in the 1970s, most scholars started to agree that the Fordist world was in decline (Thorns, 2002). Some theorists claimed the rise of a post-industrial world where new social and economic relations have emerged based on global information flows and financial transactions that are not constrained by national borders. While this phenomenon implies that it is now cities, not nation-states, which are the key nodes (*Ibid.*), at the same time, it affirms Giddens' claim that with globalization, distant events affect people more directly and immediately than before, regardless if they are economic or not (Giddens, 1998). Accordingly, Giddens' 'third-way politics' concept, which guides citizens to find their way through three revolutions of our time (**globalization, transformation in personal life, and our relationships with nature**), has recently become more attractive than ever. This has drastically changed the expectations of citizens from their city governments.

Another trend was **urbanization**, which initially accelerated through industrialization in the 19th century and created overpopulation problems in cities. With the high rate of urbanization, cities started to become the centre of social and political conflicts and inequalities (Marujo *et al.*, 2020).

As an outcome of globalization, the **ICT revolution** was born. The Internet and smartphone revolution have fundamentally changed the supply of information and communication mechanisms, modified the value chains, and created new forms of economies (such as platform economy, sharing economy, and gig economy) and new jobs. Also, in the public sphere, the emergence of big data science and the explosion of citizen data led to rapidly developing data-driven smart cities, which created enhancement opportunities for urban services (Bibri and Krogstie, 2020). These changes had a major influence on citizens' expectations, decision-making determinants, and access to their alternatives (in the form of lifestyle or city). And it made some cities stand out while putting others in a less attractive position from a citizen perspective.

Another key driver was **climate change**, which had severe consequences on citizens' lives in the form of displacement, health issues, and other well-being problems. Hence, the need for building newer, better, and more sustainable infrastructures while simultaneously addressing the urban issues that increase at an accelerated rate caused pressure on city governments.

Regarding the **changing demographics**, one can mention the aging population (Okulicz-Kozaryn, 2011) and the emergence of Generation Y & Z as inhabitants and the new workforce participants, who are relatively more experience-driven generations with different value sets and high-tech

adoption. This group privilege the consumption of experience over material things. This signals the changing relationship with amenities, and the new consumption habits, priorities, and expectations different from the previous generations.

Lastly, the **Covid pandemic** brought the ‘new normal’ that changed the urban design and social interactions, behaviours, and norms. Besides, it influenced the trends mentioned above in many different ways. For instance, it accelerated the ICT revolution, changed the workforce by bringing remote-work routines, and tightened budgets. And also, the capacity and resilience of city governments are now put in question more than ever.

All these drivers have different implications on cities even within the same country, depending on their economic (e.g. industry orientation), geographic (e.g. north vs. south), and demographic (e.g. ethnicity) positioning. However, as a result of these drivers, two things occurred in almost every large city:

- 1) The nascency of a new type of citizen with new expectations, values (e.g. green), identities (e.g. digital nomad), behaviour (e.g. connected, mobile, difficult to surprise) (Carrasco-Sáez *et al.*, 2017), lifestyles (e.g. health-consciousness, mindfulness, minimalism), needs (e.g. on-demand, customized, participatory, digital-first) and abilities (e.g. tech-savvy, mobility).
- 2) The mismatch between citizens’ expectations and cities’ offerings: Cities’ products, services, and infrastructure are no longer relevant to the changing expectations of their citizens, which leads to rising discontent. City institutions are struggling to cope with the changing requirements of the emerging interdisciplinary fields of urban interaction design (Brynskov *et al.*, 2014).

Ultimately, these factors created pressure on cities in four ways. First, the talent competition (Yigitcanlar *et al.*, 2008), which stems from the increasing mobility of human capital, especially after the emergence of remote work options, has encouraged citizens to look for opportunities outside their cities. Second, the visibility of the gap between cities’ offerings has led citizens to create political pressure on city governments. Third, the same drivers that created a new citizen type have also put pressure on cities’ existing infrastructure and resources, causing difficulties in maintaining the expected service level for the citizens (Jahromi *et al.*, 2019). And fourth, taking

no progressive action has decreased the attraction of foreign investment, which is a factor that some cities heavily rely on in today's globalized world.

All these pressures necessitated city governments to take action. And perhaps the most intuitive response was to embed happiness agendas in their programs.

2.2. Introduction of Happiness Agendas by Public Authorities

Due to the aforementioned changes, happiness agendas increasingly became a major part of public sector discussions. New public economics of happiness was born, and happiness became one of the objectives of national policies (Pykett and Cromby, 2017).

It emerged most famously with Bhutan in the form of policies in 2008, which introduced Gross National Happiness to replace GDP. A year after, The Measurement of Economic Performance and Social Progress report in France was published, which drew politicians' attention to QoL, happiness, and related social indicators. This report triggered a wave of the incorporation of happiness into the policies of European countries (Boelhouwer and Van Campen, 2013).

Following this wave, the OECD's Better Life Index and the UK's happiness measurement were introduced in 2011 (Musikanski *et al.*, 2019). Then, in 2012, the UN started issuing the World Happiness Report every year, first one being issued at the UN's High-Level Meeting: Well-being and Happiness: Towards a new economic paradigm (*Ibid.*). Following that, the Guidelines for Measuring Subjective Well-being of OECD (2013) and BRAINPOol final report by EU (2014) were developed.

In addition to the reports of multilateral agencies, country-wide and city-wide happiness and well-being initiatives were also started. Some country examples are USA's Wellbeing Project, UK's Happy City, the Canadian Happy City Experiment (Pykett and Cromby, 2017), and the UAE's happiness initiatives, including the appointment of the Ministry of State for Happiness in 2017, the establishment of Global Happiness Council and the Smart Happiness Index of Smart Dubai.

On the city level, Seoul, Victoria, Santa Monica, Seattle, and Bristol hosted some private happiness initiatives, mainly driven by NGOs in partnership with governments to measure happiness and formulate policies (Musikanski *et al.*, 2019).

In parallel, private firms and not-for-profit institutions have also made numerous attempts to define happiness and well-being metrics to generate worldwide happiness rankings of cities. Mercer's QoL rankings, Monocle QoL surveys, and the Economist Intelligence Unit's "Global Liveability Ranking" are just a few examples from the private sector, and the 'Thriving Places Index' is an example from a not-for-profit.

2.3. Criticisms of the Existing Happiness Agendas

Looking at the rankings, initiatives, or even the literature, one can see the embeddedness of the happiness term within other terms such as well-being, satisfaction, and the QoL. A few countries, like UAE (Smart Dubai, n.d.), and entities like the UN (UN - World Happiness Report, 2021), visibly addressed the distinction between these terms and accordingly, clearly emphasized the subjective aspects of happiness, such as mood and emotions. However, the vast majority of countries and private happiness indices still seem to focus on the **well-being** term, which has a broader meaning, covering material (objective) indicators and subjective ones. And it appears that the city governments who follow these indices are prone to restrict their perspectives with materialist boundaries. In this case, one should ask: What are the lenses that city governments use when looking at 'happiness' in their cities? What are their reasons for disregarding the subjective aspects of well-being (happiness) and rather focusing on objective indicators?

One reason to focus on objective indicators heavily would be misunderstanding these terms.

A second reason would be more pragmatic, suggesting the easiness of measuring and competing against other cities (compared to happiness) due to its easy-to-quantify nature. In this regard, one should note that the QoL studies were oddly neglected by policymakers and the mainstream economists who guided the policymakers for decades: The impact of policies and their outcomes (such as inflation and unemployment) on QoL and citizen happiness were not sufficiently explored (Haybron, 2006) perhaps due to the intangible nature of subjective elements within QoL, which caused measurement difficulties in the past. Nevertheless, with the recent tools that psychologists

and neuroscientists developed (Global Council for Happiness and Wellbeing, 2019) and the innovations such as AI, machine learning, and others, cities have more capabilities to measure subjective well-being at different levels. Yet, despite these new measurement opportunities, the QoL initiatives are still conducted primarily targeting objective well-being, mainly liveability, even though the extent to which happiness (subjective well-being) is conditioned by liveability in the city is still questionable (Gajdoš and Hudec, 2020). For instance, according to the research, there are cities (such as Naples and some Polish cities) where the inhabitants are critical of the liveability of their city and are dissatisfied with its governance. However, they still manage to find a satisfying way of living. This leads to low QoL in rankings but higher satisfaction and better subjective well-being (*Ibid.*). This shows that the ‘pragmatic’ approach is flawed due to this discrepancy between objective and subjective indicators; hence it may not be pragmatic in the long run.

This discrepancy can be found not only in metrics but also in the actions taken based on these metrics. Over the last few decades, cities’ strategies to achieve a higher QoL seem to fail when it comes to happiness, even if it brings material growth (OECD, 2013).

The happiness economists like Easterlin showed the discrepancy between the evolution of the growth rate of income/GDP and happiness as measured by life satisfaction (Brulé and Munier, 2021) and provided empirical examples: For instance, Easterlin’s study showed that between 1958 and 1987, the self-reported happiness in Japan remained stagnant despite the fivefold increase of real income (Easterlin, 1995). Empirical studies found that personal income creates a critical difference in happiness up to a certain point. It is said that the relationship between income and happiness includes diminishing marginal returns: income has a higher impact for lower-income groups and a lower or zero impact for higher-income groups (Ballas, 2013, 543). After having enough wealth to cover the essentials of life, such as food and shelter, income makes only a slight difference (Franklin, 2010). Besides, viewing policymaking mainly from the GDP lens has arguably increased environmental degradation and the level of stress and started threatening our own species due to consequences of heavy production focus (Musikanski *et al.*, 2019), which increase with competition about QoL among cities.

Also, surprisingly, leaders usually forget that people often compare their standard of living (such as income) with that of their peer groups (Clark and Oswald, 1996), and their evaluation sometimes

plays a more dominant role than their absolute standard of living (Florida *et al.*, 2010). This shows that even in cities with unfavourable economic conditions, it is possible to make citizens happy.

Does that mean that liveability should be completely ignored? Surely not. People need to satisfy their basic needs, such as shelter, food, and healthcare. But once the basic needs are met, a higher level of needs is developed (Okulicz-Kozaryn, 2011, 436).

As a result, we have seen an increasing criticism of GDP as being an outdated measure (Marujo *et al.*, 2020) and the emergence of new measurement methods such as the Net Domestic Product of Happiness (NDPH) as a better measure of QoL than GDP (Hajiran, 2006). OECD, for instance, integrated hedonic and eudaimonic perspectives in ‘Guidelines on Measuring of Subjective Well-being’, and thus included different forms of assessment such as the evaluative dimension (measuring the estimation of satisfaction with life) and the affective dimension (measuring emotional states or feelings based on a time point) (Marujo *et al.*, 2020, 310).

Irrespective of the reasons, this tendency to follow objective metrics usually ends up pursuing a ‘more is better’ mindset, which dictates agendas that claim the necessities of more amenities and possessions. Accordingly, most cities’ efforts to improve happiness still prioritize building amenities, and relatively less effort is spent on understanding how citizens interact with those amenities, with a limited selection of attributes such as usage, convenience, and utility. And the minimal effort that goes into the subjective nature of interaction consists of some ad-hoc satisfaction surveys to measure emotional states, which are usually inadequate.

As a result, cities’ inadequate effort to understand the subjective nature of citizen interaction caused excessive material growth. And in the current paradigm, where trends like sustainability and dematerialization gain popularity, this outcome seems to be imprudent and even outdated.

One should remember that, as Brulé & Munier stated, a happy city is ultimately a city that “considers the emotional infrastructure as paramount” (Brulé and Munier, 2021, 28). With this view in mind, alternative perspectives can be searched, where the subjective well-being determinants of QoL play a more prominent role. This would be a perspective that would rely on creating happiness based on **experiences** and the **emotions and moods** they trigger.

All studies and arguments reviewed in the previous sections underpin the need to present a new framework that shows all lenses for city governments to transform their cities into ‘happy cities’, including a new alternative lens.

2.4. Analysis of the Happiness Lenses

City governments can adopt many different lenses on their journey to create a happy city. This section aims to evaluate three lenses that are conceptualized by the author as per the **potential basis of engagement** that city governments can take when conducting improvement actions for citizen happiness:

1. **Liveability-centred** lens
2. **Service-centred** lens
3. **Moment-centred** lens

All three lenses lead to happiness in their own way, and cities need to adopt all those accordingly. In other words, these lenses are not substitutes but complementary to each other, and having a single lens may distort the view of city governments on citizen happiness. Therefore, the goal of city governments should be to find the right balance between these three lenses.

Surely, one can claim more lenses for city governments. For instance, the social welfare lens can be another option, which would help city governments launch initiatives that enable people to support each other’s welfare. An example application of this lens would be the “Bill on the Hook” campaign of Istanbul municipality, which promoted a city-wide solidarity campaign enabling people to help others who are incapable of paying utility bills because of the Covid-19 pandemic. Nevertheless, this thesis is limited to these three lenses only due to their widespread and consistent adoption by many cities.

In the following section, each of these lenses is defined. Yet, our focus in this paper will be the third lens, the ‘moment-centred lens’, as it is a relatively newer concept for cities.

	Focus	Dominant Influence Area	Means of influence	Measurement Unit	Proximity to municipal domain & control	Degree of Subjectivity (psychological & emotional factors)
Liveability-centred lens	Enhancing the standard of living to make citizens happy	Outer QoL & life chances: Liveability	Amenities	Material Outputs	HIGH	LOW
Service-centred lens	Delivering better services to make citizens happy	Inner QoL & life results: Happiness – through life satisfaction	Journeys	Material & Emotional Outputs	MEDIUM	MEDIUM
Moment-centred lens	Enabling better moments in citizens' lives to make citizens happy	Inner QoL & life results: Happiness – through moment-based happiness	Feelings	Emotional Outputs	LOW	HIGH

Figure 3. Happiness Lenses
Source: Author

2.4.1. LIVEABILITY-CENTRED LENS:

The liveability-centred lens can be seen as the mainstream lens for the majority of the current city happiness agendas. From this lens, happiness is aimed to be achieved by prioritizing objective well-being, and particularly liveability, which means providing access to the standard of living domains including, but not limited to, health, education, safety, economic prosperity, social stability, education, recreation, transportation etc.

The primary means of influence are the quantity and quality of **amenities** (Gajdoš and Hudec, 2020), such as natural amenities (e.g. climate), human-created amenities (e.g. education and health services), and other ‘objective’ factors (e.g. unemployment rate and human capital) (Ballas, 2013). As the ‘outer life chances’, these amenities give **access** to citizens in many different QoL domains.

Looking at the history of the role of municipalities, one may claim that the reason municipalities are inclined to liveability-centred lens is their long experience in infrastructure building. Throughout history, municipalities’ core responsibilities were building roads, water systems, waste systems, energy systems, sewage systems, and providing safety, healthcare, and education. Relying on the liveability theory, which states that objective conditions such as infrastructure matter for subjective well-being (Veenhoven and Ehrhardt, 1995), building these amenities was

perhaps considered the primary means to deliver happiness. And this was confirmed by many studies to some extent. For instance, amenities such as temperatures, commuting time (Florida *et al.*, 2011), and the green environment all affect happiness (Wallace and Shapiro, 2006).

Liveability is undeniably crucial for municipalities because it serves people's needs and wants, and it helps the city gain a competitive advantage (Douglass, 2002). Citizens make preferences and decisions depending on the presence of certain amenities. And they are willing to have higher spending for housing or lower salaries to live in specific areas in order to access certain amenities (Marujo *et al.*, 2020). Moreover, when looking at the self-reported surveys, it is observed that amenities such as climate, education, and green zones are relevant to self-reported QoL (*Ibid.*). Therefore, amenities and hence, liveability are worth considering when judging cities' performance for overall happiness.

On the other hand, liveability-centred lens has its own flaws, and some of these are summarized below:

- 1) **Liveability-centred lens mostly lacks subjective components:** Liveability-centred lens typically assumes that providing access to amenities is sufficient to make citizens happy. However, it falls short in explaining the root causes that make people happy about those amenities. Happiness with amenities originates from the interaction of citizens with those amenities and the meanings they are assigned. And when city governments look at those interactions from a liveability-centred lens, they usually focus on the 'utility' aspect rather than their effect on citizens' emotional state and life satisfaction. Furthermore, this lens omits the key subjective components such as the citizen's personality, demographics, perceptions, and expectations, of which the influence on citizens' happiness is usually overlooked.
- 2) **Due to dependence on amenities, liveability-centred strategies heavily rely on infrastructural investments, which are intrinsically problematic:** Infrastructure is costly to build and maintain and requires a long time for implementation. Even though the bulk of the infrastructure financing is provided by central governments, it puts pressure on city governments to borrow from the capital market and to generate more revenue to recover the costs. Hence, to finance infrastructure investments, city governments seek incremental revenue sources and apply measures such as tax increases, which ultimately

decrease citizen happiness (Arimah, 2005), at least in the short term. Especially in the context of developing countries, many cities may not afford the needed enhancements that the growing populations require in the way that the ‘international best practices’ suggest, nor would they need to. On the other hand, the omission of the long-term effects of infrastructure investments on happiness is another problem. Some actions that may create short-term pleasures for society may have long-term consequences that eventually decrease happiness. And these costs (such as the increased emissions due to outdated infrastructure) that occur in the far future may be invisible or disregarded (Musikanski *et al.*, 2019).

