WorldWide Observatory for Attractive Cities

SMARTCITY EXPO WORLD CONGRESS

2024 Edition

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Foreword

I want to thank Ester Nicole Arvilla and Paloma Moya, who helped refresh the data model and format this document, both students at Universidad Francisco de Vitoria. (Madrid)

To my University, Francisco de Vitoria (Madrid) for supporting this research.

To Fira Barcelona, SmartCityExpo & WW Congress for inspiring this challenge.

To my beloved cities, magical places for human social development and solid foundations for mankind's future dreams.

Note to reader: If you had the chance to read the WW Observatory for Attractive Cities 2020 (handle), 2021 (handle) or 2022 (handle), or Edition 2023 (handle), then you can skip the model description and go directly to chapter 6, City Attractiveness Ranking 2024

All related info at Web: www.attractivecities.com

Index

1.Introduction. Cities Attractiveness Model

1.1 Why cities Attractiveness. The competition for talent

Cities are the epicenter of human activity, the central nervous system of economic growth, social interaction and innovation. In the current context of global stability (both in economy and peace), cities are the hotbed for creativity and human development. We live, indisputably, at the best moment in the history of mankind. Technology allows us to increasingly dominate our environment and enjoy a longer and more comfortable life, yet we must not make an idol of it: it's an enabler and catalyzer, not a destiny.

The main challenge for modern cities is how to become A*ttractive* enough to both retain brilliant brains and draw talented citizens and investors. This will be fundamental for cities that want to play a role in the 4th Industrial Revolution. All the most prosperous cities have undergone a profound social transformation due to the past industrial revolutions. A surge of new disruptive technology affecting the way we work, manufacture, trade, and develop human activity has attracted talented citizens. In addition, this new technology fosters the creation of highly qualified and well-paid jobs, which then, pushes any given city's attractiveness to new heights. With rampant new AI technology in place and talented people developing it, we must provide them with a place to connect, engage and encounter each other: THE CITY.

Talent is the key to the city's economic development. Without sufficient talent, the city is not innovative, it does not generate enough wealth or employment, it is not a leader in powerful new initiatives. Even worse, the talent attraction has a positive acceleration feedback: talent calls talent but also the opposite, the lack of attractiveness makes talent migrate, so the chances of being attractive are reduced. It is therefore a fierce competition to achieve this resource: talented citizens.

One of the main factors in making this happen is the exercise of tolerance, the door opening to anyone who demonstrates talent and a willingness to contribute to the city's development while respecting local laws and customs. Thus, we can say that the recipe for prosperity of most advanced cities has been determined by the rule of the 3 T's: Technology, Talent and Tolerance (Florida, 2007), with technology being the lynchpin of each industrial revolution and its main enabler.

Western cities need additional human capital. Eastern and emerging countries are working on building up their own human capital (their young populations) and retaining it to serve as the cornerstone of their prosperity.

The main aim of this research is to understand what is being done and what is needed to make a city the most attractive for these talented citizens. There are many partial studies about employment, safety, happiness, expat treatment, economy, cost of living, etc. but none has attempted to give talented citizens an integrated vision of this new world of cities. Let's try to cover that need.

1.2 WHAT. SCOPE

The main objective here is to answer how, within a 4th Industrial Revolution framework, the city is competing to become more attractive for talent, and furthermore to define which elements enhance attractiveness, and what options exist for cities to do so. The practical consequences are twofold:

1.- Help citizens choose the best city in the world for them to realize their full potential, their goals as a citizen and as a person, and make the greatest possible contribution to society.

2.- Advise mayors and city managers on how to create the most attractive city possible in order to retain and attract talented citizens, and furthermore build a more prosperous, innovative, fair, inclusive and human city. Help them design, prioritize and implement a:

- ✓ Long-term Transformational Plan (with main focus on physical conditions and social trends)
- ✓ Short/Mid-term Improvement/Integrated Plan (with main focus on citizen needs and leveraging technology for a digital transformation)

1.3. Methodology. City Attractiveness = City Magnetism x City Profitability

By how cities are prepared and presented to talented citizens and investors, and on the other side, how citizens decide whether to move to another city or not, we can conclude that we are in front of a similar human decision process to a marriage or to a purchase. It looks like a marriage because there is a certain compromise between the parties, some love is necessary, or at least attraction, and it is not a decision that lasts a short time. It is not exactly a marriage because one part, the city, simply offer the conditions for the talent to stay or come, but without talent, city will languish then disappear. It is more like a purchase. The talented citizen "buys in" to live in a city and contribute to its economic and human development, and the city "sells" its attractions, advantages, and even offers special advantages, as incentives. There is no economic transaction, although it is clear that a price is paid due to differences in purchasing capacity (net-purchasing power) for the same citizen with the same kind of job but done in different cities. We have, therefore, that it is a human decision process among many alternatives, where mercantilist/trading benefits are involved, but also aesthetic and ethical questions about the possible destination cities. Do I like that city? And what about that city's lifestyle? These seem to be previous questions to those related to terms & conditions (wage, safety, taxes, environmental care, services.)

Like any human decision involving a compromise between two parties, the motivation to settle in a city due to its attractiveness responds to two main drivers: the emotional and the rational. (Tybout, Calder, 2019) We will call the emotional component City Magnetism ('I like it, I feel comfortable, it enriches me, it inspires me'); and we will label the rational component City Profitability ('it is a good deal, with good city services, well-being is high, cost of living is affordable, conditions match my circumstances, preferences and lifestyle'). In the rational sphere there are no emotions, only purely functional and economic facts. But humans are emotional beings, so the emotional component is very relevant, often the most.

Magnetism x Profitability

OUR DEFINED 7 POSTULATES:

- Cities are taking the key role as Centers for Human Development. There is a hidden, bloodless, but **fierce competition to attract the creative class** people, those who will rule the Innovation led by 4th Industrial Revolution.

- **City Prosperity Recipe = 3T's (Technology, Talent, Tolerance)**

- 4th Industrial Revolution is about Artificial Intelligence/Robotics. **Artificial Intelligence (AI)** is made of: **Massive Data** (from IoT world, social networks) + **Computing Power** (from large Cloud Datacenters) + **Algorithms (made by Talent**). No single city leads this revolution, but no one wants to be left behind, so competition for talented citizens is even more crucial.

- **SmartCities** approach uses technology to transform/improve Cities and **makes them more attractive for talented citizens.**

- **City Attractiveness = City Magnetism x City Profitability (yield)**
  A human decision, like a purchase. Left brain, emotional component (Magnetism) + Right brain, rational component (Profitability)

- **City Magnetism = Conditions that make you like/love the City**. Mostly permanent, slowly evolving conditions that impact people emotionally. To significantly change them → invest in a 10+y City Transformation Plan

- **City Profitability (Yield) = Services that you receive from the City compared to the Cost associated with Living in that City = CITIZENSHIP CONTRACT**. Cities invest on a 2+y Improvement / Quick Transformation Plan (Mostly Virtual)

2. City Magnetism

It's the magnetic part that attracts us to a specific city. In essence, a city is a sum of the collective past and present experiences (Marias, Ridruejo, Chueca, 1983) that make up the city's past identity and present dynamism. This emotional component has a lot to do with our tastes, preferences and feelings, and must match up perfectly with the city's aesthetic and ethical facets.

If we humanize the concept of cities, as a live ecosystem, clearly this emotional component would be the city's soul, while the rational part would be its physical aspects, its body. Cities are not just places and spaces that you can live in, they are living entities with emotional components, they have a 'soul' (Alcalde, 2017). This concept of the soul is part of their DNA, a series of emotional, intangible, and qualitative elements that make them stand out and distinguish them from the rest. It has to do with the environment and, above all, with the people who live there and their lifestyle. The opposite of a Magnetic city is the 'Generic' city (Koolhaas, 1997). An empty city, without history, superficial, sedated, as if it were drugged and numb. A city where the street has died because it is not walked and life happens vertically or in shacks, where the edges are marks of disruption (vertical – horizontal) leaving no opportunity for meeting up, for creative density. A city of fractal repetition where everything that is not strictly useful or functional has no place. A city whose center features formally directed architecture and where the wealth is concentrated leaving a diffuse wide stain of low-income areas around it, accentuating inequality.

2.1 Components of City Magnetism.

City Magnetism can be assessed through some preconditions and three main city components which are driven by the permanent creation of living history.

PreConditions: Language, Landscape, Religion. A main spoken language or the ability to be understood and talk to locals is a major primary enabler/blocker. Landscape (seashore, mountains, both) is also a strong personal preference. And finally, our personal divine dimension, our own confessions need to match or tolerate those found (Religions) on a local level.

Historical methodology can offer us an accurate analysis of any hypothesis about a city, because in itself, it is a repository of history. (Rossi, 1978). Cities are living history. The city must respect and balance the preservation and retention of its historical heritage with modern development. (Pinto, 2009). Therefore, City Magnetism is the result of human action, and covers three moments in time: Past, Present and Future, in an ascending line during progress and prosperity and a descending line during destruction and decline, following the human cycles in a perfect and infinite helix. We could say that to the city "nothing human is alien". (Terence, 163 BC).

Then, we can conclude that a model for City Magnetism can be approached by studying these three major areas:

- Identity (Past)
- Dynamism (Present)
- Strategy (Future)

City Identity (Past): The past marks, defines and writes the city identity in stone. It is like its DNA, the addition of collective contributions from its former dwellers, all adding parts of that DNA, evolving, constantly recombining itself. It can evolve, albeit slowly. It can be transformed, but through a long, complex process.

A city's identity is thus defined by those elements that make up its essence and that have been defined throughout its history, such as its culture, customs, gastronomy, and type of society and government. Also fixed determinants such as geographic location, climate and environment, green spaces, density or the risk of natural disasters come into play. Additionally, a city has to nurture its reputation (Reputation Institute, 2017), its external or projected image, its branding, through the impacts it makes on media, often by organizing cultural or sporting events.

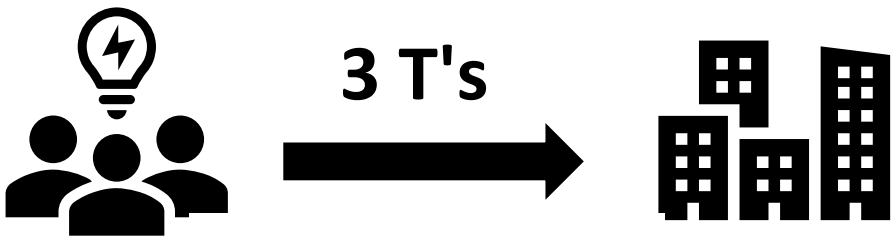
A city needs its own projected image, an advertising claim that is highly imageable (apparent, readable, visible). The goal is to become a city with a high chance of evoking a strong image in an external observer (Lynch, 1960). To approximate a model of measurable variables for a city's projected image, we turn to the different specialization areas that UNESCO attributes to a creative city: "Crafts & Folk Art, Design, Film, Gastronomy, Literature, Music and Media Arts" (UNESCO Creative Cities, 2019). All those areas are studied and included into City Branding component.

City Dynamism (Present): *"What is the City but the people?"* (Shakespeare, 1609) This aspect describes a city's psychology and ethics, how people make a living, and what the relationships among its inhabitants are like… The present represents City Dynamism. If identity lays the foundations of Magnetism, Dynamism marks the actions. A city attracts me because of its identity. When I arrive it delights me, welcomes me, motivates me, encourages me, moves me, helps me, or it does just the opposite all based on its Dynamism or lack thereof. The identity of a city is like a travel agent's brochure; Dynamism is the excursions that I can take at the destination.

We divide City Dynamism into four different indicators. First, competitiveness: those elements that measure the action, relationships, city creativity and motion, those elements which turn it into a social and economic hotbed creating complex interrelations of human development. Second, we measure how a city treats those who come, the expatriate, how easy or difficult social integration is in that city. Third, we also measure the city's ethical principles and social equity, inclusiveness and justice. And fourth, we evaluate equality.

City Strategy (Future): How can the future become a driver for a city's attractiveness? What do we expect from a city with a future? We expect it to have a solid plan (a SmartCity Plan), which includes strategies to cope with city challenges.

What makes that plan work? The rule of city prosperity, the 3 T's (Technology, Talent, Tolerance). We need investment in innovation as a fundamental and permanent driver and, of course, talent (human capital), too.

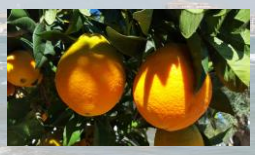


City Identity (Past)

- History
- Govern Basics
- Reputation
- GeoLocation Conditions
- Food/Gastronomy
- Branding






City Dynamism (Present)

- Competitiveness
- Expats Experience
- Ethics
- Equality


City Strategy (Future)

- Human Capital
- SmartCity Plan
- Innovation





3. City Profitability

The world is a marketplace of cities where citizens, depending on their preferences at that moment, decide to 'buy' a city and move there to live, and in this light, it makes sense that they give more value to employability when leaving the University, or to social services when they reach retirement age. Priorities vary based on their family dependencies (children or seniors) as well.

City Profitability is associated with the concept of 'is moving there a good deal?'. This is the non-emotional part, more related to a city's pure merits (economic and performance indicators).

City Profitability consists of a city performance component (functions, services, variable elements that a city provides to the citizens and that are tangible and valuable) and an economic component (citizens' ability to acquire things or the net purchasing power that a citizen will attain in that city compared to others). It is, in short, a deal. So, City Profitability (yield) is made up of the combination of services offered by a city and the cost of living in that city. We name this implicit, virtual agreement between you and your city the Citizenship Contract.