- 3) **Liveability-centred strategies usually go beyond the boundaries of local governments:** Liveability domains such as health, safety, and education are heavily dependent on national policies. In addition, the management, funding, and accountability of infrastructure investments can rarely belong to the local governments in full. As a result, the overreliance on central governments to act on these domains may result in incomplete or ineffective initiatives due to coordination issues between local and national authorities.
- 4) **Liveability-centred strategies mostly lack the local socio-economic and cultural contexts in evaluation and recommendations:** International liveability rankings assume a certain standard and expect developing countries to emulate the applications of developed countries to reach those standards. This approach is flawed in two ways: Firstly, there is a variation in the attributes of happiness across different cultures. Secondly, recommending similar liveability targets to both developed and developing countries would be neither feasible nor beneficial because the capabilities and efforts to reach those targets would be completely unequal.
- 5) **Liveability-centred lens mostly omits the historical and social processes that form the cities and instead adopts a top-down approach for building amenities:** This usually leads to the making of artificial cities and pushes the city leaders towards efficiency focus, and moves them away from experience and culture focus.

2.4.2. SERVICE-CENTRED LENS:

The service-centred lens is another popular lens that city governments use, aiming to achieve happiness by providing the best quality municipal services. This lens is based on the assumption

that satisfaction with public services is an important predictor of satisfaction with the neighbourhood (Basolo and Strong, 2002). From this lens, citizen **journeys** are the primary means of influencing citizen happiness.

This lens has been adopted by an increasing number of governments worldwide in the last few decades, perhaps as part of the customer-focus brought by the New Public Management (NPM) (Aberbach and Christensen, 2005). For instance, the ‘Customer Happiness Formula’ of UAE, formulated in 2016, puts service satisfaction at the centre of citizen happiness, highlighting ‘the government's dedication to provide services that achieve customer happiness and ensure the happiness of the entire community.’ (UAE Government, n.d.).

The recent popularity of this lens is rooted in the emerging application of user-centred design principles in cities. These principles introduced new methodologies (e.g. Scrum), approaches (e.g. user research, co-creation) (Steen, 2011), and tools (e.g. prototyping tools) to design citizen journeys. The novelty that this principle offered was to include the citizens in the design process from the beginning, mainly by capturing their inputs, and understanding the context of their usage and behaviour.

Unlike the liveability-centred lens, the service-centred lens includes several subjective features. For instance, the creation of personas when designing a journey helps city governments design their services around users’ needs and behaviours, and their emotional fluctuations throughout the journey. Therefore, emotional indicators are also acknowledged as a measurement unit, in addition to material indicators such as service delivery KPIs (e.g. number of citizens served), service channel KPIs (e.g. number of visits, bounce rate), and service level agreements (e.g. average resolution time).

Yet, this lens also has its shortcomings, some of which are summarized below:

- 1) **Service-centred lens does not focus on delivering services that exceed expectations but rather those that fix the issues:** The service-centred lens usually promotes reactive approaches that are **issue-originated**: It focuses on **problems and aims to achieve complaint-free services**. Although this may seem like the right approach from a service satisfaction viewpoint, it is arguably flawed in two ways: To begin, its reactive nature prevents city governments from taking preventive measures. Second, and more

importantly, it prevents city governments from innovating reimagined services with breakthrough ideas and rather keeps them focused on marginal improvements due to the urgent-seeming problems. These improvements are usually operation-based (e.g. organization, process etc.) or channel-based (e.g. accessibility, convenience etc.). The most typical approach is the creation of new service channels, the improvement of existing service channels, and the operational optimizations to cope with rising costs. And fixing the basic issues is problematic when considering the expectancy disconfirmation model: It is arguably hard to surprise citizens or exceed their expectations just by fixing an issue (e.g. fixing a pothole). Because, likely, the issue was not supposed to occur in the first place from the citizen's point of view. Hence, when it is fixed, citizens may not feel joy but rather a relief.

- 2) **Service-centred lens limits the happiness scope in the municipal services domain:** Municipal service satisfaction is undoubtedly an essential determinant of life satisfaction. Yet, when we think of the extent of citizens' daily exposure in the city, be it their interaction with amenities or other citizens, it is clear that municipal service satisfaction takes only a small portion of the overall citizen happiness.

- 3) **Albeit the presence of user-centred principles, the service-centred lens still lacks several subjective elements:** Although user-centred principles promote understanding citizens' profiles, needs, and likes, they fail to cover **all** subjective factors that determine happiness. For instance, persona creation and other profiling exercises usually ignore the perceived **total sacrifices** and the **trade-offs**, which are the determinants of perceived service value and hence, service satisfaction (Lin *et al.*, 2014). Additionally, several studies found that service expectations vary based on the type of neighbourhoods, which is often neglected in this lens: For instance, in the upper-class areas, **amenities** are highlighted when mentioning the expectations, while in the working-class areas, citizens demand **housekeeping services** (De Hoog *et al.*, 1990). Lastly, the **cognitive dissonance** factor is usually ignored when evaluating the service satisfaction of citizens.

2.4.3. **MOMENT-CENTRED LENS:**

The moment-centred lens is a relatively newer and perhaps bolder lens that is conceptualized in this thesis. Philosophically, it is inspired by the quote of the novelist Thomas Wolfe (1929): “We are the sum of all the moments of our lives”. This lens is adopted only in a handful of cities today, where initiatives take place in the form of events. However, it is arguably one of the most needed lenses that city governments should embrace to ensure that they cover the complete picture of happiness in a city.

The concept is twisted from the definition of Homayoun Hajiran (2006), which states, “Human feelings are reactionary emotions that are evoked during every life-event encounter.” (Hajiran, 2006, 34). Here, one may replace these ‘life-event encounters’ with **moments**, which are the building stones of **experiences**. And in the context of this thesis, these experiences cover all interactions that citizens have with their cities.

This concept is based on the increasing findings in psychology and consumer research, which show that people enjoy greater happiness from experiences than possessions (Bhattacharjee and Mogilner, 2014). These findings may potentially lower amenities and consumption in the cities once cities realize that less materialistic alternatives exist. Thus, from a happiness context, the idea of maximizing amenities and consumed goods may lose against the idea of creating interactions. In fact, this would align with the philosophy of ‘Lagom’, a Swedish word for “Moderate, Adequate, Just Right”, adopted by Sweden, a country with a high reputation of consistently achieving high happiness rankings.

The moment-centred lens targets **feelings** (reactionary emotions) as the means of influencing citizen happiness since Hajiran (2006) suggests that “feelings are by-products of that individual’s attempts toward maximizing the positive experiences of his or her quality of life” (Hajiran, 2006, 34). From this angle, it is arguably the only lens that truly embraces the ‘moment-based happiness’, which is derived from the emotional state theory of happiness.

A conceptual framework is proposed to explain the components of the moment-based happiness (Figure 4), which is central to moment-centred perspective:

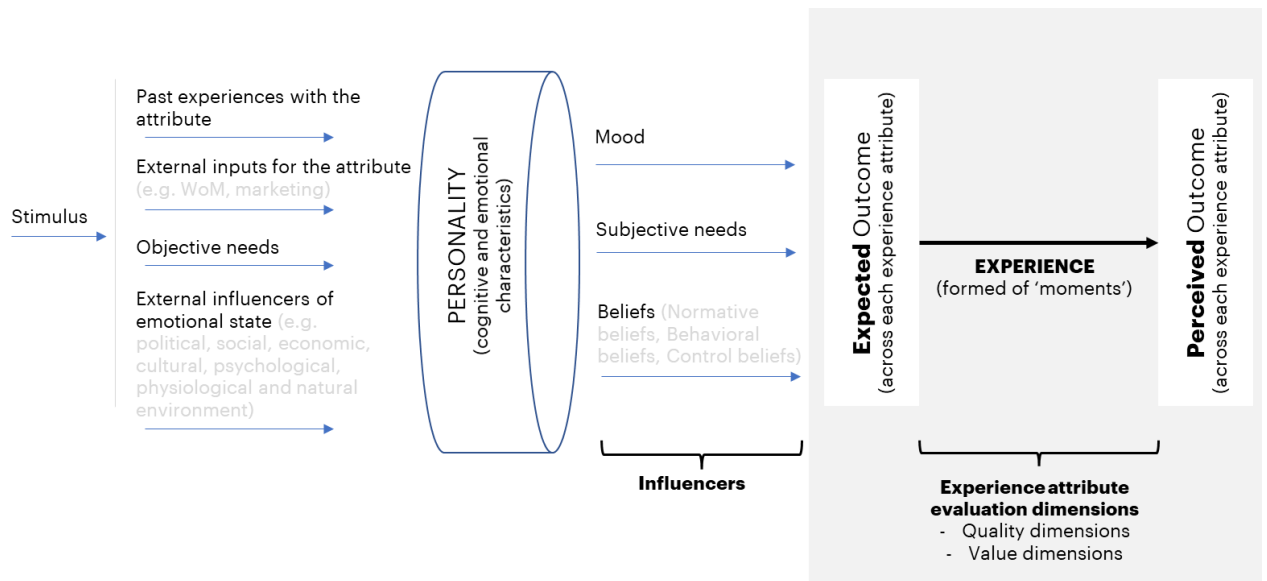


Figure 4. Moment-based Happiness – Conceptual framework

Source: Author – based on the adaptation of the primary processes to deal with life events (Hajiran, 2006), and the perceived service quality model of R. Kenneth Teas, where he combined multiple service quality models from the literature (Teas, 1993)

This lens focuses on maximizing positive feelings in the city by increasing the discrepancy between **perceived and expected outcomes** of all experiences for each citizen, taking into account the influencers and the initial inputs shown in Figure 4. In theory, there are three methods to do that:

- 1) **Reducing the citizen's expected outcome for an existing experience**
- 2) **Improving the citizen's perceived outcome for an existing experience** - Not by achieving marginal improvements, but by the creation of perceptions of attributes beyond expectations
- 3) **Creating new experiences with new interactions** – Where no expectations exist

The first method is not likely to be followed since it is out of the city government's control. Citizens and their needs keep changing, and expectations are usually set by the private sector.

The second and third methods are arguably more rational to follow. And there are multiple tactics to implement those methods:

The first tactic is to create moments with additional value or quality that are **unexpected and unprecedented**: This involves creating **experiences** that are formed of unique, surprising, and memorable moments. One of the ways to create unexpected experiences is to create **extraordinary experiences**, which Bhattacharjee and Mogilner define as “uncommon, infrequent, and go beyond the realm of everyday life” (Bhattacharjee and Mogilner, 2014, 2), and “fall outside daily routines, capture people’s attention, and endure in memories” (*Ibid.*, 13).

The second tactic is to reshape the perception by **changing the influencers** in Figure 4 - **mood, subjective needs and beliefs**: According to Lyubomirsky and Ross (1999), positive moods positively influence the evaluation of options and outcomes, and this ultimately increases the overall satisfaction (Lyubomirsky and Ross, 1999) and hence, changing the moods is critical. And studies show that influencing **mood** is feasible by changing the environment.

The third tactic is to **alter the perception through time and space**: This tactic consists of delivering an **expected** moment in an **unexpected** time, place, or form. This tactic recently became possible thanks to the emerging digital placemaking apps, digital art installations, gamification apps, virtual reality, and augmented reality apps that help cities create new dimensions. These technologies not only help city governments provoke unexpected citizen engagements and playful, sensory experiences or augment the space in the city, but also modify the city’s image by giving uniqueness and enabling storytelling, and accordingly, permanently change the overall perception. As stated previously, this thesis focuses on maximizing the positive feelings for the ‘remembering self’ in mind. Therefore, this thesis suggests the creation of peak moments to address the second and third methods mentioned previously. However, this should not mean that ‘experiencing self’ is entirely excluded. In fact, all peak moments suggested in the empirical part of this thesis arguably contribute to the positive feelings for the ‘experiencing self’ even before the ‘remembering self’.

In theory, the ordinary ‘everyday moments’ could also be targeted to maximize positive feelings. And there are studies that show that happiness from ordinary experiences increases as people get older (Bhattacharjee and Mogilner, 2014): As the time of older people is limited, they are inclined to prioritize emotionally fulfilling interactions (Carstensen *et al.* 1999 cited in Bhattacharjee and Mogilner, 2014), while the time of younger people is expansive, and hence they chase extraordinary experiences (Bhattacharjee and Mogilner, 2014). However, ordinary moments are

left out of scope since the design of such moments is already addressed adequately by many disciplines such as urban design, architecture, urban planning, and psychogeography.

Like the first two lenses, moment-centred lens also has several benefits and limitations. These are covered in the latest section of this thesis.

In the next section, we will deep-dive into the applications of moment-centred lens through peak moments.

2.5. Application of Moment-Centred Lens – Peak Moment Building Blocks

Looking at Heath and Heath's ideas on creating 'peak moments', the author argues that three building blocks are required to come together in order to create peak moments **in the context of cities: Place** (where the moment takes place), **interactions** (through which the citizens engage with each other and with the place) and **reflections** (through which the citizens make personal judgements).

2.5.1.1. Place

A place is a space with meaning (Cresswell, 2004), and cities are, first and foremost, spaces that have different meanings for different citizens.

To create peak moments, city governments should first be aware of the different city versions of each individual and the different 'places' (spaces with meanings) accordingly across different time dimensions. For example, a street may be seen as a place for great memories for some citizens, whereas the same place can be seen as a location of racist protests by others.

In theory, peak moments require no physical space boundaries. However, in the context of cities, this thesis limits the creation of peak moments in two kinds of spaces: **Public space** and **virtual space**.

Public spaces are areas that represent not only geographical spaces but also a scene for history and culture in the city (Lofland, 1998). As Suzanne Lennard and Henry Lennard explain, public

spaces are both stages and theatres where citizens can switch their roles between spectators and actors at any time (Lennard and Lennard, 1984). They are the “Third places” as per Ray Oldenburg’s definition, which are the social places other than home and work, and where people build relationships and start social exchange in a casual manner (Marujo *et al.*, 2020).

Public spaces were historically used mainly for placemaking activities such as building assets and running physical activities like events, installations, and exhibits. However, with the ICT revolution, the expansion of WiFi services, the increase of IoT technologies, and smartphone adoption, **virtual spaces** started to become popular as well. Accordingly, city governments began to follow digital placemaking strategies that involve the installation of digital technologies in public space.²

As per the classification of Shih *et al.* (Shih *et al.*, 2021), **non-immersive virtual spaces** such as websites and apps were dominant in cities for decades. These spaces were mostly about providing information to citizens about places and included the most basic forms of citizen engagement. However, in the last decade, **semi-immersive virtual spaces** (e.g. location-based games, AR applications) and **fully-immersive virtual spaces** (e.g. VR applications) have emerged as the new areas of citizen engagement and blurred the lines between physical and digital assets in a city.

2.5.1.2. Interactions

The second building block for peak moments is the interaction that takes place in these public and virtual spaces. Interactions are the means through which experiences are delivered to citizens. They are the primary means for two types of peak moments: **Moment of elevation and moment of connection.**

Two types of interactions play a central role in making these peak moments: Person-to-person interactions and person-to-place (or asset) interactions.

² Digital Placemaking Institute - <http://digital-placemaking.org/>

Person-to-person interactions:

The impact of person-to-person interactions on one's happiness has always been debated across different disciplines. While the famous French philosopher Sartre says, "Hell is other people", the well-known American urbanist, William H. Whyte, says: "What attracts people most, it would appear, is other people." (Whyte, 1980, 19) on which many other renowned urbanists agree. Irrespective of the direction of the impact, social interactions became an unavoidable part of citizens' lives with the rising urban population in many cities. Therefore, the question is no longer "if", but "how" and "with whom" should citizens interact in order to have peak moments.

In alignment with the pace of transition from public spaces to the new virtual spaces, social interactions have increasingly moved into virtual communities. This trend and the urban design legacy of the 20th century caused the emergence of cities with scarce human interaction and disconnected citizens. This led to a counterintuitive outcome: the increase of loneliness in even more crowded cities. Under these circumstances and the effects of the recent Covid pandemic, city governments look for ways to reconnect citizens with each other.

Using the interactions among citizens who know each other is relatively easier to understand and tackle and has already been addressed by urban planning and urban design projects. What is more challenging is to use the interactions among **strangers**. Whyte defines cities as the place of a 'great dance', where strangers are on a collision course with each other, and yet, they go their way untouched (Whyte, 1988).

Cities can spark interactions among strangers through various mediums, which are explained in the empirical part of this thesis.

Person-to-place interactions:

The second type of interaction occurs between a person and a place, or more specifically, a public asset in a place.

With the rapid urbanization and social isolation due to the Covid pandemic, citizens became detached from their surroundings. Moreover, the accelerated rate of changes in urban design and the emergence of new public assets made the citizens feel like total strangers.

To reconnect the citizens and to help them have peak moments, city governments should first make the city explorable by the citizens. Also, they should be fully aware of the multi-layered structure of the city (Innocent, 2018) and understand the connection of citizens with each layer. For instance, viewing the infrastructure as an autonomous layer of human necessities and efficiencies is a common mistake that city governments make. Instead of focusing only on the functionality, cities should focus on making the infrastructure more pleasurable, playable and relatable for citizens (*Ibid.*).

The good news is that the digital infrastructures that cities started to have in the last two decades can enable such a relationship. Internet, social media, smartphones, and IoT technologies led to the invention of digitized assets in many cities. Accordingly, the interaction of people with the infrastructure and assets can be observed.

Another critical area that city governments should acknowledge is the **meaning** that citizens assign to the places and assets in the city. For this one, the formulation of Lofland on the person-to-place connections, which includes memorialized locales, familiarized locales and hangouts, and home territories (Lofland, 1998) would guide city governments on the places (or locales) to organize social activities and events and installations, the assets to maintain or those to change or remove entirely.

2.5.1.3. Reflections

The third building block is reflections, which occur either as a product of one's own thinking journey or indirectly as the outcomes of interactions. Reflections are the means through which experiences are transformed into self-realization. They are the primary means for two types of peak moments: **Moment of insight and moment of pride.**

Due to the diversity of subjective attributes (such as interests, likes, sensitivities, and mindset), it is difficult for city governments to develop strategies for acting on citizens' reflections. However, certain initiatives that add stories and a 'soul' to the places would motivate citizens to do reflections that trigger moments of insight and pride. The most common examples are themed trails, VR experiences, and mobile apps that connect citizens of today with the citizens of the past or with places through storytelling.

The criticism of happiness agendas and the weaknesses of the conventional lenses set forth a justification for the need for a new lens. Despite the presence of ad-hoc applications of moment-centred lens, it is seen that the literature does not contain a solid attempt to either unpack the deeper mechanisms that shape these applications or show their potential. However, some findings from the moment-based happiness theories provide promising indicators that show that it may be worth taking moment-centred happiness study forward. For instance, the presence of circumstantial factors as the **source** of happiness and the **ability to intervene** in citizen happiness show that cities can trigger outside interventions to make citizens happy. In terms of conducting these interventions, having proposed a conceptual framework for moment-based happiness and the three tactics to maximize positive feelings in a city, the author can now go beyond theory building and take the existing literature a step further.

The first step would be to prepare a taxonomy for the applications of this lens, taking into account the suggested building blocks, which guide the formulation of mediums (places) and the intermediaries (interactions and reflections) that link those mediums with the peak moments. This taxonomy would not only help incorporate the proposed concepts within a coherent structure but also help city governments gain an improved level of understanding of moment-centred lens by showing real examples representing different contexts.

3. RESEARCH DESIGN

In this section, the applications of moment-centred lens around the world are studied, using the type of peak moments that Heath and Heath defined. This study aims to provide a taxonomy for the application of the moment-centred happiness lens through example initiatives from different countries with the mediums and types of moments used to make citizens happy. It is a step toward developing a global repository of moment-centred happiness initiatives. The objective is to have as many scholars and policymakers as possible to exploit this preliminary work in order to do more research on this field.

3.1. Methodology

As this thesis aims to explore an under-researched topic, this will be exploratory research. An inductive approach is followed in collecting data and determining the categories in the preliminary repository.

This study emerged from desktop research for city initiatives around the globe. First, creative, playful, and happy city initiatives implemented by public sector entities, private companies, NGOs, and partnerships were scanned. Then, as a result of careful screening (with inclusion criteria such as comprehensiveness of content, creativity, location of the initiative, and reported outcomes), 170 initiatives were selected to showcase examples for different types of moments across 32 countries listed in Table 3:

Table 3. Number of initiatives per country

Country	Number of initiatives
UK	50
US	26
Canada	9
Australia	9
Netherlands	7
Sweden	6
Denmark	4
France	4
Turkey	4
S. Korea	3
Switzerland	3
Singapore	3
UAE	3
Brazil	3
Taiwan	2
Spain	2
Germany	2
Iceland	2
India	2
Peru	2
Nigeria	2
Portugal	1
Colombia	1
Austria	1
South Africa	1
Hong Kong	1
Japan	1
Iran	1
Estonia	1
Israel	1
Finland	1
Lithuania	1
Grand Total	159

Source: Author's Analysis

Out of the 11 initiatives which were not listed above, seven initiatives were tagged as 'Multiple', which means the initiative took place in multiple countries, and four initiatives were tagged as 'N/A', which means either the initiative was never implemented and it is in the idea stage, or the country was missing in the description in the source website.

As this study is solely based on desktop research, it has a reliance on the online availability of the initiatives and the availability of English content. This may have influenced the findings at the disadvantage of countries, cities, and city governments with less online availability, lower digital aptitude, or lack of English content. Furthermore, the findings may have risks in timeliness, accuracy, and comprehensiveness of information, despite the cross-check exercise conducted for each initiative across multiple websites. Despite these limitations, the author proceeded with the research as the goal of this exercise was to provide an **indicative** picture of the ad-hoc happiness initiatives around the world and form a sample that meets at least the minimum requirements to develop a taxonomy to take this research further.

3.2. Scope

This study aimed to present **unique** (and sometimes '**out-of-the-box**') moment-centred lens initiatives with proven success instead of those that are more typical and widely adopted by many cities, such as **celebrations, concerts, stage shows, flash mobs, parades, carnivals, sports tournaments, competitions, comedy shows, poetry contests, thematic city tours, the typical playable city assets** (e.g. chess) and **other assets** (e.g. community gardens). Selections were made with a priority given to digital initiatives in order to highlight how technology and innovation can be used for happiness. However, some physical initiative examples were also included.

The study prioritized the public sector-led examples to guide city governments. Only a selective group of commercial examples were covered solely for inspiration.

3.3. Data Collection Methods

Since a comprehensive online repository does not exist for global moment-centred happiness initiatives, the study utilized a great variety of online sources such as academic publications, international reports, news aggregators, blogs, city websites, interviews, private sector reports, and some other websites in the city/public sector vertical or playfulness/happiness vertical. These sources were accessed through search engines and pearl growing. Some of the keywords used in the research were “happy cities”, “playful cities”, “citizen happiness”, and “happiness initiatives”. Even though no date range was used, the initiatives that were recently implemented were prioritized during selection. Other key selection criteria were the diversity of mediums, countries, and cities to be covered.

3.4. Data Analysis Methods

A textual analysis was conducted during the desktop research, with qualitative content analysis being the primary method. Images were also taken into account to validate the description of the initiatives.

As a result of this research, a preliminary repository of moment-centred initiatives was developed, including:

- Initiative name
- Public vs. commercial example: To indicate if the initiative was owned by a public or commercial entity.
- Country
- City
- Description

Once the above fields were entered, the author matched each initiative with several attributes that are described below:

Table 4. Research Attributes

Sociality	
Individual	The engagement takes place on an individual level.
Social	The engagement takes place on a social level.

Addressable citizen size	
High	A large segment of citizens can benefit from the initiative, considering the abilities and/or the context that the initiative requires.
Medium	A medium-size segment of citizens can benefit from the initiative, considering the abilities and/or the context that the initiative requires.
Low	A small segment of citizens can benefit from the initiative, considering the abilities and/or the context that the initiative requires.

Medium of interaction	
Physical	The medium of interaction is a physical channel or touch point. It requires a material product to be produced (or it requires no production at all)
Phygital	The medium of interaction is a mix of physical and digital channels or touch points. It requires a material and a digital product to be produced.
Digital	The medium of interaction is a digital channel or touch point. It requires no material product to be produced.

Type of medium	
Digital Placemaking	Digitized city asset
	Public space interactive experience
	AR-based experience
	AR-based game
Urban Installation	Interactive display
	Landscape installation & architecture
	Physical city asset
Experience App & Content	Urban art installation
	Location-based game
	Other digital materials
	Storytelling
Exhibit	Themed trails
	Immersive digital exhibit
	Interactive digital exhibit
Event	Physical exhibit
	City social game
	Festival
Other	Pop-up intervention
	Public design
	Recognition

Source: Author's research framework

While the medium of interaction and type of medium were objectively identified, the sociality and addressable citizen size were determined subjectively based on the assumption of the author using research findings.

After each attribute was filled, the ‘peak moments’ from the theoretical framework were mapped with each initiative.

Table 5. Peak Moments

MOMENTS OF ELEVATION			MOMENTS OF INSIGHT		MOMENTS OF PRIDE		MOMENTS OF CONNECTION			
Break the script	Raise the stakes	Boost sensory appeal	Trip over truth	Stretch for insight	Multiply milestones	Recognize others	Create a synchronized moment	Invite shared struggle	Connect to meaning	Deepen the ties via responsiveness

Source: Author’s research framework – based on Heath and Heath (2017)

The only peak moment left out of the research was ‘Practice Courage’ under ‘Moments of Pride’. This is mainly due to inadequate relevance to the context of the thesis.

A snapshot of the completed preliminary repository is shown in Table 6:

Table 6. Preliminary Repository (Snapshot)

#	Initiative Name	Public vs. Commercial example	Country	City	Short Description	Break the script	Raise the stakes	Boost sensory appeal	Trip over truth	Stretch for insight	Multiply milestones	Recognize others	Create a synchronized moment	Invite shared struggle	Connect to meaning	Deepen the ties via responsiveness	Sociality	Addressable citizen size	Medium of interaction	Type of medium
1	Past & Future Views	Public	UK	Cardiff	A pair of augmented reality sightseeing binoculars to visualise Perth Teigr's history and future.			X	X								Individual	High	Physical	Digital Placemaking - Digitized city asset
2	Perth Teigr Trail	Public	UK	Cardiff	A site-specific storytelling audio app that takes you on a journey around Perth Teigr, exploring its past and present in compelling ways.				X							X	Individual	Medium	Digital	Experience App & Content - Storytelling
3	Digital Town Crier	Public	UK	Cardiff	A digital town crier announcing limited-quantity offers from local independent restaurants, cafes and shops.	X	X										Social	High	Physical	Digital Placemaking - Digitized city asset
4	Connecting Physical & Digital Archives	Public	UK	Cardiff	An installation of archival objects, allowing immediate access to relevant digitised archival film, audio and photographs to make the history more visible (e.g. anchor chains, monuments to seafaring, shipping-related public artworks) so this seemed like a way to begin that process on a smaller scale. On getting closer, you see a sign prompting you to download the Perth Teigr app to unlock a layer of connected digital archival material. Within the app, you scan the objects to open up a piece of digital archival material from the local collection.			X	X							X	Social	Medium	Digital	Experience App & Content - Other digital materials
5	Teleconfusion	Public	UK	Cardiff	A free telephone box on both sides of the Barrage, which connect only to each other. You're sitting eating lunch in the Quiet Lock Crossing and someone, which you hadn't noticed before, starts ringing. You pick it up and, prompted by the conversation starters painted on the phone box, start to chat with someone you haven't met from the other side of the Barrage.	X							X			X	Social	High	Physical	Urban Installation - Physical city asset
6	Urban Rooms	Public	UK	Cardiff	Providing a physical and/or digital 'Urban Room' in every city a space where people can understand, debate and involve themselves in the past, present and future of where they live, work and play, with prompts asking visitors to provide their thoughts on what makes a 'good' or 'bad' space.										X	Social	High	Physical	Urban Installation - Landscape installation & architecture	
7	Project What If	Public	UK	Bristol	It is a major science centre exhibition all about the curiosity of a single city, with digital exhibits where products such as Human Clock (where a visitor becomes a clock's face and has to trace out a minute with their arm) are exhibited. Salisbury Trails enables visitors to move around Salisbury's historic streets and discover the city's hidden histories.	X										X	Social	High	Physical	Exhibit - Interactive digital exhibit
8	Salisbury Trails	Public	UK	Salisbury	The app provides self-guided themed trails that encourages visitors to uncover the city's unique heritage and points of interest, whether off the beaten track, exploring hidden gems or following some fantastic routes for shopping, eating and drinking in the city centre. Visitors are able to hear stories about an attraction, read about it and see related images.				X							X	Individual	Medium	Digital	Experience App & Content - Themed trails
9	LDetroit	Public	US	Detroit	Telling the stories of 100 Detroiters through image & sound.				X							X	Individual	Medium	Digital	Experience App & Content - Storytelling

Source: Author’s research framework

3.5. Considerations

Some attributes were excluded from this research due to time constraints, despite their high significance for evaluating examples. These attributes, listed in Table 7, should be used in the future studies on this topic:

Table 7. List of missing attributes

Missing Attribute	Definition	Why it is important
Ownership & Governance	The entities, collaborators, partners and partnership models, stakeholders involved, and their roles in creation and management of the initiative	For the cities to benefit from the examples, it is critical to understand the organization, roles, and governance mechanisms when each initiative is orchestrated.
Costing Structure	The costs associated with the initiative, funding structure and whether the initiative is self-sustaining	Understanding the cost and funding structure, the required level of spending, and whether the initiative is self-sustaining is crucial not only for the financial feasibility but also for prioritizing the city's agenda.
Targeted Segments	The type of citizen segments targeted for the participation to the initiative	It is neither feasible nor meaningful to expect all groups of citizens to benefit from each initiative in the same way. Some segments would be involved in particular initiatives as per their interests, physical and mental capabilities, and needs. Also, the volume and the type of engagement with the same initiative may differ among different segments.
Accessibility	The accessibility and usability of initiatives by all targeted segments	Accessibility and usability are critical aspects to ensuring full utilization of initiatives by relevant segments. This is especially true when the initiative involves a digital divide due to age, income, or physical need that some users can not meet. For instance, if a senior citizen is asked to use a complex mobile app, or if he is asked to use an installation that overlaps with the medical devices he is wearing, that particular initiative cannot be utilized in a desired level (Makedon et al. 2013).
Reusability	Whether the initiative is reusable by citizens in terms of physical sustainability & maintenance, individual and social relevance, meaning and needs	Reusability of initiatives is critical, especially if the initiative involves physical assets. However, it is usually challenging either due to physical sustainability and maintenance of the asset or the challenges related to the continuity of demand. Cities must find ways to keep initiatives relevant and meaningful for citizens.
Occupancy Rates	The level of usage and occupancy of each initiative over time	The occupancy rates and patterns for each initiative would help city governments plan and distribute initiatives efficiently and effectively.
Inclusivity	Whether the citizens in the targeted segments have equal opportunity to get involved in the initiative	Inclusivity of initiatives is critical to gaining the public trust. Hence, special groups such as people with disabilities, elderly people, and children should feel comfortable when getting involved. Design of the initiatives and assets should be done accordingly.
Citizen Participation	The level of interest and participation shown by citizens for the initiative	Understanding the level of interest and participation would help city governments find the right match between return on investments and public interests, which would lead to better spending of public money.
Citizen's Role	Whether the citizen is the actor, the supporter, the audience or the observer	The analysis of citizen's roles in each initiative would help city governments balance the initiatives to guarantee the sense of belongingness among all citizen segments.
Safety	The level of subjective and objective safety of the initiative	City governments should be mindful of the safety concerns of citizens when designing initiatives. Here, the key is to remember that even unjustified fear of citizens (subjective safety) should be considered when creating initiatives.
Level of Individual and Collective Happiness	The length and level of individual and collective happiness increase by the initiative	Although it is difficult to measure, analyzing the impact of each initiative on happiness would help city governments compare and prioritize their initiatives accordingly. This impact would be in the form of the duration of a happy moment during and post-initiative periods, and the increase in happiness level. The rise in happiness level should be observed at both individual and collective levels since some initiatives may make some people happy while making others frustrated.
Privacy	Whether personal data is used in a privacy-friendly manner	Whether the initiative collects personal data, and if it does, whether it carries a risk related to the privacy of citizens is an important attribute for city governments to consider.

Source: Author's research framework

4. RESEARCH FINDINGS

4.1. Findings on the sample set

The study encompasses 20 types of mediums upon which the findings are structured. When we listed the number of example initiatives for each type of medium, we found that the top 5 include **digital placemaking** and **urban installation** categories. On the other hand, **exhibits** and **‘other’** categories took a much smaller percentage.

Table 8. Percentage of Initiatives per Type of Medium

Type of Medium	% Initiatives
Digital Placemaking - Digitized city asset	17%
Digital Placemaking - Public space interactive experience	12%
Urban Installation - Landscape installation & architecture	11%
Urban Installation - Physical city asset	8%
Urban Installation - Urban art installation	8%
Urban Installation - Interactive display	5%
Experience App & Content - Storytelling	5%
Experience App & Content - Themed trails	5%
Digital Placemaking - AR-based experience	4%
Event - Pop-up intervention	4%
Digital Placemaking - AR-based game	3%
Experience App & Content - Location-based game	3%
Event - City social game	3%
Event - Festival	2%
Exhibit - Immersive digital exhibit	2%
Exhibit - Interactive digital exhibit	2%
Exhibit - Physical exhibit	2%
Other - Public design	1%
Experience App & Content - Other digital materials	1%
Other - Recognition	1%
Grand Total	100%

Source: Author’s Analysis

In terms of the medium of interaction, phygital initiatives, which combine the physical and digital, took the largest majority. And digital and physical initiatives have an equal share.

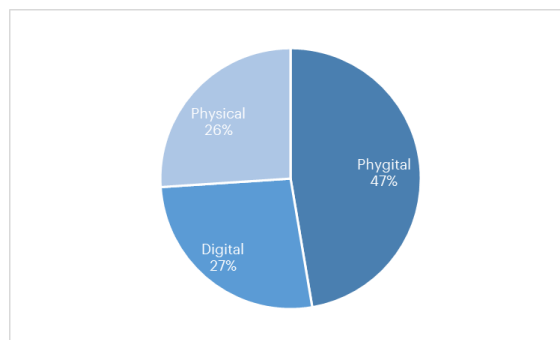


Figure 5. Medium of Interaction Breakdown

Source: Author’s Analysis

The majority of the selected initiatives have large or medium addressable sizes, as shown in Figure 6:

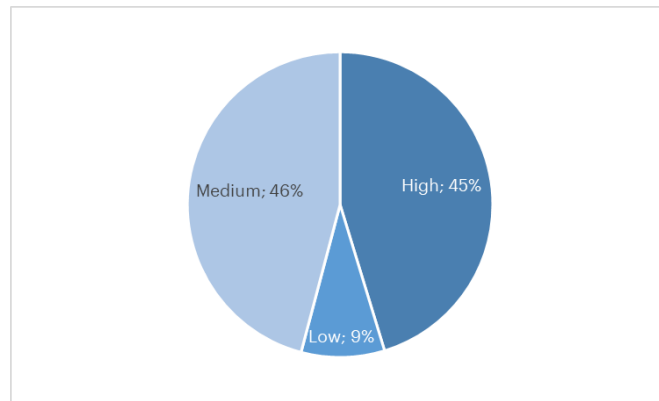


Figure 6. Addressable Citizen Size Breakdown
Source: Author's Analysis

In terms of sociality, almost 70% of the selected initiatives have an engagement that takes place on a social level, as shown in Figure 7:

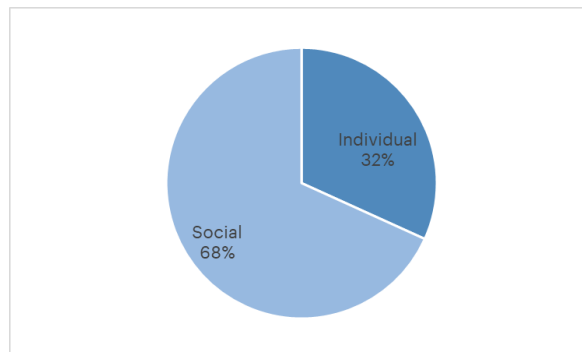


Figure 7. Sociality Breakdown
Source: Author's Analysis

4.2. General Findings

In this section, examples are listed across 20 mediums. Each medium contains a description that broadly explains the use-case of the medium, the list of initiatives, and findings about the peak moments that are delivered by the medium.