3.1 Citizenship Contract

Modern cities increasingly resemble Greek city-states. Despite the differences that social achievements have brought to our society during these 25 centuries, cities want to and must redefine the terms of their agreement with their citizens: the citizenship contract. It is a virtual contract that we all implicitly hold with our city. It is the value proposition that our city offers both to us and to the possible talent who wants to become established in our city. It is the list of gives and takes that our city has, like a billboard of city's offerings. It is a contract because the city offers us a series of services, benefits and development opportunities in competition with other cities in the world, in exchange for our contribution to the city's common project. This contribution has many facets, not only our taxes, but our generation of wealth, ideas, creativity, competitiveness, values, experience, co-creation, city development and drive to achieve its future goals. This is what millennials are evaluating now, and what local talented citizens weigh before deciding to emigrate in search of better opportunities.

3.2 Components of City Profitability.

To define the citizenship contract, we must detail the series of benefits and services the city offers us. This is the list of performance indicators to evaluate in which we group all the quantifiable services that a city can offer us into 10 areas:

- DIGITAL GOVERNMENT: A democratic, efficient, transparent, participatory, digitalized city government. Digital government as a service.
- EDUCATION: Lifelong training. Quality business schools, professional training and development.
- EMPLOYABILITY: The demand for talent.
- CONNECTIVITY: Internet infrastructure. 4G / 5G deployment.
- HEALTHCARE / SOCIAL SERVICES
- ENVIRONMENTAL SUSTAINABILITY: Water and energy efficiency. Air quality. Carbon emissions reduction, carbon neutral plans. Circular city.
- CULTURE-TOURISM: Culture as a city service, not traditions or emotions, but valuable services.
- URBAN MOBILITY: Traffic, public transportation. Mobility as a service.
- URBAN PLANNING: Urbanism as a city service.
- SAFETY: Physical and virtual safety

Then, we have to weigh these aspects against the cost of living in that city, or, in other words, the final net purchasing power (amount of things that I could buy with my final, after-tax income). Therefore, it is about comparing (multiplying) what I get from the city with what I get from my professional activity. The higher the result, the more profitable it will be for me to move to live in that city.

4. City Attractiveness Model

4.1 Cities Selection Criteria

We decided to increase our initial 2020 Analysis (made of 140 Cities), up to the world's top 175 most attractive cities according to international studies in a model made up of more than 100 indicators.

City selection criteria: Top cities in the Quality of Living Ranking (Mercer, 2019) and IESE's Cities in Motion (Berrone, Ricard, 2020) and cities scoring over 50 (no personal risk or severe living restrictions) on the Global Liveability Index (The Economist, 2021). The first two are superior quality reports featuring a wealth of details and indicators, coming from very well-known, highly reputable sources, while the Liveability Index's minimal threshold corresponds to a basic fact: nobody wants to go and live in a city where their life will be threatened, or basic living conditions are severely restricted.

4.2 Set of Indicators.

28 Indicators for Magnetism-Identity, 15 for Magnetism-Dynamism, 23 for Magnetism-Strategy, totalizing 66 indicators for City Magnetism, selected from international bodies, previously published key studies/analysis, and our own work are used for this research. Each of the 175 cities selected is also analyzed with data taken from city websites and their published SmartCity plans.

34 indicators make up the model for City Profitability (selected from international bodies, already published studies/analysis, and the author's own work).

The total number of evaluated indicators is 100, but many of them include a large number of subindicators, raising the total number of analyzed city dimensions to around 500. The selection of indicators to use follows the metanalysis methodology: researching all available indexes, then choosing those best matching previous criteria while avoiding biases. See the full list of used indicators and components in Figure 1.

Our objective is not to create yet another ranking of cities. Cities hate rankings, unless they come out on top. As the concept of attractiveness is quite personal, the most attractive city for me may not be as attractive for another person depending on the different scale of values we use to weigh a city's performance indicators, different aesthetic, personal preferences (mountains or seashore or both, spoken languages, religion...), and personal status (family dependencies, children, elder people in their care…). The model we present allows for comparisons between cities in the same geo cluster, and obtains each city's "attractiveness radiography" which helps prioritize areas that are in need of improvement, and also provides a list of cities that best fit a particular citizen's values and preferences.

Area	Subarea	Class	Indicator	Subindicator	Entity
Magnetism	Identity	History. Culture	Age	Foundation	Wikipedia
			UNESCO	World Heritage	UNESCO
			Top Museums		Wikipedia
		Government Basics	Democracy Index		The Economist
			Crime City Index		NUMBEO
		Reputation	Reputation	The Good Country Index	Anholt & Co
		Space. Density	% Natural Space	Better Life Index	OECD
			Density (inh/km2)		Demographia
		Climate	Avge. Temperature Desviation	Gradient	Climate-Data.org, Climatemps
			Avge. Precipitation Desviation	Gradient	Climate-Data.org, Climatemps
			Avge. Daily Sunshine		Climate-Data.org, Climatemps
		Geo Risk	Natural Disaster Risk		World Risk Index
		GeoEconomics	GDP Proximity	%WW	World Bank
		Gastronomy	Food Security Index		The Economist
			Cost Food		Numbeo
			Guru Restaurant		Guru Restaurant
			Michelin Guide and Guru	#Rest/Minh	Via Michelin
		Branding. External Image	Music	Own work	Own work (Wikipedia and Youtube)
			Movies	Own work	IMDB, Movie-locations.com
			Street ART	Artwork/10k Inh	Street Art Cities
			CITY BLOGGERS	SM Reach	Brand24
			Best cities	Cities Marketing	BestCities.Org
			Sports	Soccer Basketball Other Sports Events, Marathons	Football Database NBA Topendsports
			Main Events	Olympics	Olympics org
				Universal Expos	Bureau International des Expositions
				Cultural Events	Day Zero Project
	Dynamism	Competitiveness	Global Competitiveness	Economic	IMD
			Global Talent Competitiveness	Talent	INSEAD - GTCI
		Development. Quality	Cities in Motion	Cities facing Challenges	IESE Cities Motion
			Quality of life	Quality of life	Numbeo
			World Best Cities	Cities Marketing	BestCities.Org
		Expat Social Experience	Quality of Life for EXPATS	Best Cities for Expats	InterNations
		Ethics. Well-being	Happiness	Happiness Report	UN
			World Giving Score		Charities Aid Foundation
			Civic Engagement		World Bank
			Work-Life Balance		KISI
		Equality	GINI Index		WorldBank
			Gender	Economic Empowerment of women	INSEAD - GTCI
				Global Gender Gap Index	WE FORUM
				Leadership opportunities for women	INSEAD - GTCI
			Tolerance	Tolerance Minorities	INSEAD - GTCI
				Tolerance Immigrants	INSEAD - GTCI
			Poverty	Pop < 6,85$/d	World Bank
	Strategy	Human Capital	Population Age Average Per Country		World Population Review
			Ranking Human Capital	Cities in Motion	IESE
		Smart Cities Plan	Plan Smart Cities	15 Areas	Own Work + IMD
		Innovation	R&D (% GDP)		INSEAD - GTCI
			Global AI		Tortoise
			Innovation Cities / Global Innovation Index		Innovation Cities

ADDITIONAL PRE-CONDITIONS:		Landscapes		Own Work
		Language		Infoplease
		Religion		Own Work

Figure 1a. City Attractiveness Indicators. Magnetism. Source: Author

Profitability	Services	Digital Government	Digitalization of Government	eGovernment Survey	United Nations
			eParticipation Index	eGovernment Survey	United Nations
		Education. LifeLong Training	University Rankings in the subject Business and Economics		INSEAD - GTCI
			Employee Development		INSEAD - GTCI
		Employability	LinkedIn Talent Hiring Demand	Talent Insights	LinkedIN
			Employability		INSEAD - GTCI
		Connected City	MOBILE	Mobile Connectivity index	GSMA
			Internet Speed	Broadband Speed	WORLD POPULATION
			ICT Infraestructure		INSEAD - GTCI
		Health/Social SVS	Social Expenditure (% GDP)		OECD
			Life Expectancy	WHO	World Health Organization
			Physicians density		INSEAD - GTCI
			Public Health Expenditure per Capita		OECD.
		Environmental Sustainability	Carbon Neutrality Plan	A-List	Own Work + CDP
			Environmental Performance		INSEAD - GTCI
			The Green Future Index		MIT
			Environmental Performance Index	EPI	Yale
		Culture-Tourism	Culture Creative Jobs %		World Cities Culture Jobs OECD. Eurostat
			City Destination		FORBES
		Urban Mobility	Traffic Index		NUMBEO
			Time in Traffic	Time in rush hour/y	INRIX
		Urban Planning	Urban Planning		IESE Cities Motion
		Safety	Safe Cities Index		INSEAD - GTCI
			Safety Index by City		Numbeo
	Cost Of Living. Net Purchase Power	Net Real Income	Avg Wages/month		UNECE, ILOSTAT
			Direct Tax + Social Contributions	SINGLE, No CHILD	OECD
			Indirect Tax		Institute
		Cost Of Life	Purchase Power Parity Plus Rent (NY=1)		Numbeo

Figure 1b. City Attractiveness Indicators. Profitability. Source: Author

Main data sources updates vs 2023 Edition

Added Indicators:

- Magnetism.Dynamism.Quality of Life

Changed sources at:

- Magnetism.Identity.Government Basics. Crime City Index
- Magnetism.Identity.Reputation
- Magnetism.Dynamism.World Best Cities
- Profitability.Performance. Connected City.Internet Speed
- Profitability.Performance. Environmental Performance
- Profitability.Performance. Culture Tourism. City Destination
- Profitability.Performance. Urban Mobility. Traffic Index
- Profitability.Performance. Safety. Safe Cities Index

5. City Attractiveness Research

5.1. Surveys

To prove that the model works and that all its components are relevant, we carried out two surveys at two SmartCities events, so our audience brought twofold advantages: they are quite familiar with the concept of city performance, and we can consider them all as talented citizens.

•Survey of 4,500 participants at an event (NordicEdge, 2018), Stavanger (Norway). Sep2018 attendees. The largest SmartCities event in the Nordic countries.

•Survey of 21,334 participants (SmartCity Expo & WW Congress, 2018), Barcelona (Spain). Nov2018 attendees. The largest SmartCities event in the world. Due to the large response (n=1550), the data obtained will be used to fine tune weights on Magnetism and Performance for global analytics and main ranking reference / chapter 6.1 Honors Board.

5.2 Surveys results.

Our target average respondent-age was 42 years old, half of them with children (51%) and a quarter of them with elder people in their care (25%). It is an unbalanced gender sample with 67% male, however that is consistent with a very male-driven technology market.

On Magnetism: Dynamism (present) rules, then come Identity (past) and then Strategy (future). Identity and Dynamism are significantly more important than Strategy, confirming the trend that a city's future and potential are less valued than its present facts or its experience gained from Identity. This result is easily associated with the Southern European lifestyle, which is most interested in the present moment, with a loving eye for the past and less emphasis on the future. However, the differences are not so large as to consider Strategy (future) as irrelevant seeing as this survey was world-wide in nature. Identity (past) becomes more and more appreciated as people get older (the over-50 crowd). And in terms of gender, men and women agree on Magnetism, which means they have essentially the same preferences for aesthetics, education and customs.

On Profitability. In city services (see figure 2), we can very clearly identify three zones: high (positions 1 through 4) scoring more than 8.30, then mid (positions 5 & 6), then low (7 through 10). There are appreciable changes among the different age ranges studied, but these services always fall within these general zones. All 10 areas studied are relevant, as all scored a minimum of 3.5 out of 5 on average in our original survey on importance, meaning that we can say that none are irrelevant, and none have a much higher score when compared to the rest.

The main top area is Urban Mobility, as everybody recognizes this city service is crucial to keeping a city alive. As such, we have named it the 'city bloodstream'. Since we define a city as a point in space/time where people meet with and encounter each other, and this service makes that possible, we are not surprised that it is the most appreciated. Then Health/SocSVS, Environmental Sustainability and Safety follow, all grouped together, separated by a small variation in scores. Safety is the top factor for those over 60. After those come the Education and Employability group; it is a little surprising that they are not rated even higher. To help interpret the data, we assume that our attendees are so talented that they face no challenges in these aspects. In any case, Education jumps up to position 3 for younger citizens, which seems reasonable. Employability falls to the bottom position for those aged more than 60, as they are about to retire. Urban Planning, Governance, Connected City, and Cultural Services occupy the lowest positions. I was personally expecting to see Connected City finish higher; maybe the audience did not understand the concept and the disruptive implications that 5G will bring, or maybe they consider this as a static, obvious service like water or energy, and see little to no difference among cities. Governance and Urban Planning are not perceived as star city services, but rather as business as usual, as regular tasks that must be guaranteed, not as brilliant services that citizens perceive as new, innovative or disruptive.

CITY SERVICES - SCALE OF VALUES	RK	1-10
URBAN MOBILITY / TRANSPORTATION	1	10,00
SOCSERVICES / HEALTH	2	9,04
ENV. SUSTAINABILITY	3	8,95
SAFETY (PHYSICAL/VIRTUAL)	4	8,37
EDUCATION	5	7,67
EMPLOYABILITY	6	7,11
URBAN PLANNING	7	4,78
GOVERNANCE	8	2,85
CONNECTED CITY	9	1,83
CULTURAL SVS / TOURISM	10	1,00

Figure 2. City Performance/Services Ranking for SmartCityExpo Attendees. Source: Author

By gender, we find almost the same rankings with only a few differences near the top, for instance, women position Health/SocSVS at number 1 and men situate EnvSustainability at number 2. Those with children give more consideration to EnvSustainability (thinking about the planet we leave for them, perhaps); those without follow the average. People with someone elderly in their care put Health/Social Svs on top, as expected; those without boost the score of EnvSustainability. Finally, and sadly, Culture/Tourism is the least appreciated city service. This is clearly a major pending issue for most of our cities: how to serve as a kind of permanent university for citizens by constantly offering, incentivizing and promoting cultural services. A more skilled society is always a more prosperous one, and the opposite is true, too.

5.3 Model Reliability

- Medium on City Magnetism. High on City Profitability.
- Again, plan is not to create another Cities ranking. A personal tool (App) is provided, so the main topics will be weighted based on individual citizen input. Results will vary from citizen-to-citizen preferences or different life status (age, family dependents).
- Model obtained from the two surveys conducted with: 95% Confidence, <2% Error

6.Cities By Numbers. Benchmarked Cities.

6.1 City Attractiveness Ranking 2024

If we apply these survey scores to our model, (see figure 3 with full list of top175 cities) we find the Top 30 positions lead by cities from Nordics (Norway, Denmark), Central Europe (Germany, Netherlands, Luxemburg, main cities from Switzerland, Austria), Canada (Toronto, Montreal), Spain (with 4 main cities) and UAE (Abu Dhabi, Dubai). As exceptions from out of these areas, we have Taipei, Melbourne Singapore and London. USA, Australia, UK are not present till positions 30-40 with a slight decline vs 2023. That way, we see UK (20-63), USA with NYC leading (42-79) or AUS (30-83). A traditional winner, Finland has dropped till 36-57 led by Tampere.

We can see Lovability (Magnetism) and Affordability (Net Purchase Power) as main drivers for most movements up, and Liveability (Performance) as main reason for movements down. We can see the impact of QUALITY OF LIFE as main driver.

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Dubai	United Arab Emirates	73	113	20	79	1	91	2	1
Oslo	Norway	6	19	12	12	4	23	7	2
Amsterdam	Netherlands	1	5	5	15	13	4	46	3
Copenhagen	Denmark	2	12	1	9	16	1	71	4
Stavanger	Norway	15	52	8	41	5	26	9	5
Abu Dhabi	United Arab Emirates	102	138	21	94	2	103	1	6
Den Haag	Netherlands	14	36	7	62	7	16	17	7
Luxembourg	Luxembourg	26	38	4	90	6	18	12	8
Berlin	Germany	11	8	45	11	14	6	43	9
Bergen	Norway	21	58	9	50	8	36	10	10
Rotterdam	Netherlands	19	46	26	35	10	19	16	11
Madrid	Spain	3	3	27	37	39	7	73	12
Eindhoven	Netherlands	31	44	18	71	9	9	26	13
Munich	Germany	17	31	33	33	12	3	48	14
Aarhus	Denmark	8	22	3	47	30	10	69	15
Zurich	Switzerland	7	42	2	13	42	26	59	16
Vienna	Austria	10	9	29	34	34	21	57	17
Taipei	Taiwan	99	129	91	24	3	96	4	18
Barcelona	Spain	9	6	34	39	44	7	75	19
London	United Kingdom	4	2	65	6	56	11	81	20
Valencia	Spain	23	18	30	75	26	33	35	21
Toronto	Canada	45	83	42	21	15	38	13	22
Stuttgart	Germany	37	24	43	68	21	35	29	23
Hamburg	Germany	35	56	51	16	24	5	66	24
Geneva	Switzerland	18	23	11	84	41	52	37	25
Singapore	Singapore	53	121	35	5	18	14	41	26
Frankfurt	Germany	38	46	36	53	27	31	39	27
Zaragoza	Spain	51	17	67	85	19	24	30	28
Montreal	Canada	66	88	50	54	11	61	8	29
Melbourne	Australia	34	87	24	17	43	81	15	30
Sydney	Australia	22	70	23	22	51	68	36	31
Cologne	Germany	42	51	46	38	36	61	25	32
Paris	France	5	1	62	29	74	17	100	33
Edinburgh	United Kingdom	27	26	66	18	50	34	65	34
Tokyo	Japan	32	34	58	19	48	38	55	35
Tampere	Finland	28	90	10	20	53	2	87	36
Bern	Switzerland	50	38	17	106	35	41	38	37
Manchester	United Kingdom	56	53	86	29	31	22	51	38
Helsinki	Finland	16	74	14	14	62	14	85	39
Vancouver	Canada	76	98	39	76	23	46	20	40
Antwerp	Belgium	29	25	44	46	63	84	49	41
New York City	United States	13	11	71	2	76	30	93	42
Stockholm	Sweden	12	31	6	48	81	24	98	43
Nottingham	United Kingdom	75	65	95	60	28	28	42	44
Seoul	South Korea	25	48	60	3	69	102	31	45
Bristol	United Kingdom	74	56	90	77	33	45	34	46
Basel	Switzerland	48	20	16	123	58	53	64	47
Málaga	Spain	55	41	31	96	54	55	52	48
Glasgow	United Kingdom	65	60	78	61	45	40	44	49
Dusseldorf	Germany	89	65	52	111	25	13	54	50
Brussels	Belgium	41	43	41	56	66	85	50	51
Linz	Austria	60	37	32	110	52	43	62	52
Ottawa	Canada	79	97	49	70	38	69	19	53
Espoo	Finland	33	69	15	51	73	12	101	54
Houston	United States	83	111	81	26	32	64	22	55
Osaka	Japan	101	101	94	83	17	31	18	56
Oulu	Finland	46	93	13	52	68	20	91	57
Belfast	United Kingdom	88	64	82	89	37	51	32	58

Figure 3. Full list of 2024 top 175 Attractive Cities. Source: Author

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Las Vegas	United States	97	106	85	66	22	29	33	59
Washington, D.	United States	39	35	64	32	71	66	74	60
Phoenix	United States	93	129	88	7	29	55	23	61
Denver	United States	100	114	101	49	20	36	24	62
Birmingham	United Kingdom	80	72	96	64	46	71	28	63
Dublin	Ireland	44	45	38	65	70	90	61	64
Boston	United States	24	72	53	1	88	76	79	65
San Francisco	United States	36	80	47	4	79	47	84	66
Santander	Spain	63	30	56	97	60	60	67	67
Malmo	Sweden	40	59	19	74	78	43	86	68
Dallas	United States	86	100	80	43	49	65	40	69
Hong Kong	Hong Kong	95	101	104	42	40	93	11	70
Liverpool	United Kingdom	77	62	97	69	59	69	45	71
Los Angeles	United States	43	50	83	8	82	80	76	72
Miami	United States	68	91	77	25	65	72	60	73
Gothenburg	Sweden	20	55	22	40	93	55	99	74
Seville	Spain	87	27	69	127	57	41	70	75
Atlanta	United States	52	74	74	10	83	96	63	76
Kansas City	United States	90	99	76	57	61	76	47	77
Philadelphia	United States	81	88	87	45	67	86	53	78
Seattle	United States	70	108	55	23	72	55	78	79
Nice	France	57	10	70	95	89	61	88	80
Lyon	France	64	49	73	82	77	48	83	81
Adelaide	Australia	67	117	25	59	75	94	58	82
Canberra	Australia	54	106	28	28	90	95	72	83
Bordeaux	France	62	14	61	105	86	49	92	84
Yokohama	Japan	94	110	100	36	64	76	55	85
Rome	Italy	61	4	106	115	91	75	82	86
Marseille	France	71	16	79	104	87	53	88	87
Bilbao	Spain	78	40	68	102	84	81	77	88
Florence	Italy	47	7	105	78	97	72	103	89
Nagoya	Japan	110	124	89	88	55	89	27	90
Milan	Italy	59	14	108	58	96	49	111	91
Prague	Czech Republic	30	29	40	44	101	101	106	92
Torino	Italy	82	28	107	93	92	59	95	93
Lisbon	Portugal	58	13	37	118	99	87	105	94
Lille	France	91	60	75	101	94	81	88	95
Porto	Portugal	69	33	57	99	100	91	104	96
Honolulu	United States	112	151	92	67	85	67	80	97
Tallinn	Estonia	72	86	59	63	102	96	113	98
Baltimore	United States	103	109	84	80	98	72	109	99
Doha	Qatar	116	162	63	91	80	126	5	100
Wellington	New Zealand	84	103	54	72	103	106	97	101
Auckland	New Zealand	92	103	48	86	104	107	96	102
Ljubljana	Slovenia	106	71	98	109	105	104	110	103
Tel Aviv	Israel	105	114	102	55	107	110	107	104
Chicago	United States	49	54	72	31	116	88	136	105
Jerusalem	Israel	104	85	110	81	109	118	94	106
Warsaw	Poland	96	68	93	98	113	79	125	107
Athens	Greece	113	79	115	120	108	109	108	108
Riga	Latvia	111	93	111	92	112	108	114	109
Wroclaw	Poland	108	76	103	107	115	99	123	110
Istanbul	Turkey	119	76	158	100	106	135	14	111
Kuwait City	Kuwait	149	169	143	138	47	137	3	112
Budapest	Hungary	85	21	114	87	121	111	135	113
Manama	Bahrain	145	167	113	144	95	128	6	114
Shanghai	China	98	96	119	27	123	113	137	115
Beijing	China	107	78	121	73	122	117	128	116
Santiago	Chile	126	125	134	116	114	127	102	117
Vilnius	Lithuania	109	93	99	108	130	99	159	118

Figure 3. Full list of 2024 top 175 Attractive Cities. Source: Author

City	Country	MAGNETISM	IDENTITY	DYNAMISM	STRATEGY	PROFITABILITY	PERFORMANCE	NetPurchase Power	ATTRACTIVENESS
Chengdu	China	124	112	126	132	119	119	120	119
Sofia	Bulgaria	114	63	136	117	129	124	140	120
Shenzhen	China	130	150	118	114	117	105	127	121
Zagreb	Croatia	115	80	120	130	128	115	143	122
Wuhan	China	129	135	127	119	120	123	122	123
Chongqing	China	123	120	124	129	124	120	130	124
Riyadh	Saudi Arabia	147	171	109	157	110	132	68	125
Guangzhou	China	132	140	123	139	118	112	124	126
Bucharest	Romania	121	92	125	135	132	129	138	127
Bratislava	Slovakia	117	84	112	143	140	114	157	128
Ankara	Turkey	154	117	164	166	111	139	21	129
Tianjin	China	131	114	140	146	127	125	130	130
Mexico City	Mexico	118	105	130	112	143	143	134	131
Moscow	Russia	127	133	137	103	136	141	121	132
Suzhou	China	125	121	132	124	139	115	152	133
Shenyang	China	135	133	131	154	125	121	130	134
Belgrade	Serbia	120	80	138	137	145	131	155	135
Buenos Aires	Argentina	128	135	129	113	142	134	145	136
Montevideo	Uruguay	122	117	116	128	146	130	158	137
Guadalajara	Mexico	133	144	135	126	134	136	129	138
Monterrey	Mexico	137	159	139	122	138	133	139	139
St Petersburg	Russia	139	152	141	133	137	149	118	140
San José	Costa Rica	144	145	133	153	133	147	117	141
Harbin	China	152	165	142	148	125	121	130	142
Kuala Lumpur	Malaysia	146	168	128	136	131	138	119	143
Minsk	Belarus	148	137	145	164	135	156	112	144
Córdoba	Argentina	138	140	122	159	148	145	141	145
Bogota	Colombia	143	143	152	125	144	162	115	146
Rio de Janeiro	Brazil	134	132	154	121	150	149	146	147
Bangkok	Thailand	136	152	117	147	151	148	149	148
Sao Paulo	Brazil	141	142	149	131	149	142	148	149
Brasilia	Brazil	150	158	146	152	147	140	144	150
Medellín	Colombia	160	170	153	145	141	154	116	151
Cape Town	South Africa	140	131	159	134	157	159	150	152
Kiev	Ukraine	142	125	147	160	156	146	163	153
Panama City	Panama	155	161	144	156	152	155	142	154
Durban	South Africa	153	154	155	142	153	153	147	155
Johannesburg	South Africa	151	139	161	150	159	161	151	156
Jakarta	Indonesia	158	164	157	141	154	151	160	157
Tbilisi	Georgia	159	123	162	172	155	143	164	158
Quito	Ecuador	157	157	156	151	160	160	154	159
Lima	Peru	161	155	160	163	158	158	153	160
Tunis	Tunisia	156	65	171	173	164	163	173	161
Hanoi	Vietnam	163	171	148	162	161	152	170	162
Ho Chi Minh Cit	Vietnam	169	175	151	149	162	157	168	163
Asuncion	Paraguay	168	165	150	171	163	164	162	164
Casablanca	Morocco	167	128	172	169	166	170	156	165
Mumbai	India	164	145	170	155	171	166	174	166
New Delhi	India	162	156	169	140	175	173	172	167
Bangalore	India	165	149	168	161	173	168	175	168
Hyderabad	India	166	148	167	165	170	167	171	169
Santo Domingo	Dominican Republic	170	160	163	170	167	165	167	170
Rabat	Morocco	171	127	173	174	168	171	161	171
Cairo	Egypt	172	147	175	158	172	172	165	172
La Paz	Bolivia	173	173	165	168	174	174	169	173
Manila	Philippines	174	174	166	167	169	169	166	174
Accra	Ghana	175	163	174	175	165	174	126	175