4.2.1. Digital Placemaking - Digitized city assets:

Digitized city asset is a relatively new concept that mostly developed countries use as part of their digital placemaking efforts. It amplifies the value and utility of public assets such as street lights, lamps, trash bins, and benches by adding playful and interactive features enabled by ICT technologies. Such form of initiatives provides an excellent example for leveraging person-to-space interactions to create peak moments.

29 initiatives were selected in this study, listed in Table 9:

Table 9. List of Digitized City Assets ³

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Past & Future Views	Public	UK	Cardiff	It is a pair of augmented reality sightseeing binoculars to visualise Porth Teigr's history and future.
Digital Town Crier	Public	UK	Cardiff	A digital town crier announcing limited-quantity offers from local independent restaurants, cafés and shops.
Starling Crossing	Public	UK	London	Starling Crossing is an interactive pedestrian crossing that responds dynamically in real-time to make pedestrians, cyclists & drivers safer and more aware of each other.
Stop, smile, stroll	Public	UK	Bristol	Stop Smile Stroll transforms a pedestrian crossing into a 30-second opportunity for sharing a moment of magic at pedestrian crossings that brings strangers together for a moment of shared fun, breaking the mundane 'stop and walk' routine.
Hello lamp post	Public	UK	Bristol (also in Manchester, Austin (Texas), Singapore and Bordeaux, Malmo and Astana)	Hello Lamp Post enables the people in Bristol to engage in digital message conversations with street furniture – "lamp posts, post boxes, bollards, manholes, bins, or telegraph poles".
Shadowing	Public	Multiple	Multiple cities	Shadowing is a public artwork that uses technology to amplify and echo the presence of people in a city. It gives memory to a city's street lights; capturing the shadows of those who walk underneath to be replayed for the next person.
Make your rhythm	Public	Iran	N/A	Make Your Rhythm is an appropriate waiting area which gives passengers the opportunity of having fun while they are waiting for the bus, with the seats of this bus stop seem like swings that invite people to sit and with each seat linked to the column of LEDs which will light up by seat's movement.
The Conversing Circuit	Public	US	N/A	The Conversing Circuit allows you to enter different levels of play with the space around you. The attractive visuals encourage one to touch the installation in which triggers different sounds and lights to emit from the transit shelter.
Interactive swings - boston	Public	US	Boston	It is a digital installation based on the idea of creating a digital playground for all ages which consists of 20 ring-shaped swings that change color when in motion. It is a temporary interactive playground installation, designed for community to "engage, exercise, and play" as individual groups.
Musical swings - colorado	Public	US	Colorado	It is an interactive and participatory installation comprised of a series of musical swings that when used all together, compose a musical piece in which certain melodies emerge only through cooperation.
Mirimba bench	Public	US	Fort Lauderdale	It is a park bench consisting of "tuned wooden bars" coded to different notes (red is an A, green a C, and so on). The project is about using music and play to create activity in an underutilized space.
Puffin Jam	Public	Sweden	N/A	Puffin Jam allows people who are waiting to cross the road to play music and communicate with the person on the other side of the crossing. Thought of as a "public ice-breaker", the project invites city dwellers to interact with their urban landscape and each other using sound.

³ Descriptions in the "Short Description" columns of this list and all other initiative lists in the following pages were mostly taken from the websites of each initiative. These websites can be found in Appendix 1.

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Take a seat bench	Public	Switzerland	N/A	Take A Seat bench encourages strangers to meet and interact over a familiar piece of urban furniture, with a series of sensors and LEDs that shine and blink to attract people to sit down.
Disco Crosswalk	Public	UK	Bristol	It is a disco crosswalk that explodes into a "30-second party" when a pedestrian presses the button to cross the street.
Yahoo Bus Stop Derby	Commercial	US	San Francisco	This initiative allowed commuters to play on touchscreens installed at several bus shelters while waiting for the bus.
Streetpong	Public	Germany	N/A	STREETPONG is a concept of urban interaction, developed at the HAWK Hildesheim, Faculty of Art. This initiative allowed commuters to play on touchscreens installed at several bus shelters while waiting for the bus. It is a simulation, not a permanent installation so far but STREETPONG is realized at a real traffic light.
Musical Swings	Public	Canada	Montreal	Musical Swings is an urban interactive installation that stimulates human connections in public spaces. Imagined as a collective experience, the work invites people of all ages and backgrounds to make music together.
Mojo Robot	Public	US	Los Angeles	It is a robot named Mojo in Los Angeles which randomly beams light on passers by. The interactive nature of this robot attracts people to play with it and see where the light beams end up on the street.
Bloomlight	Public	Taiwan	Hsinchu	Bloomlight are a series of lanterns that respond to the passersbys like an organic creature. The dark lanterns curiously bend toward approaching visitors and unfurl a bloom of soft light.
Chairwave	Public	Netherlands	Amsterdam	Chairwave is a bench that starts a conversation with a stranger the moment someone sits down. The seats next to that person unfold once someone sits down, leaving them open as the only options for the following person to sit on. This is the perfect moment to start a conversation.
Open Happiness	Commercial	Singapore	Singapore	It is an installation of Coca Cola, where people embrace the machine with their arms and give it an affectionate squeeze. The sensor detects them hugging it and then spews out a can of Coke afterwards.
Pepsi Max's Unbelievable Bus Shelter	Commercial	UK	London	Pepsi developed an Augmented Reality experience that transformed a bus shelter display into a window that augmented unbelievable scenarios into the real world.
Volkswagen's Fun Theory - World's deepest bin	Commercial	Sweden	Stockholm	It is a trash bin with a sound effect of a long fall once somebody throws a trash into it.
Volkswagen's Fun Theory - Bottle bank arcade	Commercial	Sweden	Stockholm	Bottle bank arcade glass recycling is an innovation in which a glass bottle collection bin was refitted to resemble an arcade machine.
Volkswagen's Fun Theory - Piano stairs	Commercial	Sweden	Stockholm	It is a piano staircase built by the initiative of Volkswagen's Fun Theory to get people to stop using the lift so much.
Balançoires	Public	Canada	Montreal	Balançoires is an installation that plays music notes as people swing on them. When people swing in tandem, the music notes play together to form a melody.
Dancing Traffic Light	Public	Portugal	Lisbon	The Dancing Traffic Light aimed to capture the attention of people waiting to cross a road in Lisbon, Portugal, by displaying a red figure dancing to music rather than the standard static figure. The figure is a low-res representation of people dancing in a nearby booth.
Swingset Generator	Public	Netherlands	Utrecht	It is a swingset generator that allows public transport users at a station to charge their phones whilst having some fun playing.
Touch 'N' Dance	Public	Switzerland	Geneva	Touch 'n' Dance sees complete strangers call out to each other in the middle of the city and hold hands to kick off the music for the length of a song. The installation is freely accessible and comes to life as people take it over.

Source: Author's Analysis

Considering the daily use of public assets, some of them provide unusual use-cases thanks to digitization and the new features that are 'surprising' for citizens taking into account their expectations. Hence, they seem to fit remarkably for '**break the script**' moments, as 66% fall into that category.

Five of these initiatives were led by private firms, namely Volkswagen, Pepsi, and Coca Cola. Due to commercial interests and pressures, such firms have a well-known reputation with out-of-the-box marketing campaigns that ‘wow’ customers, some of which can inspire the public sector.

The second most dominant strategy appears to be creating a synchronized moment with assets that bring strangers together. And the third is boosting sensory appeal, thanks to visual and audio elements added into some of the assets.

Other strategies, such as raising the stakes and deepening the ties via responsiveness, are also seen with some assets. However, they take significantly fewer shares. And moments with reflection (moments of insight and pride) take an even lesser percentage.

4.2.2. Digital Placemaking - Public space interactive experience:

The second largest medium is the public space interactive experiences. These initiatives spark conversations, reactions and foster other types of engaging and entertaining experiences among citizens when they spend time in public spaces. While some are temporary installations, others are permanent and in the form of assets.

21 initiatives were selected in this study, as shown in Table 10:

Table 10. List of Public Space Interactive Experiences

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Urbanimals	Public	UK	Bristol (a touring work)	Urbanimals are a playful pack of origami-like wild beasts who appear in unexpected places across the city, waiting for people to play.
Dance step city	Public	US	N/A	Dance Step City offers a set of dance steps tailored to the environment, that take participants on a playful romp, using a combination of overhead laser projectors, similar to the ones used in laser shows and directional audio to create a rhythmic journey down a section of pedestrian walkway.
Lightning Conductor	Public	N/A	N/A	It is a motion-sensitive experience in the middle of a public space, where people can conduct their very own light orchestra through the movement of their bodies. The more vigorous their movements, the brighter and faster the pulse.
Do Not Press	Public	UK	Oxford	Do Not Press is an experimental game to connect the curious of Oxford and reward playing together. Each button opens the world to a new adventure woven into the fabric of the city of Oxford.
Dancing in Cheonggyecheon	Public	S. Korea	Seoul	An interactive installation using motion recognition technology, 'Dancing in Cheonggyecheon', is a play under Baeggaedari bridge where the audience dances with the animals living in Cheonggyecheon.
Star Light, Star Bright	Public	UK	Oxford	Star Bright Beacons are smart, IoT networked, touch activated lights which appear embedded in the pavements, mounted on walls, clustered together, and found across the city. You touch one and a light starts to pulse someone touches another, and both pulse in unison: brighter now. With all 29 winter constellations located across the city, this is a chance to explore Oxford's landscape and architecture, creating colourful star maps.
Jigi Lagos	Public	Nigeria	Lagos	It is a project which uses connected mirrors to spark unexpected conversations and reactions from people on the streets in Lagos. The mirrors sensed when people walked past and shouted out to them, triggering double takes as people tried to figure out what was going on.
Fibre	Public	Nigeria	Lagos	Fibre is a connected tree that invites passers-by to sit down with it. The tree then imparts its wisdom by "speaking" to them. This idea was developed from a Playable City Lagos workshop. The project's creators envisioned talking "wise" trees being dotted around the city, re-connecting nature to the everyday.
Street Ghost	Public	US	New York	Paolo Cirio's Street Ghosts featured life-sized pictures of people found on Google's Street View printed and posted at the same spot where they were taken.
Show Us Your City	Public	UK	Oxford	Three friendly, nomadic characters will ask the people of Oxford to show them their newly adopted city. These characters will be lifted, rolled and moved between the city's public spaces by the people. The characters will ask questions and suggest challenges all in a quest of discovering new places, finding out how people feel about the city and helping the people of Oxford to meet others they've not met before.
City Hall Tower	Public	Denmark	Aarhus	It is a system whereby the citizens of Aarhus can report problems in their home town via internet, even via smart phone. Each of the moving circular graphical elements on the constructed screen represents a bug at a different stage, with respect to the time passed since reported and its status. Finally, when the problem is resolved, the representation of the bug dies in a white fade out.
Light Drift	Public	US	Philadelphia	Light Drift is a temporary interactive lighting installation drawing viewers into a playful engagement with the artwork. The project creates a matrix of lighting elements that were arrayed along the waterfront, with seating elements on land and floating elements in the water. The orbs on land use sensors to detect the presence of a person and relay a radio signal to the corresponding orbs in the water, allowing visitors to transform the lighting behavior and color of the orbs in the river. As viewers engage and occupy the orbs along the park, the grid of lights in the water becomes an index of the activities on land. Multiple viewers create intersections of linear patterns, encouraging viewers to "play" with each other.

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Aura Installation	Public	Netherlands	Eindhoven	Aura Installation is an immersive audiovisual installation that reinterprets people's emotions as pulsing light compositions. As they sat or laid down on cushions on the floor, a musical composition played out in the background, triggering emotional responses. The visitors' emotional "data" was then analysed and metamorphosed into different forms, colours and intensities of light that were beamed down onto them from above.
Catch Me Now	Public	UK	Multiple cities	Catch Me Now is an interactive light installation, which entices audiences into a merry dance of catch. A small spotlight is moving randomly around a space on its own. When an audience member steps into the light, the spotlight stops completely and expands its light field, inviting the audience member to take center stage.
Tangible Orchestra	Public	UK	Edinburgh	Tangible Orchestra is an interactive light and sound installation that combines electronic and classical music perceived very individually in a three-dimensional space. Single units are triggered by people in close proximity and play a unique instrument, with the collection of individual instruments gathering as people congregate in the project space, eventually creating a complete musical work.
Light Installations	Public	Peru	Lima	It helps citizens conduct their own lighting orchestra with London-based Cinimod Studio's latest installation. The exhilarating and interactive installation gives visitors the power to orchestrate an awe-inspiring performance of light and sound across public space. As 'guest DJ', one assumes the position on the podium and uses their arms to point or gesture, these movements are then translated at real-time into beautiful movements of light and sound across the entire space.
Marbles	Public	Netherlands	Amsterdam	They are molded shapes that are stuffed full of LEDs, sensors, speakers, and other tech goodness so that when someone approaches or touches them they respond appropriately, changing color and making whale-like sounds.
Harpa Light Organ	Public	Iceland	Reykjavik	It is a massive light organ installation, placed on the 4th floor balcony, with a stunning view of the inside of the geometrical glass front and the downtown area. Anyone who passed through could learn how to play in blue or red or green, with quick flashes or swelling pads of light, and impress the whole city with an optical performance.
Tetris	Public	Israel	Tel Aviv	The city of Tel Aviv has turned the facade of its City Hall building into a playable Tetris game. The Tel Aviv-Yafo Municipality building was outfitted with a 32,000-square-foot screen made up of 480 LED lights. Meanwhile, two big joysticks -- nearby five feet tall -- were placed in the middle of nearby Rabin Square, where people were encouraged to play against each other.
Pong	Public	Iceland	Reykjavik	During an event, everyone was invited to play pong using their smartphone as a controller and Harpa as the screen.
Colour by Numbers	Public	Sweden	Stockholm	Colour by Numbers is a permanent light installation in the tower at Telefonplan. Everyone can change the colours in the tower with their mobile phone, by calling or using the app.

Source: Author's Analysis

Categorically, public space interactive experience medium seems to fit greatly for boosting sensory appeal, with more than half of the experiences falling into that category.

The second largest moment is 'Break the Script'. Some of these experiences transform citizens from spectators to actors, while others take them through a playful journey that they never expected.

Another equal share of experiences is found to be a good fit for creating synchronized moments, where the actions and reactions of the crowd in the public space are synchronized around the experience, triggering shared emotions.

Inviting shared struggle, raising the stakes, and deepening the ties via responsiveness are other moments with significantly less share.

Only one experience can be assumed as an example of a ‘stretch for insight’, challenging the citizens to understand how they feel about the city. And only one experience belongs to the recognize others category.

4.2.3. Digital Placemaking - AR-based experience

AR apps provide interactive experiences by creating alternate ‘places’ through different realities without causing any financial burden for physical changes. They also have the feature of creating new meanings and contexts for existing places, making them a great tool for person-to-place interactions.

This is a relatively smaller medium with only six initiatives, listed in Table 11:

Table 11. List of AR-based Experiences

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Vandal's Three Little Pigs	Public	Australia	Sydney	Vandal's Three Little Pigs is an augmented dance experience which help people interact live with the augmented, dancing pigs.
Playable Art Tram	Public	Australia	Melbourne	It is a project that transformed public transport infrastructure into a playable experience with the design that draws upon the language of geometric abstraction and blends it with machine vision and code. It transforms a 32.5 metre long C2-class Melbourne tram into a visual music score – literally making the tram playable. The speed of the tram generates different musical compositions, if it's stationary, accelerating, at full speed, slowing to a stop and so on.
64 Ways of Being	Public	Australia	Melbourne	It is an app that allows players to see Melbourne through new eyes. It is where people and place are connected at 64 locations across the city via augmented reality encounters capturing different ways of being.
UP:RISE	Public	UK	N/A	UP:RISE reflects on the UK's past, present and future and the way he's bringing this to the streets, also ushers in a new era of public art. UP:RISE will be located in the real world via strategically placed QR codes which will enable citizens, via phones, to see and hear his Augmented Reality sculpture.
NO AD	Public	US	New York	NO AD uses augmented reality technology to replace ads with artwork in realtime through your mobile device. The app will work with dozens of common ads and will be updated regularly with new content. It helps a person augment an art piece over a subway wall advertisement.
Snapchat - City painter	Commercial	UK	London	Using the camera on the Snapchat app to view Carnaby Street, City Painter lets users spray great fountains of red and blue paint above Carnaby's shops, decorating the bricks with predesigned graffiti murals (through AR). Anyone on the street can see others spraying their paint, and users can battle to cover the shops in their colours.

Source: Author's Analysis

All initiatives are naturally examples of boosting sensory appeal due to the visual novelty that AR brings. The other examples which take a more minor portion are creating a synchronized moment, raising the stakes, and deepening the ties via responsiveness.

4.2.4. Digital Placemaking - AR-based game

Games are important mediums of engagement that stimulate social interactions through incentivization and ultimately build relationships based on trust (De Lange, 2019).

Having AR technology in a game takes these social interactions and relationships to another level, where citizens construct another reality together.

Five initiatives were selected in this study, listed in Table 12:

Table 12. List of AR-based Games

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Media Graffiti	Public	S. Korea	Seoul	It is a way to enjoy the amusement of graffiti using a media tablet without the environmental pollution caused by spray. It allows people to express their feelings in public using a simple tablet and projections. At the end of the day, the accumulated images will indicate the collected feeling at the site.
Ingress	Commercial	Multiple	Multiple cities	It is an alternate reality game (aka AR) that pits two factions against each other for control of Mind Units the world over. The game turns landmarks and street art into portals that people can interact with on their mobile phones.
Urban Codemakers	Public	Australia	Melbourne	It is a process that began with this game that explores playful ways of marking and activating locations in urban environments through a blend of street art and augmented reality.
Placemaker	Public	Australia	City of Casey	It is a game based on urban codemaking, using a set of 64 urban codes situated in public space and scannable to reveal an augmented reality layer and to collect resources for later stages of the game.
Abhishek Singh playing an augmented Super Mario Bros	Commercial	US	New York	It is an AR game where the user can play Super Mario in the central park.

Source: Author's Analysis

Due to the nature of gaming, it is observed that the examples include the moments of raising the stakes as they trigger a competitive excitement, creating a synchronized moment, inviting shared struggle, and deepening the ties via responsiveness.

Only one example has a 'recognize others' moment, which shows that AR-based games are mostly used for interactions rather than reflections.

4.2.5. Urban Installation - Landscape installation & architecture

Another form of medium is landscape installation and architecture, which allow cities to reshape the environment through changes to the existing amenities or by building new amenities. This includes building bus stops, playgrounds, pools, ski slopes, and other interactive installations, such as a portal, which connects people from two different cities.

These installations are good examples of person-to-person and person-to-place interactions by shifting the focus of places from functional to pleasurable.

19 initiatives were selected in this study, as shown in Table 13:

Table 13. List of Landscape Installation & Architectures

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Urban Rooms	Public	UK	Cardiff	Providing a physical and/or digital 'Urban Room' in every city: a space where people can understand, debate and involve themselves in the past, present and future of where they live, work and play, with prompts asking visitors to provide their thoughts on what makes a "good or bad space".
Mischievous footprints	Public	Japan	N/A	Mischievous Footprints places playful prompts in city streets, drawing out new behaviours such as taking a meandering path or standing still to look around through reanimating roads with playful prompts. Using technology so pavements show the changing behaviour of people, a reflection of the natural evolution of roads, Mischievous Footprints shows that the city landscape is alive with new discoveries.
Im[press]ion	Public	UK	N/A	Im[press]ion is a scaled-up version of the small pin-screen toys for children. It works using a dipole of dynamic and responsive pin-boards to form two unique, connected surfaces. Together, pin boards create dipoles of identical surfaces, that each displays forms recorded and created by pressing the pins of the other.
The loop montreal	Public	Canada	Montreal	It is an interactive installation where members of the public must interact with one another by moving the central lever inside the loop in synchronisation, to spin the loop and activate a projector which then displays animated images of childhood fairy tales on the loop's interior and exterior.
The light seesaw, melbourne	Public	Australia	Melbourne	It is an interactive seesaw that brings a playful, modernised interpretation of the familiar childhood seesaw. Through citizen participation, light is emitted from the seesaw based on its movement up and down. Additionally, there is a gamification element where users can play 'ping pong' against one another by interacting to control the movement and bounce of the animated ping pong ball across the seesaw.
A real-time "portal" to another city	Public	Lithuania	Vilnius	It is a circular "door" for the portal near its train station that connects to a portal in Lublin, Poland, about 600 kilometers (or roughly 375 miles) away. The portals both have large screens and cameras that broadcast live images between the two cities.
Piscina no Minhocao	Public	Brazil	Sao Paolo	It is a shallow pool filled with water treated with chlorine and brought by four water trucks, that is 50 meters long along the width of one of the lanes, shallow (30 cm) and chlorinated. It is a 1-day installation.
Park and Slide	Public	UK	Bristol	Enabling people to navigate the streets of their city in a new way, the slide is a simple architectural intervention and a playful response to the urban landscape. The installation requires public participation to be activated. The person on the slide becomes the performer, while spectators either side watch on. The end result is a set of collective memories and stories that people pass on.
Ski Slope	Public	Denmark	Copenhagen	It is the ski slope of the green waste power plant in the industrial district.
Bottlestop	Public	US	Lexington, Kentucky	It is a sustainable bus shelter with used soft drink bottles. Apart from the use of the soft drink bottles, the lighting used at the bus stop is solar powered making this artistic bus stop probably the most eco-friendly bus stop of the world.
Library bus stop	Public	Turkey	Istanbul	It is a bus stop where Bookcases placed in bus stops with a wide selection of books for those who are looking to spend their leisure time while waiting for the bus.
SWAY'D	Public	US	Salt Lake City	It is an installation that has seemingly un-orchestrated subtle movements which are reminiscent of a field of grass or trees reacting from the wind. Though each rod sways independently to its own rhythm, each individual maintains harmony with the whole; all swaying together in a symphony orchestrated by the supple forces of nature - no one part more important than the whole.

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Come Ear to Me	Public	UK	N/A	Dotted across the city, multiple "come ear to me" devices look to attract the attention of people passing by and remotely consult with them by posing various questions about play. As a user would pass, a motion sensor would be triggered and the device would call out. This call to action would stop the user and they would be posed with a question.
Adult Playground	Public	US	Boston	It is an adult playground where people can sit on the swing and play or just spend time for leisure. The lawn on D Park is a good example of placemaking as it aids many other activities other than just the playground. It is a place for the community to get together, listen to music or just spend some time in the city.
Super Pool	Public	US	N/A	The Super Pool is a bigger version of the legendary Burning Man installation which has a 5,000 square foot immersive LED playground where participants can interact with circular pads of light through their own unique movements.
Pulse and Bloom	Public	US	N/A	An entirely interactive experience, Pulse and Bloom is made up of 25 mechanical lotus flowers. When participants touch the flowers, they light up to the specific rhythms of their heartbeats.
Domino Effect	Public	Canada	Montreal	It is an installation, composed of a set of giant sonorous and illuminated dominos which consists of 120 dominos distributed across several stations. The public is invited to play with sets of 10 giant, brightly coloured dominos in different ways, creating a wide range of sound and lighting effects.
Loop	Public	US	Chicago	It is an interactive installation, inspired by the zoetrope – an optical device invented in the 19th century – this retro-futuristic machine creates playful animations with the simple pull of a lever, bringing to life 13 classic fairytales. It is a cross between a music box, a zoetrope and a railway handcar. Once activated, the cylinder becomes animated with light and sound, creating the illusion of motion in the drawings.
Cinetransat	Public	Switzerland	Geneva	Cinetransat is an open air cinema where people go from an individual classic cinema situation - where they are told to be quiet at first crunch of popcorn - to a collective experience where the crowd applauds the good guys, boos the baddies, shares picnics, sings and dances, together.

Source: Author's Analysis

Our study showed that these initiatives are a good fit for creating a synchronized moment, with close to half of the initiatives having this feature. Furthermore, these examples prove that building installations can trigger personal contacts and shared feelings among people in a public space, even if these public spaces are in different countries, like in the example of the 'portal' to another city.

The second largest category is 'boost sensory appeal' moments, and the third is the 'break the script' moments which provide playful prompts, unusual public assets with surprising features and designs, and out-of-the-box installations that "wow" citizens using technology.

Some initiatives, although minor, provide 'trip over truth' moments since they prompt empathy towards other citizens using technology. A relatively few others can be examples of raising the stakes, inviting shared struggle, and deepening the ties via responsiveness.

4.2.6. Urban Installation - Urban art installation

Urban art installation is another form of urban installation that combines artwork with public spaces to change citizens' perceptions, triggering feelings and generating new information about their familiar surroundings. It also facilitates dialogues between observers of the artwork in the public space.

At the same time, urban art installations can be used to trigger reflections about self among citizens who visit public spaces.

14 initiatives were selected in this study, listed in Table 14:

Table 14. List of Urban Art Installations

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Interactive Light Façade for São Paulo Hotel	Public	Brazil	Sao Paolo	A work of urban art and a 30-story intervention that is visible both day and night. In the daytime, a coat of metal sheet creates a pixelated skin in blue, gray and gold. This urban camouflage was designed from the analysis of on-site ambient noise by using parametric software.
BruumRuum!	Public	Spain	Barcelona	BruumRuum! is a permanent interactive light art installation in Barcelona that invites passing visitors—young and old alike—to participate in turning the entire plaza into a glorious game in which the sounds of city life become a light-filled visual jazz.
Prrr...	Public	Canada	Montreal	Prrr... is a light-based work occupying the empty space above a building with a rich history and drawing from the neighbourhood's memories. Attracted by the glow emanating from imposing blinds, passersby are invited to go down this unassuming street and discover the small house that hides there, unaffected by the passage of time.
Ilot de Chaleur	Public	Canada	Montreal	The Island of Warmth is an interactive light installation that lets visitors generate the fire's sounds and movements. Sensors placed under the floor of the platform allow festival goers to determine the movements of the flames and the music created by the sounds of the fire. As they dance and jump, the visitors kindle the embers, fan the flames and send sparks flying. Flames leap and swirl, creating warmth, light, smoke, and music.
L'esprit Des Lieux	Public	Canada	Montreal	It is a permanent immersive installation at the First Nations Garden of the Montreal Botanical Garden. An animated painting where light, video and music reveal nature in a new light, L'Esprit des lieux brings the majestic poplar tree of the First Nations Garden to life by offering an experience inspired by Indigenous culture imbued with poetry and wonders.
City Gazing	Public	Multiple	Singapore, Beijing and Amsterdam	City Gazing is a light art design produced worldwide and it invites the viewer to experience the brings feeling of seeing the earth from space to people on earth.
LightScraper	Public	N/A	N/A	The LightScraper is a custom built aluminium structure fabricated with a layer or semi translucent mesh. A single computer and two projectors are used to bring the visuals to life. The LightScraper also acts as a giant musical instrument, people's location influence the melodies emitting from the sculpture.
Literature vs. Traffic.	Public	Canada	Toronto	It is an installation where a group picks up a street or city area typically associated with noise, pollution, and traffic jams, and turns it into a place of quietness by filling the place over 10,000 books.
Pulse	Public	US	Philadelphia	Pulse is an interactive public artwork which utilizes a high-pressure misting system of specialized pumps that create an ultra-fine, fog-like, cool mist that quickly evaporates.
Theory of Time	Public	India	Goa	It is an immersive shadow art installation with street-long piece features a net of suspended letters that create typographic shadows on the concrete floor, when sunlight shines down on it during the day. The letters spell out phrases related to the passage of time, such as "Time works wonders" and "Time is an illusion."
Time Changes Everything	Public	India	Delhi	It is an art installation with an innovative twist on mural art. Instead of paint, the artist manipulated the sun's rays to create this ever-changing artwork. By cutting letters from thin sheets of metal and drilling them to the building at precise angles, over 70 words are cast along its facade.
A Comma, A	Public	US	Houston	It is a public art creation that revolves around glowing projections of beautiful poems, novels and prose. Illuminating the surrounding walls and ground of the M.D. Anderson Library at the University of Houston.
MASSIVart	Public	Canada	Toronto	It is an interactive art installation, the "Emotophone" that encourages passersby to fall in love (again) using a famous questionnaire by psychologist Arthur Aron by talking through long twisted pipes while answering questions proven to foster a quick connection between strangers.
Interconnected	Public	US	Charlotte	Interconnected is a public artwork that uses data from airport systems to create ebbing and flowing abstract forms on three high-definition digital screens.

Source: Author's Analysis

All initiatives except one can naturally boost sensory appeal. This comes from the DNA of artworks and aesthetics, which appeal to the senses of sight and hearing. The rest of the examples include other moments of elevation and connection.

In terms of reflections, there is only one example, which is recognizing others, taking the passers-by on a journey in history.

4.2.7. Urban Installation - Physical city asset

Physical city assets are used to reinterpret the everyday environments in a city. These are the assets that citizens can stumble upon in their daily journeys and interact with them any time they like. These assets encompass telephone boxes, musical instruments, billboards, board games, and many other interactive physical assets.

These assets' broad uses prove that city governments can be extremely creative.

14 initiatives were selected in this study, listed in Table 15:

Table 15. List of Physical City Assets

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Teleconfusion	Public	UK	Cardiff	A free telephone box on both sides of the Barrage, which connect only to each other. Users are sitting eating lunch in the Outer Lock Crossing and a phone, which they hadn't noticed before, starts ringing. Users pick it up and, prompted by the conversation starters painted on the phone box, start to chat with someone they haven't met from the other side of the Barrage.
Paths	Public	UK	N/A	Paths is a public space musical instrument and light installation, focusing on cyclists and their movement in monitored spaces that will initiate "synchronised and beautiful audio and visual representation."
Supernatural	Public	UK	Bristol	"Supernatural" is a series of musical instruments embedded in historic places around Bristol, with the aim of conjuring up the "natural and mystical history specific to each location."
Knock, Knock	Public	UK	Oxford	Knock, Knock is a way to link two disparate parts of Oxford in a unique and playful way. A mysterious front door would appear over night in two locations in Oxford and invite passers-by to knock on it. When someone knocks on a door, the knock will magically be heard on the linked door and if someone in the other location hears it, they can reply by knocking back, creating an instant and surprising conversation.
A Walk with My DIY Pet	Public	S. Korea	Seoul	These fish-shaped pets, called BLIMPS, are balloons that float along a narrow walkway and swim across the Cheonggyecheon stream. This site-specific event evokes coordination, strolling, and participation.
Play Me, I'm Yours	Public	Multiple	Multiple cities	Located on streets, in public parks, markets and train stations the pianos are available for everyone to play and enjoy.
Yellow-framed Cape Town	Public	South Africa	Cape Town	It is a frame installation that helps tourists to take the best of this monument, but also to remind to the local people the beauty of their Mother City.
Monopoly in the park	Public	Brazil	San Jose	San Jose Monopoly in the Park is a giant game board that citizens can rent, and step into the roles of the shoe, the thimble and other game pieces as citizens roll the giant dice and work their way around the board, trying to beat out the San Jose Police Officer's Association "Go Directly to Jail" space.
Double Happiness	Public	Hong Kong	Hong Kong	It is a swing set out of a converted advertising billboard.
Quicksilver Ramp	Commercial	Denmark	N/A	It is a real skateboard ramp mounted on the side of a bus shed, providing pass time activities for the waiting passengers.
Street Scrabble	Public	US	Seattle	It is a giant Scrabble (board game) installed in a public space.
Shadow WiFi	Public	Peru	N/A	It is an interactive billboard that connects beach goers to a free wi-fi network that will work as long as they are sitting in the shade.
The Trampoline Bridge	Public	France	Paris	The Bridge Trampoline made up of 3 inflatable modules with a 30m diameter, similar to huge buoys. A net trampoline is tethered in the centre of each buoy. The PVC buoys are held together by ropes to form a stable, freestanding structure.
Expo 2020 Waterfall	Public	UAE	Dubai	It is a volcano-like waterfall structure with three openings that allow entry to its core and allow viewing from three vantage points.

Source: Author's Analysis

Categorically, the physical city asset medium seems to fit greatly for creating synchronized moments, with the vast majority of assets falling into that category. This makes the need for physical city assets to create shared feelings quite evident.

Also, nearly half of these assets can be examples of breaking the script, thanks to the unexpected experiences they provide in public spaces.

The rest of the moments include boosting sensory appeal, inviting shared struggle, and deepening the ties. These assets require collective action to engage, and hence, they improve social connections among citizens.

Yellow-framed Cape Town is the only example that provides a ‘trip over truth’, reminding people about the local beauties of the city. It is a good example of triggering reflections in the public space.

4.2.8. Urban Installation - Interactive display

The interactive display is another form of urban installation which creates engagement by sharing textual, video, or audio content with the public through electronic or physical displays placed in public spaces. This study provides a broad range of examples spanning from display boards, and signposts to laser shows and fountain shows.

The interactive display is a great medium to create unique experiences with dynamic use of content that is shaped based on the context of the surrounding area and the people in that area.