Figure 3. Full list of 2024 top 175 Attractive Cities. Source: Author

Honors Board. Magnetism IDENTITY

HISTORY/CULTURE

1	Paris
2	London
3	Florence
4	Madrid
5	Tunis
6	Rome
7	Beijing
8	Mexico City
9	Seoul
10	Vienna

GOV-BASICS

1	Espoo
2	Stavanger
3	Taipei
4	Bergen
5	Aarhus
6	Tampere
7	Bern
8	Den Haag
9	Zurich
10	Eindhoven

REPUTATION

1	Gothenburg
2	Stockholm
3	Malmo
4	Aarhus
5	Copenhagen
6	Munich
7	Stuttgart
8	Dusseldorf
9	Hamburg
10	Cologne

SPACE/DENSITY

1	Riga
2	Oslo
3	Las Vegas
4	Ottawa
5	Gothenburg
6	Linz
7	Oulu
8	Chongqing
9	Tampere
10	Bordeaux

CLIMATE

1	Florence
2	Washington
3	Nice
4	Rome
5	Montevideo
6	Jerusalem
7	San Francisco
8	Marseille
9	Lisbon
10	Quito

GeoRISK

1	Luxembourg
2	Singapore
3	Minsk
4	Manama
5	Bratislava
6	Budapest
7	Aarhus
8	Copenhagen
9	Geneva
10	Basel

GeoECONOMICS

1	Prague
2	Atlanta
3	Miami
4	Baltimore
5	Chicago
6	Washington,
7	Vienna
8	Linz
9	Wroclaw
10	Warsaw

GASTRONOMY

1	Nice
2	Bilbao
3	Antwerp
4	Basel
5	Luxembourg
6	Espoo
7	Geneva
8	Malmo
9	Yokohama
10	Brussels

BRANDING

1	Paris
2	New York City
3	London
4	Los Angeles
5	Barcelona
6	Chicago
7	Madrid
8	Rome
9	Boston
10	Dubai

Honors Board. Magnetism

Magnetism DYNAMISM

EXPAT EXPERIENCE

1	Málaga
2	Valencia
3	Madrid
4	Abu Dhabi
5	Barcelona
6	Dubai
7	Lisbon
8	Luxembourg
9	Doha
10	Tokyo

COMPETITIVENESS

1	Zurich
2	Singapore
3	Basel
4	Bern
5	San Francisco
6	Geneva
7	Boston
8	Copenhagen
9	Aarhus
10	Dublin

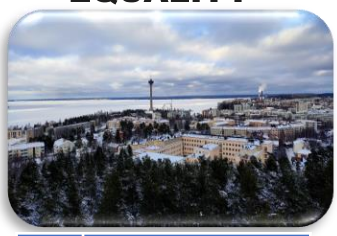
QUALITY OF LIFE

1	Luxembourg
2	Amsterdam
3	Den Haag
4	Stavanger
5	Frankfurt
6	Aarhus
7	Vienna
8	Copenhagen
9	Eindhoven
10	Munich

ETHICS WELL-BEING

1	Copenhagen
2	Aarhus
3	Stavanger
4	Bergen
5	Oslo
6	Stockholm
7	Malmo
8	Gothenburg
9	Tampere
10	Helsinki

EQUALITY



1	Tampere
2	Oulu
3	Espoo
4	Stavanger
5	Bergen
6	Oslo
7	Helsinki
8	Dublin
9	Malmo
10	Gothenburg

Magnetism STRATEGY

HUMAN CAPITAL

1	Boston
2	New York City
3	London
4	Washington, D.C.
5	Los Angeles
6	Canberra
7	Paris
8	San Francisco
9	Chicago
10	Edinburgh

SMARTCITY

1	Helsinki
2	Singapore
3	Copenhagen
4	Tampere
5	Rotterdam
6	Antwerp
7	Edinburgh
8	Oslo
9	Zurich
10	Amsterdam

INNOVATION

1	New York City
2	Los Angeles
3	Boston
4	San Francisco
5	Houston
6	Chicago
7	Seattle
8	Dallas
9	Atlanta
10	Miami

Honors Board. Profitability. Performance

DIGITAL GOV.

1	Sydney
2	Melbourne
3	Adelaide
4	Canberra
5	Tallinn
6	Helsinki
7	Tampere
8	Espoo
9	Oulu
10	Amsterdam

EDUCATION. LIFELONG TRAINING

1	San Francisco
2	Boston
3	New York City
4	Washington, D.C.
5	Chicago
6	Seattle
7	Los Angeles
8	Baltimore
9	Philadelphia
10	Dallas

EMPLOYABILITY

1	Dusseldorf
2	Luxembourg
3	Hamburg
4	Osaka
5	Berlin
6	Singapore
7	Dallas
8	Munich
9	Basel
10	Zurich

CONNECTED CITY

1	Singapore
2	Hong Kong
3	Dallas
4	Denver
5	Houston
6	Las Vegas
7	Phoenix
8	Seattle
9	Atlanta
10	Miami

HLC / SOCIAL SVS

1	Linz
2	Vienna
3	Marseille
4	Bordeaux
5	Nice
6	Paris
7	Lyon
8	Lille
9	Dusseldorf
10	Hamburg

ENV.SUSTAINABILITY

1	Copenhagen
2	Tampere
3	Nottingham
4	Stockholm
5	Malmo
6	London
7	Manchester
8	Paris
9	Oslo
10	Milan

CULTURE/TOURISM

1	Barcelona
2	London
3	Amsterdam
4	Madrid
5	Tokyo
6	Los Angeles
7	Rome
8	Paris
9	Osaka
10	Milan

URBAN MOBILITY

1	Oulu
2	Santander
3	Tampere
4	Zaragoza
5	Málaga
6	Bilbao
7	Helsinki
8	Espoo
9	Valencia
10	Seville

URBAN PLANNING

1	London
2	New York City
3	Hamburg
4	Berlin
5	Amsterdam
6	Rotterdam
7	Toronto
8	Dubai
9	Washington
10	Vienna

SAFETY

1	Nagoya
2	Singapore
3	Zaragoza
4	Bern
5	Zurich
6	Tokyo
7	Yokohama
8	Aarhus
9	Den Haag
10	Santander

Honors Board. Profitability. Net Purchase Power

MONTHLY WAGE (AVG)

1	Oslo
2	Bergen
3	Stavanger
4	Dubai
5	Abu Dhabi
6	Zurich
7	Geneva
8	Bern
9	Basel
10	Luxembourg

INCOME AFTER DIR TAXES

1	Dubai
2	Abu Dhabi
3	Oslo
4	Bergen
5	Stavanger
6	Zurich
7	Geneva
8	Bern
9	Basel
10	Taipei

NET REAL INCOME

1	Dubai
2	Abu Dhabi
3	Zurich
4	Geneva
5	Bern
6	Basel
7	Oslo
8	Bergen
9	Stavanger
10	Taipei

COST OF LIFE

1	Hyderabad
2	New Delhi
3	Córdoba
4	Mumbai
5	Accra
6	Buenos Aires
7	Minsk
8	Bangalore
9	Cairo
10	Tunis

Figure 4. Honors Board. Source: Author

Honors Board. ATTRACTIVENESS

IDENTITY

1	Paris
2	London
3	Madrid
4	Rome
5	Amsterdam
6	Barcelona
7	Florence
8	Berlin
9	Vienna
10	Nice

DYNAMISM

1	Copenhagen
2	Zurich
3	Aarhus
4	Luxembourg
5	Amsterdam
6	Stockholm
7	Den Haag
8	Stavanger
9	Bergen
10	Tampere

STRATEGY

1	Boston
2	New York City
3	Seoul
4	San Francisco
5	Singapore
6	London
7	Phoenix
8	Los Angeles
9	Copenhagen
10	Atlanta

PROFITABILITY

1	Dubai
2	Abu Dhabi
3	Taipei
4	Oslo
5	Stavanger
6	Luxembourg
7	Den Haag
8	Bergen
9	Eindhoven
10	Rotterdam

MAGNETISM

1	Amsterdam
2	Copenhagen
3	Madrid
4	London
5	Paris
6	Oslo
7	Zurich
8	Aarhus
9	Barcelona
10	Vienna

ATTRACTIVENESS

1	Dubai
2	Oslo
3	Amsterdam
4	Copenhagen
5	Stavanger
6	Abu Dhabi
7	Den Haag
8	Luxembourg
9	Berlin
10	Bergen
11	Rotterdam
12	Madrid
13	Eindhoven
14	Munich
15	Aarhus

PERFORMANCE

1	Copenhagen
2	Tampere
3	Munich
4	Amsterdam
5	Hamburg
6	Berlin
7	Madrid
8	Barcelona
9	Eindhoven
10	Aarhus

NET PURCHASE POWER

1	Abu Dhabi
2	Dubai
3	Kuwait City
4	Taipei
5	Doha
6	Manama
7	Oslo
8	Montreal
9	Stavanger
10	Bergen

Figure 4. Honors Board. Source: Author

6.2 Cities Segments & Grouping

WINNERS: NOR, DK, NED, GE, UAE, SPA, CAN, EU Main Capitals and South Europe (FR, ITA, POR) slight improvement due to EU funding investment. Main reasons are: Increase on Dynamism due to Quality of Life and Expat Experience, on Strategy due to SmartCity Plan, and on Profitability due to better NetPurchase Power. Main capitals are recovering ground vs Intermediate cities. TUR has experienced a significant gain due to stability and trust. Worth mentioning the case of Spain: Due to strong recognition as leaders on Quality of Life (InterNations (2024), Quality of Life for Expats, Best Cities (2024), technology Adoption (leading UN eGov (2024)) and moderated Cost of Living, Spanish cities have experienced a significant rise.

LOSERS: USA, UK, AUS, SWE, FIN, SWI, NZ due to late recovery actions and inflation impact, increase on cost of living (SWE, FIN) and decrease on Quality of Live, also worsening of Inequality (Gini Index). Reduction or stalling on investments has impacted the quality of services (performance) (USA, AUS). Gap with LatAm and all Asia increased a little due to economy impact (except CHN)

No significant change experienced by JPN, SouthAfrica, CEE (except TUR), EU Non-Capital cities

Main segments. ADVANCED: Top100. (Western Europe, AUS, US, CAN, JPN, 4 Asian tigers). Here we can split in three groups. 1-30 Quality of Life & Profitability (Nordics, GE, NED, SPA, UAE), 30-70 Mainly Economy driven (US, UK, SWI, CAN, JPN), and 70-100 Attractive mainly because of Magnetism, facing problems in Profitabilty (FR, SouthEurope). CHALLENGERS: 100-115. (NZ, ME, CEE, ISR). EMERGING: 115-164. (with CHN leading 115-130, then LatAm, RUS, SouthEast Asia, SouthAfrica). STARTERS: 165-175. (IND, Africa).

Advanced: From position 1 to 100, we find the most advanced, Western civilization cities. The first 30 cities in this advanced group correspond to those with the greatest Quality of Life, (still) affordable economy and Magnetism attractiveness. The position of NOR is especially noteworthy with the 3 cities studied in the top 10 positions. UAE (Dubai (1) and Abu Dhabi (6) have finally reached these top positions due to extraordinary Profitability and consistent improvement on technology adoption and quality of life. DK, NED, LUX, GER, SPA, CAN accompany UAE, NOR in these top 30, all countries investing strong on technologies with covid-recovery funds and gaining new levels of quality of live, some from lovability, all from livability (performance of provided services). Taipei (18), Singapore (26) maintain good positions due to technology investment, social stability and trust building. CAN improved its profitability and jumped into these top30 with two cities (TOR, MON)

From position 30 to 70 we have USA, AUS, UK, JPN all suffering strong the economic impact. They are not so Attractive from Magnetism point of view due to social inequity, decrease on quality of living and stalled technology adoption. FIN dropped due to cost of living. BEL is here improving due to technology adoption. Next, and from positions 70 to 100, we find FR, IRE, ITA, all of them with a strong Magnetism and trying to maximize the recovery funds to compensate the recession and the four Asian tigers (SIN, KOR, TAI, HK) climbing from Challenger's area. TAI (18) and SIN (26) over this level, and KOR (45), HK (70) showing a steady progress forward. JPN continues with its economic reform and with problems in social equality (HRW 2022) but investing strong on technology and preparing Osaka's Expo 2025 to show world leadership. Closing this group (80-100) we find ITA, FR, and POR with problems due to high taxes, but they remain here due to high magnetism (Lovability), although at risk of falling to the next group.

Challengers: In this area, we group cities from positions 100 to 115 which are progressing rapidly, competing to join the leading group, following the example from Asian tigers. Here, we find the Middle East, led by Israel and Central/Eastern Europe. Any of these cities can join the top-tier group as soon as they gain prestige and consolidate the interesting advances they have made in recent years. NZ has dropped in this segment due to stalled technology investment and increase on cost of living.

Emerging: Positions 115-164. Here we find first China growing slightly and taking (115-130), then most of Latin America led by Chile (117-160). And finally, Russia (132-140), South Africa (150s) and SouthEast Asia. It is like a BRIC group, but without India,replaced by Southeast Asia's Thailand, Malaysia although with obvious different dimensions. The cities in this group have plans, recognize this global competition, and are making rapid progress.

Starters: Positions 165-175. Among the Starters are Indians and Africans. These cities are beginning to plan their strategies for the global competition for talent although they continue to be burdened by unresolved, basic social and economic issues. Bolivia, Philippines, Dominican Republic are falling into this segment as well.