Nine initiatives were selected in this study, listed in Table 16:

Table 16. List of Interactive Displays

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Every Thing Every Time	Public	UK	Manchester	Every Thing Every Time is an installation that consists of a custom-built split flap display board bearing poetry with the words displayed not 'written' by a person, rather randomly created by data gathered from the daily lives of the city's inhabitants.
Happy place	Public	UK	N/A	Happy Place reinterprets signposts as experiences to move visitors and locals both physically and emotionally across the city. Signposts equipped with interactive displays will reveal a small excursion, but just if the person in front of it looks happy.
Whispering clouds and animals	Public	N/A	N/A	"Whispering clouds" light up and display messages, inviting communication between people in the same area. Bech calls it a "playful physical manifestation of the digital cloud." Two (or more) massive stunning clouds hang over the city – lighting up and displaying people's messages they encourage participants to play and connect.
Every passing moment	Public	UK	Liverpool	Every Passing Moment (EPM), was a mobile public artwork that tracked and recorded any discoverable Bluetooth device to automatically seed a flower in a virtual garden projected onto an urban screen.
TXtual Healing	Public	US	Multiple cities	TXtual Healing contextualizes text messaging into user generated story telling, whether in public space or as an indoor installation. Projects include displaying text messages in speech bubbles pairing them with graphic content, writing messages out in the hand of graffiti artists, interactive movies where the audience text's the dialog and triggers the movie to play forward, mixed media pieces using permanent graphics with projected messages, and live performance pieces such as freestyle rapping their text messages.
Volkswagen's Fun Theory - Speed camera lottery	Commercial	Sweden	Stockholm	It is a tool built by the initiative of Volkswagen's Fun Theory, which photographs the speeders and give them a citation. And that money goes to a pot. But if a person obeying the law his picture will also get snapped he'll be entered into a lottery and win some of that money from those feeders.
Light Show - Burj Khalifa	Public	UAE	Dubai	Burj Khalifa (the tallest building in the world, located in Dubai) has the laser show with stylish and energetic lighting choreography that blends with a colourful kaleidoscope of images.
Fountain Show	Public	UAE	Dubai	It is a fountain show that comes to life every 30 minutes starting from 6pm throughout the week. The illuminated fountain sway to the melodies of popular tracks including Michael Jackson's Thriller, Andrea Bocelli and Sarah Brightman's Time to Say Goodbye and many more.
Projection Mapping - Singapore	Public	Singapore	Singapore	The projection mapping in Singapore was vivid digital projections of flowers and bubbles, which were displayed across the gardens' eight "supertrees"—tree-like vertical gardens measuring as tall as 165 feet. The 20-minute projection display used 120 light fixtures and 24 flame projectors.

Source: Author's Analysis

Interactive displays are a good fit for boosting sensory appeal in the crowds and creating a synchronized moment at the same time, triggering the same feelings and reactions among the spectators simultaneously.

Also, they can help cities break the script by disrupting the routines with novelties. And some have features of deepening the ties via responsiveness.

Furthermore, they are one of the rare mediums which can serve for recognizing others and trip over truth moments.

4.2.9. Experience App & Content – Storytelling

Storytelling apps are great mediums to trigger a social exchange between a storyteller and a listener. They enable citizens to get immersed in different stories about the city and the people, using smartphones as the main interface channel. By conveying different stories and contexts, these apps help citizens find different meanings of the same space, which translate those spaces into ‘places’. This way, citizens connect with each other, strengthen their social bonds, and improve mutual understanding.

Storytelling apps are the most suitable among all mediums to trigger reflections among citizens.

Nine initiatives were selected in this study, listed in Table 17:

Table 17. List of Storytelling Apps

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Porth Teigr Trail	Public	UK	Cardiff	It is a site-specific storytelling audio app that takes users on a journey around Porth Teigr, exploring its past and present in compelling ways.
i.Detroit	Public	US	Detroit	It is a project which tells the stories of 100 Detroiters through image & sound.
Safe Haven	Public	UK	Devon	The Safe Haven App transports visitors back in time to historic house, Seale-Hayne, telling the story of this former military hospital, during the First World War through augmented reality, coupled with an immersive soundscape that leads visitors around the grounds.
Situations	Public	UK	Bristol	Situations produced a new kind of public artwork for Bristol, Missorts, delivered as an app for iPhone & Android. The app delivers original sound and music to users as they walk around the St. Mary Redcliffe Cathedral area of the city. It reflects the past and present of the Redcliffe area of the city and the diversity of writings, objects and architectures that are found there. The work features ten original and interconnected short stories.
Empath	Public	UK	N/A	Empath enables users to become someone else and navigate their life for a while through an audio augmented reality experience where the drama is in the player's head, controlled by decisions they make in the real world, like where to walk or who to call.
Soho's history of youth rebellion, told by the National Trust	Public	UK	London	It is an immersive soundscape app that recounts the hedonistic lifestyles and colourful stories from the characters who lived, worked and played in Soho from WW2 to the present day.
The bridge tales	Public	UK	Bristol	The Bridge Tales App combines dramatic reconstructions, voice overs, photography, short films and interactions with Twitter to display the history and untold stories of the Bridge in a fun, educational and enjoyable way.
Carnaby echoes	Public	UK	London	Carnaby Echoes is an app that reveals the hidden stories behind 10 decades of local music history. As visitors walk around the street, they can see a host of commemorative plaques at key historic locations. The app enables people to be immersed in the sounds, stories and characters that relate to these plaques.
Dadaocheng Information Platform	Public	Taiwan	Taipei	The Dadaocheng information platform encourages a mental connection between users and the site, provides knowledge from history to current events, from the story of celebrities to local architecture. Thus, related information enhances the impression of users regarding spatial quality and the urban condition.

Source: Author's Analysis

It is found that all storytelling apps, except one, can be considered examples of deepening the ties via responsiveness. And all storytelling apps, except one, can be regarded as examples of the trip over truth since they somehow rewire citizens' understanding of their city or the people of their city and ultimately change the way they see the world. Besides, this medium also has the moments of 'boosting sensory appeal', 'recognize others', and 'connecting to meaning'.

4.2.10. Experience App & Content - Themed trails

Themed trails are great ways to take citizens through a memorable journey where they can uncover the city's unique points of interest and explore hidden gems.

These apps are similar to storytelling apps. What they have in common is that they usually contain audio and video features combined with augmented reality and GPS to immerse citizens into a story. Thus, they are also suitable mediums for triggering reflections among citizens.

Eight initiatives were selected in this study, as shown in Table 18:

Table 18. List of Themed Trails

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Salisbury Trails	Public	UK	Salisbury	Salisbury Trails enables visitors to move around Salisbury's historic streets and discover the city's hidden histories. The app provides self-guided themed trails that encourages visitors to uncover the city's unique heritage and points of interest, whether off the beaten track, exploring hidden gems or following some fantastic routes for shopping, eating and drinking in the city centre. Visitors are able to hear stories about an attraction, read about it and see related images.
Yuru Be Istanbul	Public	Turkey	Istanbul	It is an app that encourages people to walk in different trails of Istanbul, by giving missions, points, badges and rewards. The purpose of this app is to motivate people to do physical exercise.
Battersea Power Station Heritage Trail	Public	UK	London	It is a heritage trail app for London's Battersea Power Station, with three key elements: a location-based heritage trail for older visitors, a game for younger visitors, and an augmented reality (AR) experience which allows people the chance to access parts of the building still under construction.
Artist-led soundwalks in Belfast	Public	UK	Belfast	Soundwalks project aims to use sonic art to engage the public through the development of a locative mobile phone app. It uses GPS to track your location within the city and trigger site-specific sounds to provide unique listening experiences.
The diamond street	Public	UK	London	The Diamond Street App takes you on a journey through London's historic jewellery quarter of Hatton Garden either from a distance or as a dynamic, immersive audio walk through the city streets.
My Europe - Navicup App	Public	Estonia	Multiple cities	It is a trail app with four trail options —the green trail, the grants trail, the digital trail and the culture trail. Participants can choose how many trails to pass. When arriving at a checkpoint, three multiple-choice questions will appear on the screen. The participant has to answer the question to continue the walk. It does not matter if the answer is right or wrong, the goal is to pass the checkpoints and gain new knowledge. Among all those who pass at least one trail, there will be a draw Estravel vouchers (value EUR 100).
Alternative Heritage Walks	Public	UK	N/A	Lucienne and Yarli will guide users through the streets of Chinatown down to Liverpool's historic docks, as well as through the reconstructed and imaginary spaces within Yarli's artwork.
Beautiful Routes	Public	Spain	Barcelona	It is an app that measures the "beauty" of specific locations within cities and then chooses a route between two locations in a way that maximizes the beauty along it through an algorithm.

Source: Author's Analysis

The vast majority of these apps contain 'boost sensory appeal' moments. Also, as these apps trigger reflections, 'trip over truth' and 'deepen the relationship via responsiveness' are the other moments these apps leverage.

In this category, Yuru Be Istanbul app distinguishes itself from the others as it is the only one with 'raise the stakes' and 'multiply milestones' since it contains motivating steps for citizens to take action. It is also an example of 'create a synchronized moment', which are not the typical moments that themed trail apps provide.

4.2.11. Experience App & Content - Location-based game

Location-based game is a popular urban game genre that frames the city as a playing board (De Lange, 2019, 357). They provide citizens with a playful way to engage with the environment in the city, using smartphones as the main interface.

Five initiatives were selected in this study, listed in Table 19:

Table 19. List of Location-based Games

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Tower of London games	Public	UK	London	The Tower of London is a location-based game that would take players around less visited areas of the Tower of London and engage them with its colourful history in quizzes.
Wayfinder live	Public	Multiple	Bristol, Barcelona and the Melbourne	Wayfinder Live is a free-to-play location-based augmented reality game. Scanning urban codes on the street unlock fragments of animation and sound documenting traces of a hidden micronation.
Battle Paris	Commercial	France	Paris	Battle Paris is an application allowing users to join a "battle" between different Paris neighborhood teams.
Chromaroma	Public	UK	London	Chromaroma was a London-based game using players' Oyster cards and Barclays Cycle Hire accounts. Points are awarded depending on the stations and journeys users complete on the London Underground and London Buses, as well as using 'Boris bikes'.
Run That Town	Public	Australia	N/A	Run That Town is a resource management game with a twist – it lets users take control of any neighbourhood in Australia. The game allows players to use real census data to discover who's who in their area, and make decisions that will sway popular opinion, boost or retard growth, and impact their citizens' quality of life.

Source: Author's Analysis

It is observed that all of the location-based games are examples of raising the stakes, as they all contain a game mechanism that puts players under competitive pressure, and all except one are examples of 'invite shared struggle' moment. Some are examples of creating a synchronized moment, as they involve team play.

4.2.12. Experience App & Content – Other digital materials

Other digital materials are digital archives and interactive mapping websites, covered as separate mediums.

Two initiatives were selected in this study, listed in Table 20:

Table 20. List of Other Digital Materials

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Connecting Physical & Digital Archives	Public	UK	Cardiff	An installation of archival objects, allowing immediate access to relevant digitised archival film, audio and photographs to make the history more visible (e.g. anchor chains, monuments to seafaring, shipping-inspired public artworks), so this seemed like a way to begin that process on a smaller scale. On getting closer, users see a sign prompting them to download the Porth Teigr app to unlock a layer of connected digital archival material. Within the app, users scan the objects to open up a piece of digital archival material from the local collection.
MyBlockNYC	Public	US	New York	It is an interactive mapping website that captures and presents personal video accounts of the life and culture of New York City in order to create an intimate, evolving, and complete portrait of this great city. Users upload videos geographically, building the first fully interactive video map of New York City.

Source: Author's Analysis

Here, the examples include boosting sensory appeal (due to visual elements) and trip over truth (since it takes citizens on a journey in history), recognizing others, and inviting shared struggle.

4.2.13. Event - Pop-up intervention

Events have a crucial role in everyday life of cities (Richards and Palmer, 2010), promoting cultural exchange among citizens and encouraging person-to-person interactions. And eventful cities are those that blur cultural boundaries and improved diversity (*Ibid.*). They provide citizens with many reasons to visit public spaces. In fact, research by PWC shows that the most compelling reason to visit a public space is for a specific event (94.3%) (Goddard, 2017).

Pop-up interventions are popular mediums of events that are used as part of tactical placemaking strategies of cities. They have the feature of generating a buzz by creating memorable experiences.

Six initiatives were selected in this study, listed in Table 21:

Table 21. List of Pop-up Interventions

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Chocomel Experiment	Public	Netherlands	Amsterdam	It is a water gun shootout in Amsterdam streets.
Traffic Mimes	Public	Colombia	Bogota	The traffic mimes fanned out through the city, mocking lawbreakers, applauding courteous drivers, and dramatizing the frustrations and challenges of citizens moving through traffic.
Mobile Podcast Studio	Public	Netherlands	Amsterdam	It is a metro line that becomes a mobile podcast studio
500 Plates	Public	US	Ohio	500 Plates brought together 500 residents in Akron, Ohio from each of the city's 22 neighborhoods at one, 500 foot-long table on the underused Innerbelt Freeway for a shared community meal.
Diner en Blanc	Public	France	Paris	Diner en Blanc is a world-wide flash-mob dinner experience, with people dressed in white.
Restaurant Day	Public	Finland	Helsinki	The phenomena restaurant day is a food carnival originating from Helsinki in 2011 that happens four times a year, where anyone can set up a pop-up restaurant, café or bar in their home or office, on street corners, or at gardens, parks, and beaches.

Source: Author's Analysis

Due to their nature of disrupting the routines, all initiatives can be considered examples of breaking the script. Also, all initiatives, except one, can be considered examples of creating a synchronized moment since they involve attendance and the shared experience of many citizens all together.

Others include 'trip over truth' and 'invite shared struggle' moments.

4.2.14. Event - City social game

City social games are mediums that increase the willingness of citizens to engage with each other by facilitating interactions with strangers. These games use buildings, landscapes, and streets (Qabshoqa, 2018) to create memorable experiences within the urban context, triggering joy and imagination among citizens. These games are mostly intended for adults, helping them escape their daily routine in the city.

Five initiatives were selected in this study, listed in Table 22:

Table 22. List of City Social Games

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Biketag colour keepers	Public	UK	Bristol	Part exploration, part battle, part collaboration, part art experience, colour keepers was a chance to play on bikes in the city, set colours free and co-create light trails using the biketag light system.
2.8 Hours Later	Public	UK	London	It is a city-wide zombie chase game that regularly takes places in Sheffield and London.
District	Public	Multiple	Multiple cities	District uses the joy of discovery and urban exploration to motivate active living at any level. District brings cities to life with virtual checkpoints and challenges spread across the city. With no set route and no set distance, users choose how they explore. Walk, jog, or run - District is for everyone.
Clued Upp	Commercial	Multiple	Multiple cities	CluedUpp creates immersive outdoor experiences that bring families, friends and colleagues together in unique and innovative ways.
Flora London Marathon	Public	UK	London	The Flora London Marathon is a marathon for every runner, inspired by the New York City Marathon, but its ongoing success has made it the benchmark against which all others are now judged.

Source: Author's Analysis

All five games can create a synchronized moment and inviting shared struggle due to the nature of games, and some can be examples of raising the stakes as they contain competitive pressure.

4.2.15. Event – Festival

Festivals are the type of events that not only create collective joy but also foster a sense of community in the city. They gather citizens from different communities and create a powerful sense of belonging.

Although festivals are one of the widespread mediums of peak moments, we have included 4 of them in this study, listed in Table 23:

Table 23. List of Festivals

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Amsterdam Light Festival	Public	Netherlands	Amsterdam	Amsterdam Light Festival is a placemaking hotspot – in luminescent artwork, transforming the streets into a dazzling gallery space. Femke Schaap’s Virtual Fairground riffed on the fractious relationship between the city’s residents and visitors to create an immersive, kaleidoscopic light playground that both groups would enjoy – subversive digital placemaking at its most playful.
Digital playgrounds – Vivid Festival Sydney	Public	Australia	Sydney	It is a free annual festival where art and technology intersect. It incorporates light, music and innovative ideas to transform Sydney into a wonderland of interactive, digital sculptures and installations. It offers an app that provides free audio tours across installations to help guide visitor interactions and encourage exploration across the different sites.
Counter Play	Public	Denmark	Aarhus	It’s an international play festival gathering a diverse, vibrant play community every other year in Aarhus, Denmark.
Now Play This Festival	Public	UK	London	Now Play This is a festival of experimental game design running at Somerset House in London each Spring, showcasing interactive and playful work as part of the London Games Festival.

Source: Author’s Analysis

All festivals can be considered as creating synchronized moments as they trigger shared feelings among many citizens simultaneously.

Some can be examples of boosting sensory appeal and inviting shared struggle.

4.2.16. Exhibit - Immersive digital exhibit

Immersive digital exhibits are great ways to provide unique sensory experiences to citizens, which have grown popular in the last decade. They heavily use digital technologies such as augmented reality and artificial intelligence, and arts such as music and visual arts in order to push the boundaries of art.

This form of exhibit grew mainly inside museums due to physical and digital requirements. However, recently, they started to emerge in several public spaces. This trend made them great mediums for bringing strangers together and improving person-to-person interactions.

Four initiatives were selected in this study, listed in Table 24:

Table 24. List of Immersive Digital Exhibits

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Camden People's Museum	Public	UK	London	Camden People's Museum is a digital space (an immersive exhibition) that brings to life the stories of its diverse inhabitants through augmented reality as well as live performances.
Museum Experimental Guide: National Museum of Singapore	Public	Singapore	Singapore	It is an app that provides a mixed reality museum experience that engages visitors through gamification and dynamic content.
Atelier Lumieres by Culturespaces	Public	France	Paris	The Atelier Lumieres "Workshop of Lights" experience showcases work from artists Dalí and Gaudí in a "hypnotic atmosphere" and allows viewers to journey through the artistic world using digital technology.
Artvive	Public	Austria	Vienna	The Artvive app is used by museums to help visitors better understand the art exhibits by providing the user with more information about the artist and the context that influenced the art piece.

Source: Author's Analysis

It is seen that all initiatives are examples of boosting sensory appeal as they engage citizens with immersive content. Also, they provide examples of deepening the ties via responsiveness, trip over truth, and raising the stakes.

4.2.17. Exhibit - Interactive digital exhibit

Interactive digital exhibits are other forms of exhibits that have vital importance in attracting citizens to public spaces. These exhibits, unlike the physical ones, not only create information but also trigger interaction actively involving visitors emotionally, socially, and physically using ICT (Economou, 2008).