6.3. City Attractiveness Findings

City Attractiveness is influenced by several key trends that affect the quality of life in urban areas. These trends are shaped by factors such as economic conditions, environmental sustainability, safety, healthcare, education, infrastructure, and more. To study all those components, let's split the approach into three areas, matching our Quality of Live model concepts with the current trends of Lovability, Liveability and Affordability:

City Magnetism → City Lovability

City Profitability. Performance → City Liveability

City Profitability. Net Purchase Power → City Affordability

If I had to highlight which of these drivers is the main at the moment, I would clearly think about Lovability. Why? Because this is human-centred, and every time we focus on placing the citizen front and center of what we do in the city, happiness is improved, and this is the main perception of quality of life. Liveability is quite good in most of studied cities (most from first world because, by default, a city that implies a risk for your life is not attractive, period). Ok, Prosperity helps and Affordability is super important, but new generations are not so much driven by profitability but quality of live. So, cities trend to make them more human, fostering inclusion, people connection and attachment, stimulating creativity, ruling by freedom and respect, encouraging empowerment, making human-centred cities with happier people. And happier and empowered people make more resilient cities eager to drive economic growth. Good approach done by Singapore and described by these two Singaporeans working for Deloitte (Kulasooriya & Wee, 2021)

City Magnetism → City Lovability

Although Magnetism mainly includes Identity (Branding), Dynamism (Social Experience) and Strategy (Technology and Innovation), City Lovability is based on that all but goes beyond, above all the lived experience, the moment, the emotions associated with living a wonderful experience, the Greek *'kairos'* as a definition of the present time as enjoyment of the moment, as a small explosion of happiness, of good feeling, charming.

Below are some of the main trends that are shaping city lovability in 2023 and beyond:

Social and Cultural Vibrancy. Social City:

- **Cultural Offerings and Lifestyle**
- **Sustainable Tourism**
- **Diversity and Inclusivity**
- **Civic Participation**
- **Engaging Citizens in Decision-Making**

Post-Pandemic Urban Recovery. New workstyles (Hybrid, Remote, Nomad)

- **Green Spaces and Outdoor Living**
- **Hybrid Work Environments**
- **Remote Work-Friendly Cities**
- **Gig Economy Growth**
- **Platforms for Local Businesses Development**

Global vs. Local/Regional Disparities. Intermediate Cities

- **Differences Between Global Cities and Intermediate Cities**
- **Rebalancing Urban Density**

City Profitability. Performance → City Liveability

Best liveability is associated with top city services quality (City Performance). Main services 10 groups are: Digital Government and technology use, Lifelong-Training (Education), Employability (abundant offers and qualified demand), Communications Connectivity, HealthCare and Social Services, Environmental Sustainability (Carbon neutral, Circular City), Culture/Tourism, Urban Mobility (Sustainable, Autonomous, Shared), Urban Planning and Safety. All of them in a stable, peaceful and risk-free geopolitical environment.

Sustainability and Climate Change Adaptation:

- **Climate Adaptation**
- **Sustainable Transportation**
- **Energy Efficiency**
- **Sustainable Urban Tech**
- **Circular Economy Innovations**

Public Health and Safety:

- **Healthcare Infrastructure**
- **Telemedicine and Healthtech**
- **Smart Hospitals**
- **Mental Health Focus**
- **Safety and Crime Rates**

Digital Infrastructure and Smart City Initiatives.

- **Artificial Intelligence and Automation Investments**
- **Digital Connectivity**
- **Investment in Smart Infrastructure**
- **Smart City Solutions**
- **Data-Driven Governance**
- **AI in Urban Management. Digital Twins**
- **Automation and Robotics in Public Services**
- **Tech Hub Cities**
- **Innovation in Public Services**

Mobility and Transportation Innovations:

- **Public Transport Efficiency**
- **Walkability and Cycling Infrastructure.**
- **Autonomous Vehicles and Mobility-as-a-Service (MaaS)**
- **Electric and Micro-Mobility Investments**

Geopolitical Stability, Global Trade Shifts and Governance:

- **Political Stability as a Key Factor**
- **Public Trust in Institutions**
- **Geopolitical Risk Management**
- **Trade Hubs and Supply Chains**

Quality of Education. Lifelong Training. ReSkilling:

- **Access to Quality Education**
- **Tech Talent and Digital Literacy Initiatives**

Resilience and Cybersecurity Investments:

- **Cybersecurity in Urban Management**
- **Resilient Cities**
- **Resilience to Economic Shocks. Diversified Economies**

City Profitability. Net Purchase Power → City Affordability

And finally, the economic terms for the best Quality of Life. Those cities with good wages, low taxes and affordable cost of life multiply their attractiveness. But best quality and top performer cities trend to become expensive. Especially relevant is cost of housing, as main cost associated with living in a city. Inflation made cost of good to rise and also mortgages interest ratios, making a house buy an unreachable dream for young people. Most young people are leaving parents house later every year, creating family and generations problems and delaying the independence and self-confidence experience.

Affordable Housing and Cost of Living:

- **Housing Affordability:**
- **Urban Outmigration**
- **Inflation and Cost of Living**

Tech-Driven Economic Development Zones. Tech Startups and Venture Capital

- **Innovation Districts and Tech Hubs**
- **Special Economic Zones (SEZs)**
- **Fintech Innovation**
- **Growing Startup Ecosystems**
- **Public-Private Partnerships in Innovation. Urban technology Research institutes.**

Conclusion

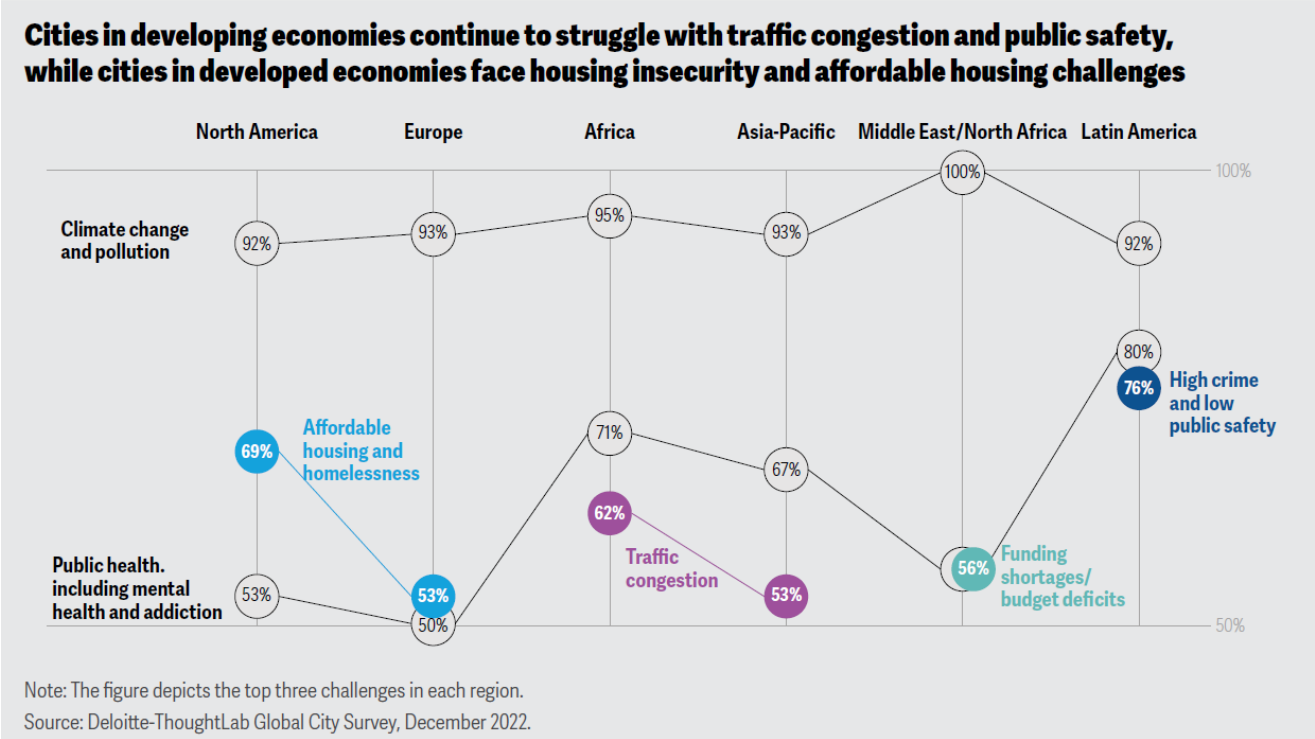
- Talented people, and especially those with soft or no ties to any particular place due to family or business reasons are seeking the best Quality of Life city that also matches their cultural preferences.
- Quality of live is a three-component motion: A vibrant stimulating lovable city (a perfect combination of natural conditions with social and cultural action with the innovation as development flag, plenty of best services and performance (Liveable) where your money worths the dedicated effort to make it (Affordable cost of living).
- In 2023, cities have invested heavily in technology to drive economic performance and improve quality of life. The focus is on smart city solutions, digital infrastructure, AI-driven services, sustainable urban development, and fostering innovation ecosystems. Cities that embrace these trends are not only boosting their economic competitiveness but also enhancing their resilience, sustainability, and liveability in the face of global challenges.
- In 2024, cities around the world are navigating a period of uncertainty driven by multiple global challenges, including economic volatility, geopolitical tensions, and climate change. The performance of cities during these times of uncertainty depends largely on their ability to adapt, innovate, and build resilience. The most successful cities are those that can balance economic growth with environmental sustainability, affordability, and citizen well-being while navigating the complexities of a volatile global landscape.

We observe 3 general patterns or trends from all cities:

1.- Economy. In the 2021 Observatory we saw how cities in the USA, Canada and Australia grew significantly by facing the economic shock caused by the pandemic with greater resilience. It took them very little time to recover. However, in 2022 they were overtaken by Europe and Japan, being less impacted by inflation and by the positive effect of the European recovery funds launched since 2021 (the American IRA scheme started too late in 2022 (August)). In 2023, inflation was brought under control, but prices did not return to previous levels and the affordability gap between the USA and Europe narrowed significantly. The investment engine in environmental sustainability also lost some of its extraordinary hype and opportunities to invest in technology (digital twins, IoT, etc.) took a backseat, especially in the USA. Therefore, cities that are "still" affordable for young talents who want to establish themselves and those that "still" receive investment funds enjoy an advantage. Within the economy, and as a consequence of the last period of inflation, we have seen a general rise in the cost of housing. In many cities, young talent finds it unaffordable to buy a home or rent one within a reasonable distance 8 no way for 15' ideal city…). This can be considered the main economic problem in large cities.

If we look at the accurate analysis by (Deloitte, 2023) we see that Climate change and pollution continue to be recognized as the main challenge, but it requires strong investments in the medium and long term. When the EU studied how much investment would be required for a city to become Carbon neutral in 2030, it was estimated at around €900 million for a city of around 100k inh. The calculation cannot be extrapolated directly proportional, but we can think of around €6b for a city of 1m inh. This is out of reach and causes the goal to be seen as unattainable, and therefore, smaller actions with a greater impact on citizens in the short term are prioritized.

Associated with the economy is the growing insecurity in large cities and is chronic in America (in the North due to the armed population and in the South due to organized gangs). Also in this context, opiate addiction is becoming a very important problem in the USA, with thousands of people wandering the streets like anesthetized zombies. These people are losing their jobs, purchasing power, homes and need a significant effort in economic aid and time to get out of the problem.



2.- Innovation. In parallel to economic resilience, those cities with a solid strategic innovation plan and leadership in the adoption of the latest technologies have gained relative positions compared to cities with a similar profile that have slowed down investment in innovation due to considerations of digital sovereignty, legislation applicable to data localization, blocks to the adoption of the latest technologies, etc. These considerations, although important, cannot slow down the leverage of innovation. Satisfactory ways can always be found to ensure compliance with the GDPR and other applicable legislations without blocking new technologies, which are key to the development of cities and the attraction of talent. New technologies, and especially advanced technologies in artificial intelligence, digital twin, predictive analytics and others, are only possible with the parallel adoption of cloud computing strategies and require the massive use of data. This is why Nordic cities are leading (and Norway and Finland have overtaken Sweden). The Netherlands is gaining a lot of ground and is positioned on top with Norway and Denmark. Germany is finally getting serious about investing in technology for cities and has moved up the ranking. Switzerland and the UK seem to be holding back the momentum in 2022. The current challenge is the adoption of artificial intelligence in all areas of the city. This requires a broad, well-structured and available information (data) base. In addition, the correct and aggregated use of sensitive citizen information is another challenge to respect privacy, security, regulations, etc.

3.- Non-capital cities. We see the rise of non-capital cities in most countries. These cities are proven more attractive than the capital cities of their countries. Examples are Bergen vs Oslo, Aarhus vs Copenhagen, Gothenburg vs Stockholm, Tampere vs Helsinki, Antwerp vs Brussels, Valencia vs Madrid. The explanation is obvious: these cities incorporate the general advantages of the country, while offering a better quality of life by more easily approaching the 15' city ideal model due to their size. They also have a much lower cost of living as they are not the capital, especially in real-state. In addition, if they are based in a country well connected by public transport, then the supposed advantages of living in the capital are reduced and, therefore, they surpass their capital cities in attractiveness.

The rise of cities in Southern Europe and Spain in particular, especially medium-sized cities such as Valencia, Zaragoza, Malaga, Seville, Nice, Bilbao, Lyon, Florence, is worth analyzing. Their extraordinary quality of life, with a moderate cost, especially housing, medium size, good public transport and special attention to environmental sustainability make them gain many positions in attractiveness. It is clear that these medium-sized cities will never be able to compete in Magnetism with iconic cities with history and culture on every corner, but the problems of cost of living, social inequality and unacceptable distances in time make these cities lose attractiveness. It seems to conclude that the ideal situation is a well-connected medium-sized city (less than 90') from one of these iconic cities. This way you enjoy quality of life and have an excellent international airport, theaters, opera house, etc. in reasonable times for those specific occasions.