Three initiatives were selected in this study, listed in Table 25:

Table 25. List of Interactive Digital Exhibits

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Project What If	Public	UK	Bristol	It is a major science centre exhibition about the curiosity of a single city, with digital exhibits where products such as Human Clock (where a visitor becomes a clock's face and has to trace out a minute with their arm.) are exhibited.
RE:CODE	Public	Australia	Melbourne	Re:Code is an exhibition which described the language of urban codes as they are defined within the experimental field kit. Urban codes are made of nouns, verbs and adjectives.
Interactive Wall Kit	Public	N/A	N/A	These are interactive installations which takes the exhibition onto another level by adding projection mapping, using MadMapper. When the user walks up to the piece, they can interact with a certain section and it triggers that area of the city to come to life through different animated projections.

Source: Author's Analysis

It appears that these initiatives include breaking the script, creating a synchronized moment, and boosting sensory appeal.

4.2.18. Exhibit - Physical exhibit

Physical exhibits are the traditional form of exhibits that mainly contain physical elements. Their positive impact on social connections is similar to that of other forms of exhibits.

Three initiatives were selected in this study, listed in Table 26:

Table 26. List of Physical Exhibits

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Gromit Unleashed	Public	UK	Bristol	Gromit Unleashed was a public charity art trail, in which 80 giant artist-decorated fibreglass sculptures of Gromit were displayed on the streets of Bristol and the surrounding area. At the end of the art trail, the sculptures were auctioned to raise funds for Wallace & Gromit's Grand Appeal, the Bristol Children's Hospital Charity.
Shaun in the City	Public	UK	Multiple cities	It is a public charity arts trail, in which 120 giant, artist and celebrity-decorated fibreglass sculptures of Shaun the Sheep were displayed in famous locations and green spaces around London and Bristol.
Talk to Me	Public	US	New York	It is an exhibition that focuses on objects that involve a direct interaction, such as interfaces, information systems, visualization design, and communication devices, and on projects that establish an emotional, sensual, or intellectual connection with their users. Examples range from a few iconic products of the late 1960s to several projects currently in development—including computer and machine interfaces, websites, video games, devices and tools, furniture and physical products, and extending to installations and whole environments.

Source: Author's Analysis

These initiatives provide examples for breaking the script since they contain unusual elements that make the experience unforgettable. Also, they are examples of 'trip over truth' and 'deepen the ties via responsiveness' moments.

4.2.19. Other - Public design

Public design is one of the mediums that is rarely used to help cities create engaging experiences. They have similarities with the guerrilla placemaking activities that citizens do. However, public design usually involves regulatory involvement.

Two initiatives were selected in this study, listed in Table 27:

Table 27. List of Public Designs

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Temporary Play Street Order	Public	UK	Bristol	A Temporary Play Street Order (TPSO) lets residents close a street to traffic so children can play. Citizens can apply to shut their street as often as once a week for up to three hours.
Labplatz	Public	Germany	Berlin	It is a parking space which was turned into public space.

Source: Author's Analysis

While both initiatives create synchronized moments, Labplatz is also an example of breaking the script since this situation involves a novelty for the residents.

4.2.20. Other – Recognition

'Recognitions' are humanly gestures of city governments usually associated with a milestone or a pride event. These initiatives can include giving compliments, surprising with a gift, telling someone a joke, or other actions that make citizens distinguish one day from the next and feel proud and happy about themselves.

Two initiatives were selected in this study, listed in Table 28:

Table 28. List of Recognitions

Initiative Name	Public vs. Commercial example	Country	City	Short Description
Celebrating Teacher's Day	Public	Turkey	Ankara	It is a surprise gesture for teachers in 1,883 schools in Turkey, by sending flowers to celebrate the Teacher's day.
This Country is Grateful to You	Public	Turkey	Ankara	It is a customized voice (instead of a beep) which says "This country is grateful to you" when a war veteran uses the buscard in a bus.

Source: Author's Analysis

As expected, both initiatives are examples of 'recognizing others' moments. Additionally, 'This Country is Grateful to You' can be considered an example of deepening the ties via responsiveness.

5. ANALYSIS, DISCUSSION, AND RECOMMENDATIONS

5.1. Research Analysis

The research aimed to evaluate the theoretical propositions, including the applications of **the three tactics of the moment-centred lens** (create moments with additional value or quality that are unexpected and unprecedented, change the influencers, alter the perceptions through time and space), **the building blocks of peak moments** (place, interactions, reflections) and **the potential of creating a taxonomy** by mapping peak moments with public sector initiatives. Moreover, it sought some additional insights into the three attributes: medium of interaction, sociality, and addressable citizen size.

Looking at the top two medium categories in the sample (digital placemaking and urban installation), it would be fair to claim the mixed-use of digital placemaking (which relies on virtual spaces) with traditional placemaking practices (which rely on physical spaces), which is in line with the theoretical expectations mentioned in the building blocks section.

Secondly, as seen from the presented examples, cities worldwide use different mediums, and most of these mediums are used to create more than one type of peak moment. This can be interpreted as a lack of a unified view on selecting strategies to create peak moments in cities. However, this preliminary mapping can provide a basis for a hypothesis for future studies, which is **the potential inclination of cities to use some mediums for specific peak moment types, and particular attributes**. This is shown in Table 29 and Table 30:

Table 29. List of Moments (as per their highest share in mediums)

Type of moments	Highest share in:
Break the script	Pop-up interventions
	Digitized city assets
	Recognitions
	Physical exhibits
Raise the stakes	Location-based game
	AR-based game
	City social game
Boost sensory appeal	AR-based experience
	Immersive digital exhibit
	Urban art installation
	Themed trails
Trip over truth	Storytelling app
	Themed trails
Stretch for insight	Public space interactive experience - the only medium
Multiply milestones	City social game
	Themed trails
Recognize others	Recognition
	Other digital materials
Create a synchronized moment	City social game
	Festival
	Public design
	Pop-up intervention
Invite shared struggle	City social game
	Location-based game
	AR-based game
Connect to meaning	Storytelling app - the only medium
Deepen the ties via responsiveness	Storytelling app
	AR-based game
	Themed trails

Source: Author's Analysis

Table 30. Analysis of Other Attributes

Medium of interaction analysis
All pop-up interventions, physical exhibits, and public designs are physical .
All storytelling apps, themed trails, immersive digital exhibits, and other digital materials are digital .
All interactive digital exhibits are phygital .
Addressable citizen size analysis
All festival and physical exhibit mediums address to large citizen segments .
All storytelling apps, themed trails, AR-based experiences and other digital materials address to medium citizen segments .
Sociality analysis
All city social games, festivals, interactive digital exhibits, physical exhibits, public designs and urban installations contain an engagement that takes place on a social level.
All themed trails, recognitions and other digital materials contain an engagement that takes place on an individual level.

Source: Author’s Analysis

Thirdly, it is clear that the applications of moment-centred lens provide examples for all of the tactics mentioned to increase the discrepancy between perceived and expected outcomes to maximize positive feelings. For instance, the initiatives with ‘break the script’ moment can be examples of the first tactic: “Create moments with additional value or quality that are **unexpected and unprecedented**”. Also, the initiatives with ‘boost sensory appeal’ moment can be examples of the second tactic: “Reshape the perception by **changing the influencers - mood, subjective needs, and beliefs**”. Lastly, many digital and phygital mediums such as AR experiences and games can be examples of the third tactic: “**Alter the perception through time and space**”.

Another finding derived from the selected method of mapping is the relatively minor use of moments of insight and pride compared to moments of elevation and connection. This may show that the **moments of insight and pride** (which mostly rely on ‘reflections’) may not be the most preferred positive defining moments compared to **moments of elevation and connection** (which mostly rely on ‘interactions’). However, further research is needed to validate this argument and to understand the root causes if this argument holds.

Lastly, in terms of the mutual exclusiveness and collective exhaustiveness of the classifications, the developed taxonomy seems promising. However, more examples should be found to test the success of this taxonomy.

5.2. Discussion

Cities worldwide may adopt different happiness lenses at different times to make their citizens happy, and there is no one-size-fits-all lens to address the happiness problems in cities.

The current gap in the cities, however, is the inadequate adoption of the moment-centred lens as opposed to the two dominant lenses. City governments usually overlook the importance of moment-centred happiness lens, and ultimately, they have never considered ‘creating peak moments’ as one of their roles.

Moment-centred happiness lens can play a vital role in the happiness of cities in many ways:

- It empowers cities to find creative ways to create happy moments by expanding the city government’s influence from amenities and services to all interactions in the city, including those that occur among citizens themselves.
- Apart from its significance on citizen happiness, moment-centred happiness strategies would have a ripple effect on other liveability domains: By encouraging people to spend more time in public spaces, it would increase safety and economic activities. In addition, thanks to the social connections that it creates, it would establish a greater sense of belonging among citizens.
- The peak moments that are the products of out-of-the-box initiatives would make the city hyped in the international arena and improve city’s attractiveness against competitor cities.
- Unlike amenities, which are static material structures that are difficult to be reshaped as per the changing citizen demographics, needs and urban plans, moments are more flexible for change, as they mostly create dynamic dematerial components such as experiences.

On the other hand, moment-centred lens also has its shortcomings that one can criticise. For instance, despite the ‘dematerialization’ narrative in the thesis, looking at the outcome of the study, it would be **unfair to claim a total dematerialization** with moment-centred lens. An example would be the urban installations, which can work in the opposite direction, increasing the manufacturing of material goods. To mitigate, cities can prioritize the categories with less material production, such as events, experience apps and content, and some of the digital placemaking initiatives.

A second critique would be made on the ‘**techno-deterministic**’ position in this thesis. Although some initiative examples rely on simple ‘low-tech’ or ‘no-tech’ ideas, the majority of the examples presented in this thesis have digital or phygital roots. This may cause city governments to fall into the trap of technological solutionism and focus on gimmicks rather than innovation while working on out-of-the-box solutions. In other words, the motivation for PR may dominate the actual happiness outcome.

One can also highlight **the risk of hedonic adaptation**: All happy moments that are created, including those that are part of extraordinary experiences, would eventually be taken for granted due to hedonic adaptation, which ultimately reduces the happiness generated by the experience (Bhattacharjee and Mogilner, 2014; Nelson et al., 2009). Citizens who become addicted to chasing new moments may put extra pressure on city governments to sustain innovation while trying to revitalize the old assets for further use by citizens who lose interest. One mitigation would be to manage the expectations of citizens well from the start and avoid material solutions (such as landscape installations) as much as possible. The good news is that the adaptation of people to happiness that they get from experiences is slower than that of possessions (Dolan, 2014).

Impact measurement can also be brought up as a challenge: Despite the recent advancements in measurement technologies, there is still a great challenge in associating the subjective inputs (the ‘inputs’ and ‘personality’ that are depicted in the moment-based happiness framework) with the emotional outputs. Because the way people experience emotions differ, mentally and physiologically (Jahromi *et al.*, 2019), there is still a reliance on self-assessment measurement techniques that are prone to fail in delivering the feelings in full accuracy. Besides, due to the difficulty in measurement, the **resonance** factor, which is defined as “the capacity of individuals to feel affected by another person, object, music, etc.” (Brulé and Munier, 2021, 114), may be omitted in this lens.

Another criticism that may be levelled against this lens would be the potential risk of nudging and privacy violations through moment-centred lens applications.

5.3. Recommendations

Expecting the moment-centred lens to be the single solution for all happiness problems would be a narrow-minded approach. All three lenses should be used across different application areas to increase happiness in the short-term, mid-term, and long-term. For instance, a liveability-centred lens can be used for initiatives of **long-term nature** (e.g. large infrastructural projects), aiming to provide access to the ideal standard of living for happiness. Service-centred lens, on the other hand, can be used for initiatives of **mid-term nature** (e.g. digitizing citizen complaints), aiming to contribute to life satisfaction by providing frictionless experiences to citizens. And finally, moment-centred lens can be used for initiatives of **short-term nature** (e.g. an app that offers audio stories of historical buildings), aiming to provide moment-based happiness through instant experiences in city life.

To achieve more balance among these lenses, moment-centred lens needs to be embedded in cities' happiness agendas. For continuity of outputs, city governments should transform themselves into 'the architect of peak moments' and spend the effort thinking of ways to help the citizens better seize the moments.

Today there are several moment-centred happiness attempts as part of the 'playful city' trend. "City as a center of entertainment"; "city as everyday theater" (De Lange, 2019, 355), and "City-as-a-theme-park" concepts are only a few of them. Yet, city governments need a more structured approach to embed the moment-centred lens in their DNA. And the taxonomy created in this thesis can be used as the first step in formulating this approach.

6. CONCLUSION

Citizen happiness has played a crucial role in defining cities' agendas over the last few decades, especially after the changing relationship between cities and citizens.

Today, the confusion on happiness terms and the failed neoliberal agendas that once promised to deliver on the changing citizen expectations put happiness itself in question in the public administration field. The materialist strategies that heavily focused on amenities and possessions to bring happiness have not only failed to do so but also created damage to the environment and individual well-being, which ultimately reduced collective happiness in cities. Concerning the increasing competition between cities worldwide, and the pressure that comes with the changing citizen expectations, city governments are now seeking alternative lenses and methods to deliver happiness to their citizens.

This thesis has touched on the lenses that city governments can adopt to achieve happiness in their cities. The liveability-centred and service-centred lenses, the two lenses that have long dominated city governments' agendas, were explained and criticised for their weaknesses. As an alternative, the moment-centred lens is presented. The outputs of this lens have already been experimented with by many cities worldwide. Nevertheless, they were usually ad-hoc activations that mainly prioritized the "WoW factor" rather than the impact of a holistic view on happiness. In other words, cities have not fully reaped the benefits of the moment-centred lens yet. To do that, city governments require a systematic approach that embeds this lens into their happiness agendas with a clear strategy and a long-term implementation mindset.

This thesis does not intend to provide a comprehensive formula or guiding principles for cities to follow the moment-centred happiness lens. Rather, it aims to provide a taxonomy for the applications of this lens and its use-cases across different mediums from different countries in order to trigger more interest in unearthing its potential. An empirical study would be needed to further deep-dive into moment-centred lens by evaluating the peak moments and mediums across more attributes that were covered in the 'Considerations' section of this thesis and then comparing them with those of other lenses.

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APPENDICES

Appendix 1. List of Initiative Websites

#	Initiative Name	Website
1	Past & Future Views	https://calvium.com/explaining-the-ideas-at-ideescape-porth-teigr/
2	Porth Teigr Trail	https://calvium.com/explaining-the-ideas-at-ideescape-porth-teigr/
3	Digital Town Crier	https://calvium.com/explaining-the-ideas-at-ideescape-porth-teigr/
4	Connecting Physical & Digital Archives	https://calvium.com/explaining-the-ideas-at-ideescape-porth-teigr/
5	Teleconfusion	https://calvium.com/explaining-the-ideas-at-ideescape-porth-teigr/
6	Urban Rooms	https://calvium.com/explaining-the-ideas-at-ideescape-porth-teigr/
7	Project What If	https://calvium.com/projects/we-the-curious-project-what-if/
8	Salisbury Trails	https://calvium.com/projects/salisbury-trails/
9	i.Detroit	https://www.marcuslyon.com/artworks/idetroit/
10	Yuru Be Istanbul	https://calvium.com/projects/hidden-cities/#:~:text=all%20this%20possible,-.The%20Hidden%20City%20Experience,%2C%20Hamburg%2C%20Deventer%20and%20Trento.
11	Battersea Power Station Heritage Trail	https://calvium.com/projects/battersea-power-station-redevelopment/
12	Safe Haven	https://calvium.com/projects/safe-haven/
13	Situations	https://calvium.com/projects/situations/
14	Tower of London games	https://calvium.com/projects/tower-of-london/
15	Vandal's Three Little Pigs	https://vandal.sydney/portfolio/world-square-three-pigs/
16	Camden People's Museum	https://www.arcade.ltd/camden-alive-partners-with-arcade/
17	Amsterdam Light Festival	https://amsterdamlightfestival.com/en/artworks/edition/edition-7
18	Every Thing Every Time	https://futureeverything.org/portfolio/entry/naho-matsuda-every-thing-every-time-cityverve/
19	Starling Crossing	https://umbrellium.co.uk/projects/starling-crossing/#:~:text=Starling%20Crossing%20is%20an%20interactive,product%2C%20please%20visit%20Starling%20Technologies.
20	Museum Experimental Guide: National Museum of Singapore	https://advisor.museumsandheritage.com/blogs/eight-great-digital-placemaking-projects-around-globe/

#	Initiative Name	Website
21	Atelier Lumieres by Culturespaces	http://www.dpem.com/blog/insights/trends-in-digital-placemaking-and-building-brand-community-online
22	Stop, smile, stroll	https://www.playablecity.com/projects/stop-smile-stroll/#:~:text=Stop%20Smile%20Stroll%20will%20transform,'stop%20and%20walk'%20routine.
23	Hello lamp post	https://www.hellolamppost.co.uk/
24	Urbanimals	https://www.playablecity.com/projects/urbanimals/
25	Shadowing	https://wireframe.ca/portfolio-item/shadowing/
26	Biketag colour keepers	https://www.playablecity.com/projects/biketag-colour-keepers/
27	Empath	https://dev.playablecity.com/projects/empath/
28	Dance step city	https://www.playablecity.com/projects/dance-step-city/
29	Happy place	https://www.playablecity.com/projects/happy-place/
30	Make your rhythm	https://www.playablecity.com/projects/make-your-rhythm/
31	Mischievous footprints	https://www.playablecity.com/projects/mischievous-footprints/
32	Paths	https://techspark.co/blog/2016/10/04/let-people-know-favourite-playable-city-shortlisted-project-help-win-30k-prize/
33	Im[press]ion	https://techspark.co/blog/2016/10/04/let-people-know-favourite-playable-city-shortlisted-project-help-win-30k-prize/
34	The Conversing Circuit	https://techspark.co/blog/2016/10/04/let-people-know-favourite-playable-city-shortlisted-project-help-win-30k-prize/
35	Artist-led soundwalks in Belfast	https://calvium.com/projects/belfast-soundwalks/
36	The diamond street	https://calvium.com/projects/rachel-lichtenstein-diamond-street/
37	Soho's history of youth rebellion, told by the National Trust	https://calvium.com/projects/soho-stories-national-trust/
38	The bridge tales	https://calvium.com/projects/bridge-tales/
39	Carnaby echoes	https://calvium.com/projects/carnaby-echoes/
40	Digital playgrounds – Vivid Festival Sydney	https://eventavision.com/vividsydneyfestival2016/#:~:text=Vivid%20Sydney%20is%20a%20festival,all%20to%20enjoy%20%E2%80%93%20for%20free.