Other findings: No Correlation Attractiveness vs Population, Strong one vs GDP. See chapter 6.5

6.4 City Attractiveness by GeoCluster.

AREA	ATTR24	ATTR23	ATTR22	ATTR21	ATTR20
Africa	162	164	164	162	166
Asia-Pacific	95	90	88	86	82
CE Europe	122	123	123	121	119
China Extended	113	113	116	128	131
India Extended	168	169	170	172	163
LatinAmerica	148	147	146	144	141
Middle East	98	101	104	116	121
North America	65	58	29	37	45
Western Europe	45	48	58	52	51

Figure 5. Average positions by Clusters. Attractive Cities by Geographic Area. Source:Author

Figure 5 shows the average position achieved by each geographic area. Since the 2020 analysis, we find a head-to-head competition in Attractiveness between North America and Western Europe. With the economic impact of the pandemic, we can notice in the 2021 and 2022 analysis that North American cities rose in the ranking, while European cities suffered more from the effects of the pandemic and recovered more slowly. Western Europe enjoys more magnetism, history, culture and social values, but pays a high price in taxes to maintain its welfare policy programs, worsening its profitability. In 2022, North America did the opposite: it compensates for the lack of history and cultural/human flavor with strong economic and competitive incentives where they rank high in (and win in) everything by offering high profitability, high wages, moderate taxes and a reasonable cost of living. Better economic management of the pandemic crisis had this impact, improving the attractiveness of cities in the United States and Canada.

However, in the 2023 data we see a significant deterioration in North America (NA) (from average 29 to 58), being overtaken by Western Europe. This deterioration continues in this analysis of 2024, because the cost of living in the USA has not improved (although inflation has been contained) and prices have not fallen (just the opposite in the cost of housing, since many investors have seen real estate and gold as safe investment areas in the face of existing uncertainty (unstable oil prices, wars in critical areas, exorbitant bubble of technology and companies associated with artificial intelligence, etc.).

In parallel, Europe has not had as much of an inflationary effect, and medium-sized cities are holding up well, for the moment, to the pressure of the high cost of housing, so their traditional magnetism and quality of life (lovability) are evident, and even the results of 2023 improve, rising from an average of 48 to 45.

Few changes in Africa, China, India, Latam. Some worsening in Asia-Pacific with Australia falling due to the high cost of living and other Asian cities due to a worsening of the social situation. The 4 Asian tigers are improving their position due to their leadership in innovation. The Middle East is also improving slightly due to the boost from Saudi Arabia, UAE and Türkiye.

6.5 City Attractiveness vs Population vs GDP.

We study the possible correlation of City Attractiveness with city population (Metropolitan Area). In figure 6, we can see the 175 studied cities, distributed horizontally according to their size, and vertically according to their score in the model. There are megacities in high and low positions, as well as medium-sized cities. In Magnetism, we rated high-density as positive, as an enabler of personal communication and development of activity. It's also well studied that despite the possible dispersion in small towns brought by the new communication and Internet technologies, citizens continue to prefer living in medium and large cities over living in isolated small towns. We should not confuse small cities close in commuting time to other large cities: they must be associated to that main city. For humans, they are psychologically the same city, same metropolis. From the observation and the correlation coefficient R^2 = 0.0652 we conclude that there is NO correlation between City Attractiveness and city size. Furthermore, we see that largest cities are strongly attractive due to Magnetism, although they are usually more expensive, and therefore with less Profitability, but that the second/third ranked cities in each country are more affordable, maintaining very good performance standards and high Profitability, although they are less Magnetic, so both things are offset in both city sizes. As explained, midsized cities are winning the competition due to their better quality of life. Perhaps we could say that we find megacities with more problems and handicaps to be leaders in Attractiveness, but they provide a bonus when it comes to Magnetism which is important to value.

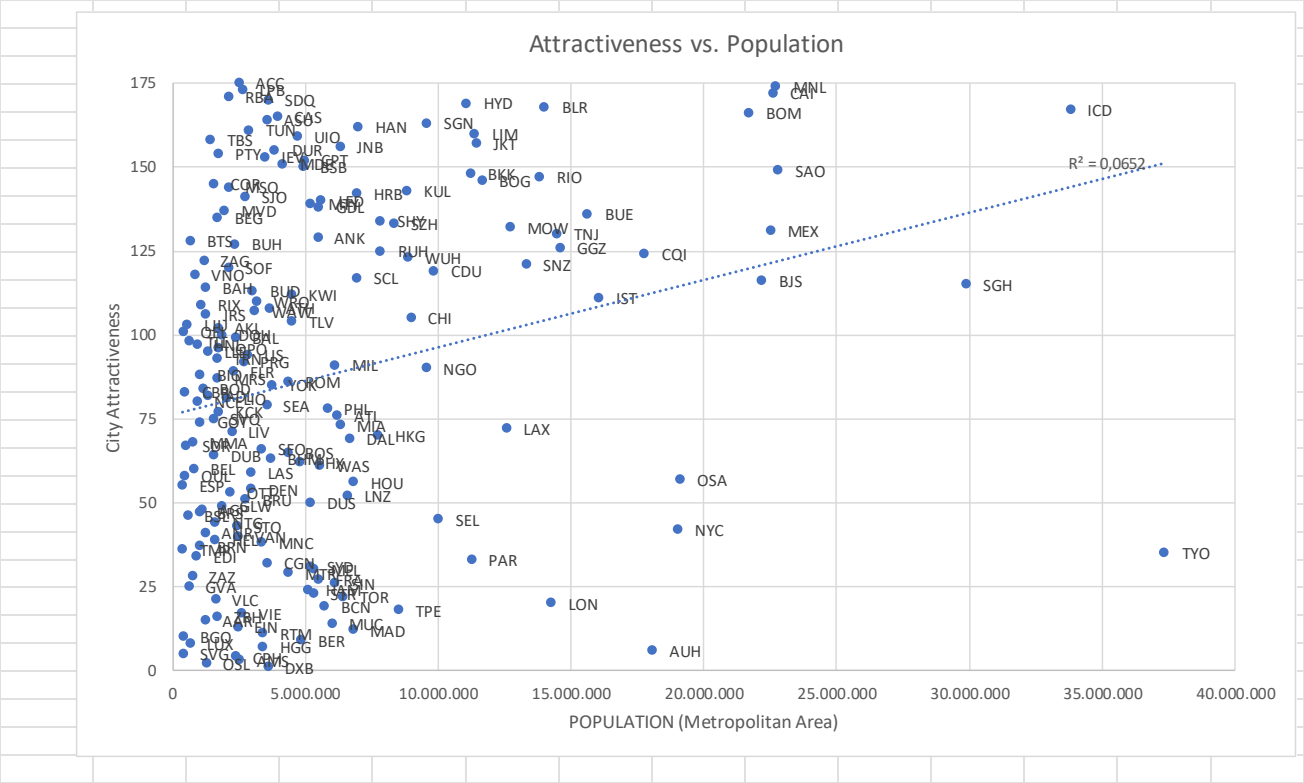


Figure 6. City Attractiveness vs Population (Metropolitan Area). Source: Author

In figure 7, we can compare City Attractiveness with GDP/Capita. Here R^2 = 0.5764, indicating a good correlation (although deteriorating vs last years, which means that money is becoming less relevant…) between these two magnitudes. No surprises: larger budgets with which to invest improves city branding, the external image, events, cultural activities, competitiveness and obviously the city services and Net purchasing power, because of higher wages. The opposite is also true: as we studied, low budgets lead to poorer city development, urbanism, quality of live and services and lower wages, so all main items are severely impacted. Again, we cannot conclude that City Attractiveness is a just a matter of rich cities, and we see a trend to reduce that correlation. That's not true, as we can see in vertical (very similar GDP) all cities from same country, and positions vary in a large range (USA from 55-79), UK (20-63), but obviously city wealth and capacity to invest strongly contributes to City Attractiveness.

Figure 7. City Attractiveness vs GDP/Cap (USD). Source: Author

6.6 Attractive Cities vs SmartCities.

We are going to study the impact of investments in SmartCities on making the city more Attractive. We found that for many cities, investments in their SmartCity plan are the main axis of their strategy to improve their Attractiveness. These investments directly improve performance in city services, and therefore their City Profitability. In addition, they improve their investment in the future, their strategy, also their image of modernity and their reputation, and therefore, their Magnetism. For many cities, it is an important question of prestige (Asian Tigers and Chinese cities). However, we see many cities that pay little attention to a consolidated SmartCities plan, (even if they offer very good services) because they do not consider that they should improve their external image because they think they simply do not need it, since they are already very attractive from economy point of view… We place the Swiss, and some German, US cities here. Let's study figure 8.

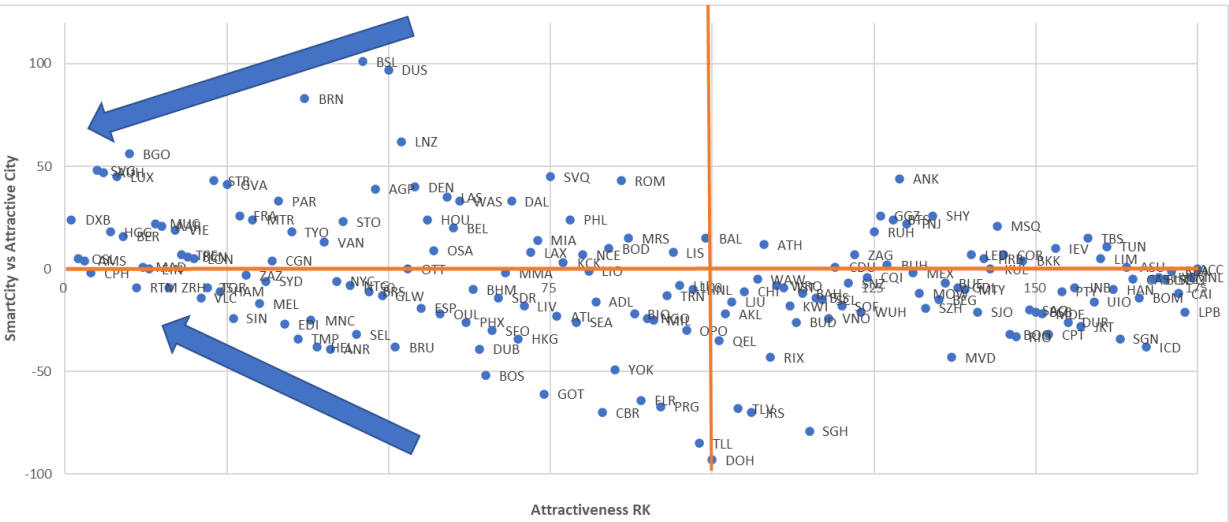


Figure 8. City Attractiveness Ranking vs Gap (SmartCity vs AttractiveCity). Source: Author

The horizontal line at zero: Over that line, cities more Attractive than Smart; under that line, those Smarter than Attractive.

On the vertical axis, the orange line marks rank 100 at Doha, or the midpoint in Attractiveness, so to the left are the cities classified as Advanced; to the right the Challenging, then Emerging, then Starters.

To the left, under the top arrow we find the Swiss cities, much more attractive than smart, with short smart city plans, but they don't need them either! However, they are reacting and realizing that they need to invest in technology to maintain that leadership. Just below that arrow and to the right we find many US and German cities, with very good attractiveness, but that should improve their SmartCity plan. We then reach the orange line that marks many South Europe cities, on the border with the challenging cities (Lisbon, Rome,..). On this same left side, at the bottom, we find the leading cities in SmartCity, those investing heavily to improve positions in Attractiveness (Copenhagen, Amsterdam, Helsinki, Valencia, Barcelona, Singapore...) Here is where the main battle for Attractiveness is fought nowadays, with large investments in Sustainability, citizen services, etc.

From the vertical orange line to the right, we see that most cities are at under the horizontal line: they are the Challengers, investing heavily in SmartCity plans to get promoted to the advanced group (Tel-Aviv, Doha, and many from Eastern Europe like Tallinn...) If we advance to the right, then we enter the Emerging group first and the Starters at the right end. We see that they all obtain better positions in SmartCity than in Attractiveness (most under the horizontal line), which indicates that they all use investments in SmartCity to improve their services for citizens, their image of modernity and their Attractiveness in general.

Therefore, as a general guideline, the SmartCities' Plan fulfills its mission of improving citizen services (Profitability), while helping in strategy, reputation, branding (Magnetism) and becoming the most powerful tool to improve in Attractiveness. Little can be done about fixed issues like geolocation. Some cities with poor geo conditions and large investment capacity (Doha, Singapore, Dubai,..) are exploring the creating of a virtual city in the metaverse (a MetaCity), to capture virtual talent? Investments in changing or improving Identity are slow and always in the medium-long term. It is difficult to quickly improve economic conditions and net purchasing power. Therefore, the obvious lever, with more short-term results (even in a four-year legislature) is to invest heavily in a solid SmartCities plan. The cities that fail in this, have either fallen asleep in the leadership glory, (and are now waking up, like the Swiss, some US, German) or are losing positions and do not take advantage of excellent Magnetism to improve positions (some Southern Europe). On the other hand, cities with handicaps in Magnetism, either due to a lack of history (U.S.), weather conditions (Nordics) or long distances (AUS) compensate with good SmartCity & Services plans that improve their attractiveness to leadership positions. Cities with strong "European" Magnetism, but strong SmartCity investment while keeping cost of housing under control are soaring, like Valencia, Zaragoza.