#	Initiative Name	Website
41	Interactive swings - boston	https://static1.squarespace.com/static/57625b763e00be9642e737fe/t/5b101fd1758d46ee7037a244/1527783395194/TecniPlay+Research+Report
42	Musical swings - colorado	https://static1.squarespace.com/static/57625b763e00be9642e737fe/t/5b101fd1758d46ee7037a244/1527783395194/TecniPlay+Research+Report
43	The loop montreal	https://static1.squarespace.com/static/57625b763e00be9642e737fe/t/5b101fd1758d46ee7037a244/1527783395194/TecniPlay+Research+Report
44	The light seesaw, melbourne	https://www.engadget.com/2012-06-19-light-up-seesaw.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2x1LmNvbS8&guce_referrer_sig=AQAAACeWiy0SBXGm6cAd.JnsLLVsv5.Jm6.JrPBziR0Ub9s1rFXoxPhXPps-DjFXGb97c6SfKdfApAXD-QDceOE3W6yRnxuQB-XLK-eIPWvWn3edDfcYMe0iXzx748TGczuqa7fQha.z-2Q71FVYL5LAuVuzn09sAkWWSQk7LX0Dxbh317wF
45	A real-time "portal" to another city	https://www.calvertjournal.com/articles/show/12920/high-tech-portal-connects-vilnius-lublin-poland-lithuania
46	Lightning Conductor	https://www.fastcompany.com/3046850/7-ideas-for-a-more-playable-city-from-sociable-benches-to-musical-intersections
47	Mirimba bench	https://www.fastcompany.com/3046850/7-ideas-for-a-more-playable-city-from-sociable-benches-to-musical-intersections
48	Supernatural	https://www.fastcompany.com/3046850/7-ideas-for-a-more-playable-city-from-sociable-benches-to-musical-intersections
49	Puffin Jam	https://www.fastcompany.com/3046850/7-ideas-for-a-more-playable-city-from-sociable-benches-to-musical-intersections
50	Take a seat bench	https://www.fastcompany.com/3046850/7-ideas-for-a-more-playable-city-from-sociable-benches-to-musical-intersections
51	Whispering clouds and animals	https://tinebech.com/whispering-clouds-shortlisted/
52	Wayfinder live	http://ludea.net/wayfinderlive/
53	RE:CODE	https://www.melbourne.vic.gov.au/SiteCollectionDocuments/knowledge-fellowship-report-2017-troy-innocent.pdf
54	Playable Art Tram	https://www.melbourne.vic.gov.au/SiteCollectionDocuments/knowledge-fellowship-report-2017-troy-innocent.pdf
55	64 Ways of Being	https://www.melbourne.vic.gov.au/SiteCollectionDocuments/knowledge-fellowship-report-2017-troy-innocent.pdf
56	Knock, Knock	https://www.playablecity.com/projects/knock-knock/
57	Do Not Press	https://www.playablecity.com/projects/do-not-press/
58	Media Graffiti	https://www.playablecity.com/projects/media-graffiti/
59	A Walk with My DIY Pet	https://www.britishcouncil.kr/en/uk-korea-2017-18/events/playable-city
60	Dancing in Cheonggyecheon	https://www.britishcouncil.kr/en/uk-korea-2017-18/events/playable-city

#	Initiative Name	Website
61	Star Light, Star Bright	https://www.playablecity.com/projects/star-light-star-bright/
62	Piscina no Minhocao	https://www.archdaily.com.br/br/01-153675/piscina-no-minhocao http://g1.globo.com/sao-paulo/noticia/2014/03/em-manha-fria-arquiteta-leva-piscina-de-50-metros-para-o-minhocao.html
63	Interactive Light Façade for São Paulo Hotel	https://www.archdaily.com/769567/estudio-guto-requena-creates-interactive-light-facade-for-sao-paulo-hotel
64	Jigi Lagos	https://www.playablecity.com/projects/jigi-lagos/
65	My Europe - Navicup App	https://estonia.representation.ec.europa.eu/uudised-ja-uritud/europe-day-2022_et?fbclid=IwAR3arLVe8ihWxRA7PSlyCFN0TLEtXdHW5mMRYi8jHYMhOBO8oY5J6scblk
66	Fibre	https://www.playablecity.com/projects/fibre/
67	UP:RISE	https://www.bom.org.uk/2021/06/23/uprise-coming-to-a-city-near-you/
68	Alternative Heritage Walks	https://www.fact.co.uk/event/virtual-tour-alternative-heritage-walks
69	Counter Play	http://www.counterplay.org/the-what-why-of-counterplay/
70	Park and Slide	https://www.lukejerram.com/urban_slide/
71	Street Ghost	https://www.digitalartarchive.at/database/general/work/street-ghosts.html
72	Play Me, I'm Yours	http://www.streetpianos.com/
73	Temporary Play Street Order	https://www.bristol.gov.uk/streets-travel/playing-out#:~:text=A%20Temporary%20Play%20Street%20Order,your%20first%20playing%20out%20session.&text=the%20dates%20and%20times%20that%20you%20would%20like%20your%20street%20closed
74	2.8 Hours Later	http://cyberparks-project.eu/agora/blog/2014/11/27/playable-city/
75	Chocomel Experiment	https://www.youtube.com/watch?v=ZU7mN7KMhys
76	Disco Crosswalk	https://www.bloomberg.com/news/articles/2016-11-07/what-the-playable-cities-concept-gets-wrong
77	Ingress	https://nanopdf.com/download/the-importance-of-play-in-digital-placemaking-emily-sun_pdf
78	Battle Paris	https://www.jcdecaux.com/fr/mobility-trends/come-out-and-play-towards-emergence-playable-city
79	Chromaroma	https://www.jcdecaux.com/fr/mobility-trends/come-out-and-play-towards-emergence-playable-city
80	Yahoo Bus Stop Derby	https://clios.com/awards/winner/interactive/yahoo-bus-stop-derby-9080

#	Initiative Name	Website
81	Streetpong	https://www.jcdecaux.com/fr/mobility-trends/come-out-and-play-towards-emergence-playable-city
82	Ski Slope	https://shanesutton.com/project/3674/
83	Traffic Mimes	https://solutions.thischangeseverything.org/module/traffic-mimes-in-bogot%C3%A1
84	Dadaocheng Information Platform	https://www.researchgate.net/publication/356284909_Digital_Placemaking_for_Urban_Regeneration_Identification_of_Historic_Heritage_Values_in_Taiwan_and_the_Baltic_States
85	Show Us Your City	https://www.playablecity.com/projects/show-us-your-city/
86	Gromit Unleashed	https://en.wikipedia.org/wiki/Shاون_in_the_City
87	Shaun in the City	https://en.wikipedia.org/wiki/Gromit_Unleashed
88	MyBlockNYC	https://www.facebook.com/MyBlockNYC/
89	Talk to Me	https://www.moma.org/calendar/exhibitions/1071?installation_image_index=10
90	Urban Codemakers	https://dl.acm.org/doi/pdf/10.1145/3284389.3284493?casa_token=fP6gFEt1apMAAAAA:S6gNSKY9BTCfb-8S6KgPvFGO7czK7bRx4JftXnMrulxWYS_bYRLz1PuPPilyG2uOPvPYyu9kKgVH
91	Run That Town	https://dl.acm.org/doi/pdf/10.1145/3284389.3284493?casa_token=fP6gFEt1apMAAAAA:S6gNSKY9BTCfb-8S6KgPvFGO7czK7bRx4JftXnMrulxWYS_bYRLz1PuPPilyG2uOPvPYyu9kKgVH
92	Placemaker	https://www.researchgate.net/publication/331419079_Play_about_Place_Placemaking_in_Location-based_game_design
93	District	https://exploredistrict.com/
94	Abhishek Singh playing an augmented Super Mario Bros	https://www.businessinsider.com/super-mariobros-central-park-abhishek-singh-augmented-reality-video-2017-6
95	NO AD	https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1223&context=crpsp
96	Artvive	https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1223&context=crpsp
97	City Hall Tower	https://cavi.au.dk/research/city-bug-report/
98	Yellow-framed Cape Town	https://secretcapetown.co.za/cape-town-yellow-frame-tour/
99	Monopoly in the park	http://www.seecalifornia.com/attractions/san-jose-monopoly-in-the-park.html
100	BruumRuum!	https://artec3.com/bruumruum

#	Initiative Name	Website
101	Musical Swings	https://www.dailytouslesjours.com/en/work/musical-swings
102	Bottlestop	https://list25.com/25-amazing-bus-stop-concepts/
103	Library bus stop	https://www.listal.com/viewimage/14162866
104	Double Happiness	https://www.we-find-wildness.com/2011/02/didier-fiuza-faustino/ https://highlike.org/text/didier-faustino-12/
105	Every passing moment	https://link.springer.com/chapter/10.1007/978-1-84882-727-1_7
106	SWAY'D	https://www.archdaily.com/142763/sway%25e2%2580%2599d-interactive-public-art-installation-daniel-lyman
107	Light Drift	http://www.howeleryoon.com/work/742/light-drift
108	Prrr...	https://www.quartierdesspectacles.com/en/about/partnership-productions/work/33/prrr/
109	Ilot de Chaleur	https://www.creos.io/en/portfolio/island-of-warmth/#:~:text=The%20Island%20of%20Warmth%20is,the%20sounds%20of%20the%20fire.
110	L'esprit Des Lieux	https://www.atomic3.ca/projet.php?id=96
111	Aura Installation	https://www.dezeen.com/2017/11/25/aura-installation-translates-emotions-into-beams-of-light-studio-nick-verstand-dutch-design-week/?li_source=LJ&li_medium=bottom_block_1
112	Come Ear to Me	https://calvinfreeman.ie/lets-talk-about-play
113	Adult Playground	https://www.smartcitiesdive.com/ex/sustainablecitiescollective/five-best-placemaking-initiatives-us/991756/
114	Mojo Robot	https://www.smartcitiesdive.com/ex/sustainablecitiescollective/five-best-placemaking-initiatives-us/991756/
115	Labplatz	https://www.smartcitiesdive.com/ex/sustainablecitiescollective/tactical-urbanism-berlin-sees-parking-spots-turned-public-spaces/45661/ http://www.stiftungfreizeit.com/2012/07/labplatz-siesta.html
116	Catch Me Now	https://tinebech.com/portfolio-item/catch-me-now/
117	Mobile Podcast Studio	https://popupcity.net/observations/amsterdams-metro-line-54-becomes-a-mobile-podcast-studio/
118	Bloomlight	https://popupcity.net/observations/the-curious-street-light-that-bends-to-meet-you-as-you-pass-by/
119	City Gazing	https://www.vouw.com/city-gazing
120	Chairwave	https://www.vouw.com/chairwave

#	Initiative Name	Website
121	Open Happiness	https://technabob.com/blog/2012/04/12/coca-cola-open-happiness-hug-vending-machine/
122	TXtual Healing	http://www.txtualhealing.com/blog/?page_id=2
123	Pepsi Max's Unbelievable Bus Shelter	https://grandvisual.com/work/pepsi-max-bus-shelter/
124	Volkswagen's Fun Theory - World's deepest bin	https://www.youtube.com/watch?v=cbEKAwCoCKw
125	Volkswagen's Fun Theory - Bottle bank arcade	https://www.youtube.com/watch?v=vj0Ukc2u5R8 http://www.pacebutler.com/blog/bottle-bank-arcade-glass-recycling/
126	Volkswagen's Fun Theory - Piano stairs	https://www.youtube.com/watch?v=SBymar3bds
127	Volkswagen's Fun Theory - Speed camera lottery	https://medicalfuturist.com/swedish-speed-camera-lottery-healthy-living/
128	Quicksilver Ramp	https://www.toxel.com/inspiration/2008/10/03/creative-bus-stop-advertisements/
129	Tangible Orchestra	https://www.pinterest.dk/pin/140174607126836745/ https://www.picaroon.eu/tangible-orchestra.php
130	Interactive Wall Kit	https://www.bareconductive.com/blogs/community/designing-a-beautiful-interactive-environment-with-the-interactive-wall-kit
131	LightScraper	https://mymodernmet.com/10-beautiful-art-installations/ https://mymodernmet.com/the-lightscraper-interactive/
132	Light Show - Burj Khalifa	https://whatson.ae/2022/01/burj-khalifa-laser-show-2022/
133	Fountain Show	https://whatson.ae/2022/01/burj-khalifa-laser-show-2022/
134	Super Pool	https://www.huffpost.com/entry/burning-man-2014-art_n_5632531?utm_hp_ref=mostpopular
135	Pulse and Bloom	https://www.huffpost.com/entry/burning-man-2014-art_n_5632531?utm_hp_ref=mostpopular
136	Street Scrabble	https://www.trendingcity.org/street-scrabble-seattle/
137	Projection Mapping - Singapore	https://www.bizbash.com/production-strategy/audiovisual-lighting/media-gallery/13482585/16-mindblowing-examples-of-projection-mapping
138	Light Installations	https://www.we-heart.com/2011/04/09/dj-light-installation-lima/
139	Literature vs. Traffic.	https://ebookfriendly.com/street-toronto-10-thousand-books-pictures/
140	500 Plates	http://creativeinterventionists.org/500-plates

#	Initiative Name	Website
141	Pulse	https://worldlandscapearchitect.com/janet-echelman-interactive-public-artwork-comes-to-life-at-dilworth-park/
142	Theory of Time	https://mymodernmet.com/shadow-art-installation-theory-of-time-daku/
143	Time Changes Everything	https://mymodernmet.com/daku-sundials-innovative-graffiti/
144	A Comma, A	https://www.trendhunter.com/trends/a-comma-a
145	MASSIVart	http://massivart.com/project/hullmarks-emotophone/
146	Marbles	https://www.vice.com/en/article/vvz8kj/interactive-public-sculptures-respond-to-human-touch-and-provide-a-digital-playground-for-residents
147	Domino Effect	https://worldlandscapearchitect.com/the-domino-effect-interactive-installation-is-helping-montrealers-forget-the-winter-gloom/#.YadXO9BBxPZ
148	Loop	https://rnrchicago.org/navy-piers-loop-new-interactive-public-art-installation-in-polk-bros-park/
149	Beautiful Routes	http://geoawesomeness.com/the-new-algorithm-finds-the-most-beautiful-route-from-a-to-b/
150	Shadow WiFi	https://www.trendhunter.com/trends/skin-cancer
151	Snapchat - City painter	https://www.wired.co.uk/article/snapchat-launches-local-lenses
152	Clued Upp	https://www.cluedupp.com/pages/about-us
153	Balançoires	https://nanopdf.com/download/the-importance-of-play-in-digital-placemaking-emily-sun_pdf
154	Interconnected	https://www.wfae.org/arts-culture/2018-07-20/the-story-behind-interconnected-clts-new-digital-public-artwork
155	Harpa Light Organ	https://icelandmonitor.mbl.is/news/culture_and_living/2016/06/09/harpa_concert_hall_turned_into_an_instrument/
156	Tetris	https://money.cnn.com/2016/09/06/technology/tetris-building-tel-aviv/index.html#:~:text=The%20city%20of%20Tel%20Aviv,up%20of%20480%20LED%20lights.
157	Pong	https://owenhindley.co.uk/ext/harpapong/
158	Dancing Traffic Light	https://newatlas.com/smart-dancing-traffic-light/33849/
159	The Trampoline Bridge	https://www.faireparis.com/en/projets/faire-2017/trampoline-bridge-1284.html#:~:text=The%20Bridge%20Trampoline%20made%20up,its%20environmental%20impact%20is%20minimal.
160	Expo 2020 Waterfall	https://blog.wego.com/expo-2020-waterfall/#:~:text=Intended%20to%20help%20people%20relax,place%20to%20play%20with%20water

#	Initiative Name	Website
161	Diner en Blanc	https://www.dinerenblanc.com/
162	Celebrating Teacher's Day	https://www.ciddigazete.com/ankara/mansur-yavas-tan-ogretmenlere-cicekli-kutlama-h42537.html
163	Swingset Generator	https://www.newsflare.com/video/301164/swingset-generator-lets-public-transport-users-charge-phones-while-having-fun
164	This Country is Grateful to You	https://onedio.com/haber/mansur-yavas-in-gazilerimiz-icin-uygulamaya-koydugu-bu-vatan-size-minnettar-ego-karti-anonsu-1004354
165	Flora London Marathon	https://www.tcslondonmarathon.com/
166	Restaurant Day	https://www.finedininglovers.com/article/restaurant-day-2013-play-restaurant-one-day
167	Now Play This Festival	https://nowplaythis.net/
168	Touch 'N' Dance	https://happycitylab.com/en/project/touch-n-dance/
169	Cinetransat	https://happycitylab.com/en/project/cinetransat-8/
170	Colour by Numbers	http://www.colourbynumbers.org/en/still.html

Source: Author's research

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