Finally, at figure 9 Attractive Cities vs SmartCities by GDP, we can see that investing in SmartCities is quite independent from GDP, so all cities can invest resources on creating and executing a compelling SmartCity Plan. This will improve Attractiveness, and if investment is done rationally, progress can be very significant with a moderate cost (we have seen great progress in Latam Cities with very reasonable budgets, but wise investments). On the other hand, Attractiveness is more directly dependent on GDP, so everything that could contribute to improving it counts and is welcome (including the improvement in talent and investors' investment because of an increase in awareness due to a brilliant SmartCity plan). So, we are circling around same concept. As a conclusion, all areas are intertwined, and a balanced plan will touch the most-effective levers.

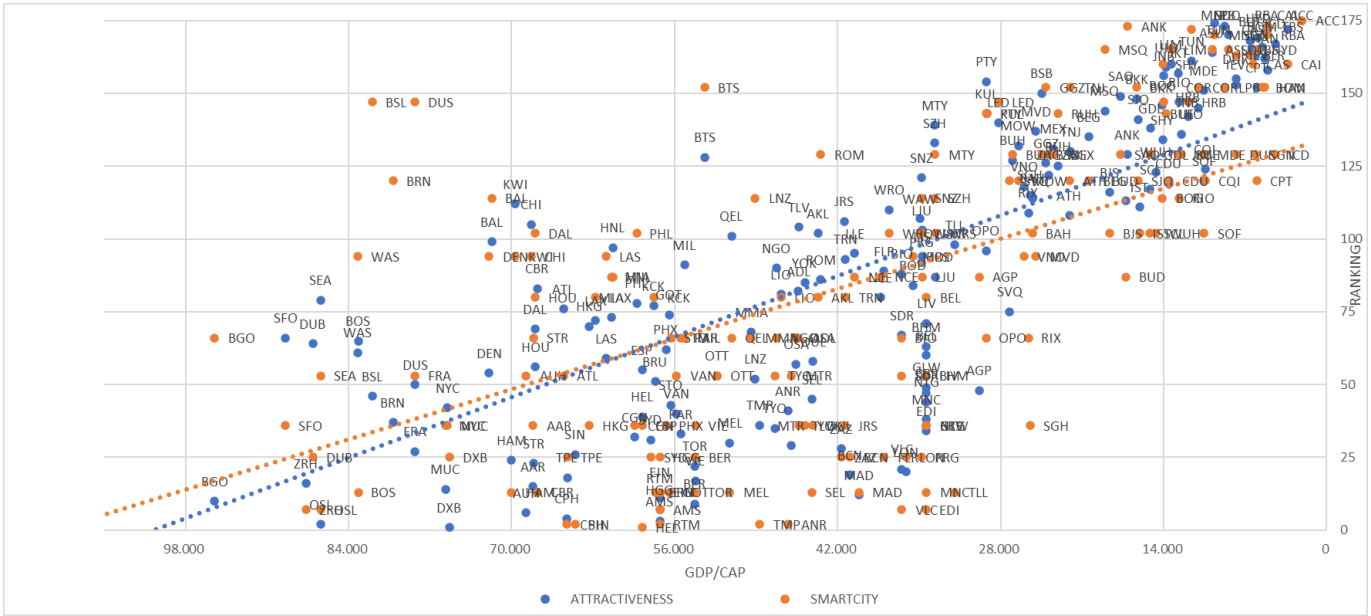


Figure 9. Attractive Cities vs SmartCities by GDP. Source: Author

6.7 Attractive Cities. Comparing 2024 vs 2023-22-21-20 Results.

If we look at the evolution of cities during these 5 consecutive years of analysis, we can conclude that the main positive driver has been the continuous investment in technology, while keeping the cost of living under control. This is the case of UAE, the 4 Asian tigers, Spain (especially the cities with leadership in investment in SmartCities, such as Valencia, Barcelona, and recently, Zaragoza, Malaga and Madrid), the Benelux (maintaining strong leadership in technology applied to cities), as well as Finland and Japan. Norway and Denmark do not grow because they were already in leadership positions. In the part of decline in these years, we can put inflation as the main driver, strongly impacting the USA, AUS, CAN and NZ. SWE fall is due to the slowdown in the adoption of Cloud technologies and artificial intelligence due to excessive regulation, without finding effective ways to maintain technological leadership while preserving digital rights. You cannot go against the current, especially in technology, when the whole world is in a process of constant acceleration. In 2022, we saw the positive impact from the rapid recovery of pre-pandemic GDP in the US and other countries (OECD, 2021). However, the effect of inflation has been very important in the US, CAN, AUS, NZ. In the 18 American cities studied, the rankings have fallen significantly. The IRA Plan is a great support, but it came late (August 2022) and its impact on employment and economic recovery is yet to be demonstrated. What is clear is that it does not encourage the adoption of technology as the European plan did, where 20% was to be invested in technological modernization.

City	Country	AREA	RK24	RK23	DIFF 24-23	TREND
Dubai	United Arab Emi	Middle East	1	7	6	104
Abu Dhabi	United Arab Emi	Middle East	6	6	0	102
Taipei	Taiwan	China Extended	18	8	-10	86
Madrid	Spain	Western Europe	12	63	51	61
Singapore	Singapore	Asia-Pacific	26	52	26	54
Zaragoza	Spain	Western Europe	28	69	41	51
Den Haag	Netherlands	Western Europe	7	14	7	50
Brussels	Belgium	Western Europe	51	76	25	36
Antwerp	Belgium	Western Europe	41	41	0	36
Barcelona	Spain	Western Europe	19	75	56	34
Tampere	Finland	Western Europe	36	19	-17	31
Osaka	Japan	Asia-Pacific	57	57	0	29
Paris	France	Western Europe	33	78	45	27
Munich	Germany	Western Europe	14	29	15	26
Nottingham	United Kingdom	Western Europe	44	48	4	26
Valencia	Spain	Western Europe	21	73	52	25
Hong Kong	Hong Kong	China Extended	70	80	10	25
Riyadh	Saudi Arabia	Middle East	125	126	1	25
Málaga	Spain	Western Europe	48	82	34	24
Luxembourg	Luxembourg	Western Europe	8	28	20	24
Shenzhen	China	China Extended	121	127	6	24
Las Vegas	United States	North America	59	33	-26	23
Linz	Austria	Western Europe	52	59	7	22
Eindhoven	Netherlands	Western Europe	13	22	9	20
Tokyo	Japan	Asia-Pacific	35	42	7	20
Stuttgart	Germany	Western Europe	23	23	0	20
Wuhan	China	China Extended	123	122	-1	20
Chengdu	China	China Extended	119	120	1	19
Amsterdam	Netherlands	Western Europe	3	15	12	18
Guangzhou	China	China Extended	126	125	-1	18

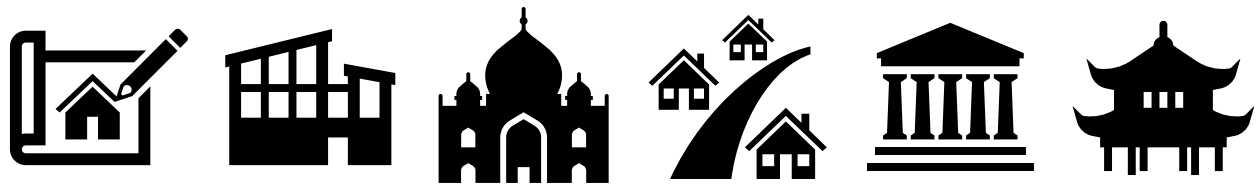
City	Country	AREA	RK24	RK23	DIFF 24-23	TREND
Adelaide	Australia	Asia-Pacific	82	36	-46	-80
Wellington	New Zealand	Asia-Pacific	101	92	-9	-71
Canberra	Australia	Asia-Pacific	83	44	-39	-71
Chicago	United States	North America	105	64	-41	-69
Kansas City	United States	North America	77	43	-34	-64
Gothenburg	Sweden	Western Europe	74	13	-61	-64
Auckland	New Zealand	Asia-Pacific	102	91	-11	-51
Malmo	Sweden	Western Europe	68	25	-43	-51
Phoenix	United States	North America	62	45	-17	-47
Stockholm	Sweden	Western Europe	43	35	-8	-38
Atlanta	United States	North America	76	61	-15	-37
Basel	Switzerland	Western Europe	46	11	-35	-37
Baltimore	United States	North America	99	83	-16	-35
Bern	Switzerland	Western Europe	37	2	-35	-33
Dallas	United States	North America	69	65	-4	-31
Honolulu	United States	North America	97	89	-8	-31
Denver	United States	North America	54	60	6	-29
Melbourne	Australia	Asia-Pacific	30	18	-12	-29
Ottawa	Canada	North America	53	40	-13	-29
Los Angeles	United States	North America	72	55	-17	-28
Córdoba	Argentina	LatinAmerica	145	137	-8	-27
Liverpool	United Kingdom	Western Europe	71	58	-13	-24
Sydney	Australia	Asia-Pacific	31	31	0	-23
Montreal	Canada	North America	29	30	1	-22
Buenos Aires	Argentina	LatinAmerica	136	130	-6	-21
Houston	United States	North America	56	39	-17	-19
Miami	United States	North America	73	71	-2	-17
Kuala Lumpur	Malaysia	Asia-Pacific	143	135	-8	-16
Santiago	Chile	LatinAmerica	117	117	0	-15
Sao Paulo	Brazil	LatinAmerica	149	144	-5	-15

Figure 10. Comparing 2024 vs 2023 and Trend 24->20

In the list of winners, we see a strong rise of Japan. After the pandemic, its economy grew by 2.2% percent in the second quarter of 2022, the fastest in 12 years, making the years of stagnation be forgotten. But we think the key is over technological development: Japan advanced its vision of Society 5.0, a human-centered society that balances economic advancement with solving social problems through a system that highly integrates cyberspace and physical space. Japan is investing 120 byen in R&D over five years starting from fiscal 2021, focusing on key technologies such as artificial intelligence, quantum technology, IoT, and biotechnology. (Bloomberg, 2023). Notably, the traditional social challenges it faces, such as population aging and gender inequality, are being firmly addressed. The major cities that have gained notable positions are European, with Benelux, Spain, Germany and Finland. In terms of technology, Germany launched its new digital strategy for the next three years in August 2021, with the aim of boosting its digital sovereignty, innovation and competitiveness. The strategy includes 18 initiatives to invest in technologies (Delcker, 2022). The United Arab Emirates is surprising the world in terms of investment in technology and extraordinary economic proposition, which compensate for its problems with cultural and environmental attractiveness. Its constant investment in sporting events positions it internationally. In addition, it is immune to fluctuations in the energy crisis. Southern Europe is gaining ground, but only Spain and France achieve a real improvement due to investment in technology and in the case of Spain, it is still affordable in medium-sized cities. In any case, the extraordinary magnetism of southern Europe compensates its tax hell that hinders its attractiveness for talent. China improves due to the incorporation of technology. Latam, Africa and India maintain the worst positions and increase the gap with the Challengers (CEE, Middle East).

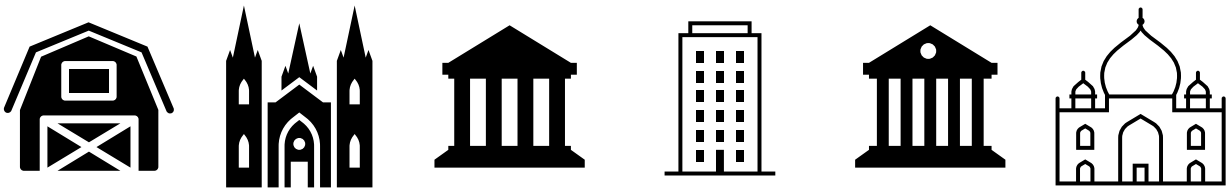
City	Country	AREA	RK24	RK23	DIFF 24-23	TREND	MAG-RK24	MAG-RK2	DIFF 24-2	TRENI	PROF-RK24	PROF-RK23	DIFF 24-23	TREND
Dubai	United Arab Emi	Middle East	1	7	6	104	73	109	36	37	1	2	1	99
Oslo	Norway	Western Europe	2	1	-1	9	6	4	-2	7	4	4	0	12
Amsterdam	Netherlands	Western Europe	3	15	12	18	1	1	0	2	13	51	38	39
Copenhagen	Denmark	Western Europe	4	5	1	15	2	2	0	4	16	29	13	27
Stavanger	Norway	Western Europe	5	3	-2	17	15	20	5	5	5	6	1	20
Abu Dhabi	United Arab Emi	Middle East	6	6	0	102	103	111	8	22	2	1	-1	97
Den Haag	Netherlands	Western Europe	7	14	7	50	14	35	21	15	7	9	2	61
Luxembourg	Luxembourg	Western Europe	8	28	20	24	26	51	25	25	6	20	14	28
Berlin	Germany	Western Europe	9	12	3	-3	11	9	-2	1	14	28	14	-3
Bergen	Norway	Western Europe	10	4	-6	17	21	28	7	17	8	7	-1	17
Rotterdam	Netherlands	Western Europe	11	10	-1	7	19	17	-2	-1	10	13	3	19
Madrid	Spain	Western Europe	12	63	51	61	3	15	12	20	39	83	44	42
Eindhoven	Netherlands	Western Europe	13	22	9	20	31	29	-2	1	9	31	22	30
Munich	Germany	Western Europe	14	29	15	26	17	18	1	20	12	40	28	36
Aarhus	Denmark	Western Europe	15	9	-6	16	8	7	-1	6	30	26	-4	24
Zurich	Switzerland	Western Europe	16	16	0	-13	7	10	3	19	42	34	-8	-39
Vienna	Austria	Western Europe	17	24	7	-3	10	12	2	0	34	49	15	-3
Taipei	Taiwan	China Extended	18	8	-10	86	100	96	-4	-2	3	3	0	106
Barcelona	Spain	Western Europe	19	75	56	34	9	13	4	0	44	92	48	38
London	United Kingdom	Western Europe	20	68	48	8	4	3	-1	-3	56	94	38	16
Valencia	Spain	Western Europe	21	73	52	25	24	39	15	10	26	79	53	33
Toronto	Canada	North America	22	54	32	-2	45	41	-4	-40	15	69	54	29
Stuttgart	Germany	Western Europe	23	23	0	20	37	36	-1	26	21	27	6	14
Hamburg	Germany	Western Europe	24	20	-4	-1	35	23	-12	-10	24	17	-7	0
Geneva	Switzerland	Western Europe	25	26	1	-9	18	34	16	49	41	32	-9	-32
Singapore	Singapore	Asia-Pacific	26	52	26	54	53	60	7	15	18	53	35	61
Frankfurt	Germany	Western Europe	27	37	10	8	38	43	5	20	27	48	21	3
Zaragoza	Spain	Western Europe	28	69	41	51	51	80	29	-2	19	59	40	65
Montreal	Canada	North America	29	30	1	-22	66	64	-2	-39	11	12	1	-3
Melbourne	Australia	Asia-Pacific	30	18	-12	-29	34	26	-8	-26	43	15	-28	-37
Sydney	Australia	Asia-Pacific	31	31	0	-23	22	33	11	-11	51	43	-8	-37
Cologne	Germany	Western Europe	32	17	-15	-3	42	16	-26	-6	36	22	-14	-3
Paris	France	Western Europe	33	78	45	27	5	5	0	-3	74	97	23	15
Edinburgh	United Kingdom	Western Europe	34	38	4	0	27	19	-8	13	50	61	11	-14
Tokyo	Japan	Asia-Pacific	35	42	7	20	32	32	0	20	48	62	14	9
Tampere	Finland	Western Europe	36	19	-17	31	28	30	2	17	53	14	-39	20
Bern	Switzerland	Western Europe	37	2	-35	-33	50	21	-29	15	35	5	-30	-34
Manchester	United Kingdom	Western Europe	38	32	-6	-12	56	38	-18	-39	31	46	15	6
Helsinki	Finland	Western Europe	39	21	-18	13	16	6	-10	5	62	54	-8	5
Vancouver	Canada	North America	40	77	37	10	76	82	6	-23	23	64	41	27
Antwerp	Belgium	Western Europe	41	41	0	36	29	46	17	53	63	55	-8	-1
New York City	United States	North America	42	62	20	0	13	8	-5	-6	76	85	9	2
Stockholm	Sweden	Western Europe	43	35	-8	-38	12	11	-1	-8	81	72	-9	-68
Nottingham	United Kingdom	Western Europe	44	48	4	26	75	75	0	5	28	37	9	27
Seoul	South Korea	Asia-Pacific	45	86	41	4	23	44	21	-7	69	96	27	2
Basel	Switzerland	Western Europe	46	11	-35	-37	48	40	-8	18	58	8	-50	-54
Bristol	United Kingdom	Western Europe	47	56	9	7	74	54	-20	-10	33	58	25	9
Málaga	Spain	Western Europe	48	82	34	24	55	57	2	-7	54	82	28	21
Glasgow	United Kingdom	Western Europe	49	34	-15	-1	65	48	-17	-9	45	41	-4	0
Dusseldorf	Germany	Western Europe	50	46	-4	-5	89	91	2	2	25	21	-4	-5
Brussels	Belgium	Western Europe	51	76	25	36	41	47	6	46	66	78	12	14
Linz	Austria	Western Europe	52	59	7	22	60	63	3	9	52	56	4	9
Ottawa	Canada	North America	53	40	-13	-29	79	67	-12	-35	38	35	-3	-17
Denver	United States	North America	54	60	6	-29	96	86	-10	-25	20	38	18	-8
Espoo	Finland	Western Europe	55	49	-6	-14	33	31	-2	-18	73	73	0	-13
Houston	United States	North America	56	39	-17	-19	83	81	-2	5	32	19	-13	-15
Osaka	Japan	Asia-Pacific	57	57	0	29	101	84	-17	0	17	36	19	41
Oulu	Finland	Western Europe	58	27	-31	5	46	37	-9	-11	68	30	-38	5

Figure 11. Attractiveness (Magnetism – Profitability) Comparison 24 vs 23 and Trending 24→20. Source: Author



City	Country	AREA	RK24	RK23	DIFF 24-23	TREND	MAG-RK24	MAG-RK23	DIFF 24-23	TREND	PROF-RK24	PROF-RK23	DIFF 24-23	TREND
Las Vegas	United States	North America	59	33	-26	23	98	90	-8	-6	22	10	-12	44
Belfast	United Kingdom	Western Europe	60	47	-13	9	88	68	-20	-5	37	39	2	14
Washington, D	United States	North America	61	50	-11	-3	39	27	-12	-11	71	74	3	-1
Phoenix	United States	North America	62	45	-17	-47	93	93	0	-8	29	16	-13	-22
Birmingham	United Kingdom	Western Europe	63	51	-12	-4	80	61	-19	-3	46	52	6	-6
Dublin	Ireland	Western Europe	64	74	10	1	44	22	-22	-5	70	89	19	7
Boston	United States	North America	65	66	1	-3	25	25	0	25	88	77	-11	-25
San Francisco	United States	North America	66	72	6	9	36	24	-12	-17	79	86	7	7
Santander	Spain	Western Europe	67	90	23	16	63	72	9	-9	60	90	30	27
Malmo	Sweden	Western Europe	68	25	-43	-51	40	42	2	-9	78	25	-53	-60
Dallas	United States	North America	69	65	-4	-31	85	88	3	1	49	47	-2	-30
Hong Kong	Hong Kong	China Extended	70	80	10	25	95	107	12	-14	40	33	-7	61
Liverpool	United Kingdom	Western Europe	71	58	-13	-24	77	77	0	2	59	50	-9	-27
Los Angeles	United States	North America	72	55	-17	-28	43	50	7	-2	82	63	-19	-29
Miami	United States	North America	73	71	-2	-17	68	73	5	8	65	71	6	-27
Gothenburg	Sweden	Western Europe	74	13	-61	-64	20	14	-6	22	93	24	-69	-83
Seville	Spain	Western Europe	75	84	9	-14	87	87	0	-54	57	76	19	12
Atlanta	United States	North America	76	61	-15	-37	52	62	10	18	83	57	-26	-55
Kansas City	United States	North America	77	43	-34	-64	90	92	2	-68	61	18	-43	-46
Philadelphia	United States	North America	78	53	-25	-7	81	74	-7	8	67	45	-22	-18
Seattle	United States	North America	79	67	-12	-3	70	65	-5	3	72	65	-7	-7
Nice	France	Western Europe	80	88	8	4	57	56	-1	-10	89	93	4	1
Lyon	France	Western Europe	81	87	6	-13	64	55	-9	-18	77	91	14	-1
Adelaide	Australia	Asia-Pacific	82	36	-46	-80	67	76	9	-37	75	23	-52	-73
Canberra	Australia	Asia-Pacific	83	44	-39	-71	54	58	4	24	90	42	-48	-85
Bordeaux	France	Western Europe	84	81	-3	1	62	53	-9	-5	86	84	-2	2
Yokohama	Japan	Asia-Pacific	85	70	-15	-7	94	71	-23	0	64	67	3	-8
Rome	Italy	Western Europe	86	98	12	8	61	69	8	-1	91	101	10	14
Marseille	France	Western Europe	87	85	-2	-6	71	66	-5	-12	87	87	0	-4
Bilbao	Spain	Western Europe	88	96	8	2	78	70	-8	-17	84	98	14	7
Florence	Italy	Western Europe	89	95	6	7	47	52	5	25	97	99	2	6
Nagoya	Japan	Asia-Pacific	90	79	-11	-1	110	101	-9	-10	55	44	-11	9
Milan	Italy	Western Europe	91	97	6	0	59	45	-14	-16	96	104	8	1
Prague	Czech Republic	CE Europe	92	108	16	5	30	59	29	60	101	119	18	-3
Torino	Italy	Western Europe	93	94	1	6	82	78	-4	13	92	95	3	12
Lisbon	Portugal	Western Europe	94	105	11	7	58	85	27	26	99	108	9	13
Lille	France	Western Europe	95	93	-2	-7	91	95	4	-17	94	80	-14	-9
Porto	Portugal	Western Europe	96	99	3	2	69	79	10	6	100	106	6	8
Honolulu	United States	North America	97	89	-8	-31	112	104	-8	-13	85	68	-17	-62
Tallinn	Estonia	CE Europe	98	102	4	2	72	94	22	32	102	107	5	-6
Baltimore	United States	North America	99	83	-16	-35	102	97	-5	-5	98	66	-32	-76
Doha	Qatar	Middle East	100	100	0	12	116	120	4	21	80	70	-10	14
Wellington	New Zealand	Asia-Pacific	101	92	-9	-71	84	83	-1	-29	103	88	-15	-76
Auckland	New Zealand	Asia-Pacific	102	91	-11	-51	92	89	-3	-30	104	81	-23	-63
Ljubljana	Slovenia	CE Europe	103	106	3	0	106	102	-4	-4	105	105	0	1
Tel Aviv	Israel	Middle East	104	103	-1	-12	105	100	-5	-9	107	103	-4	-14
Chicago	United States	North America	105	64	-41	-69	49	49	0	-25	116	75	-41	-70
Jerusalem	Israel	Middle East	106	101	-5	-13	104	98	-6	-11	109	102	-7	-14
Warsaw	Poland	CE Europe	107	110	3	0	97	105	8	12	113	109	-4	-3
Athens	Greece	CE Europe	108	113	5	2	113	112	-1	-5	108	113	5	6
Riga	Latvia	CE Europe	109	112	3	7	111	110	-1	12	112	111	-1	3
Wroclaw	Poland	CE Europe	110	109	-1	-4	108	103	-5	-3	115	110	-5	-8
Istanbul	Turkey	Middle East	111	134	23	12	119	128	9	0	106	133	27	27
Kuwait City	Kuwait	Middle East	112	107	-5	1	149	145	-4	21	47	11	-36	0
Budapest	Hungary	CE Europe	113	111	-2	-2	86	99	13	17	121	112	-9	-2
Manama	Bahrain	Middle East	114	104	-10	11	145	132	-13	17	95	60	-35	16
Shanghai	China	China Extended	115	116	1	4	99	108	9	7	123	132	9	19
Beijing	China	China Extended	116	119	3	10	107	113	6	14	122	131	9	19

Figure 11. Attractiveness (Magnetism – Profitability) Comparison 24 vs 23 and Trending 24→20. Source: Author



City	Country	AREA	RK24	RK23	DIFF 24-23	TREND	MAG-RK24	MAG-RK23	DIFF 24-23	TREND	PROF-RK24	PROF-RK23	DIFF 24-23	TREND
Santiago	Chile	LatinAmerica	117	117	0	-15	126	118	-8	-10	114	118	4	-22
Vilnius	Lithuania	CE Europe	118	114	-4	-9	109	106	-3	2	130	125	-5	-17
Chengdu	China	China Extended	119	120	1	19	124	126	2	25	119	115	-4	6
Sofia	Bulgaria	CE Europe	120	115	-5	2	114	114	0	0	129	122	-7	6
Shenzhen	China	China Extended	121	127	6	24	130	137	7	28	117	120	3	19
Zagreb	Croatia	CE Europe	122	121	-1	-5	115	117	2	7	128	126	-2	-8
Wuhan	China	China Extended	123	122	-1	20	129	127	-2	25	120	114	-6	9
Chongqing	China	China Extended	124	118	-6	6	123	121	-2	17	124	117	-7	1
Riyadh	Saudi Arabia	Middle East	125	126	1	25	147	158	11	27	110	100	-10	-8
Guangzhou	China	China Extended	126	125	-1	18	132	136	4	28	118	116	-2	9
Bucharest	Romania	CE Europe	127	124	-3	-6	121	122	1	6	132	130	-2	-11
Bratislava	Slovakia	CE Europe	128	123	-5	-14	117	115	-2	-2	140	134	-6	-23
Ankara	Turkey	Middle East	129	148	19	7	154	154	0	-7	111	137	26	13
Tianjin	China	China Extended	130	129	-1	7	131	133	2	8	127	129	2	7
Mexico City	Mexico	LatinAmerica	131	139	8	-7	118	124	6	-6	143	146	3	1
Moscow	Russia	CE Europe	132	131	-1	-12	127	134	7	-20	136	128	-8	4
Suzhou	China	China Extended	133	132	-1	-2	125	125	0	9	139	140	1	-10
Shenyang	China	China Extended	134	128	-6	-2	135	135	0	9	125	123	-2	-2
Belgrade	Serbia	CE Europe	135	136	1	5	120	119	-1	-2	145	143	-2	4
Buenos Aires	Argentina	LatinAmerica	136	130	-6	-21	128	123	-5	-11	142	139	-3	-26
Montevideo	Uruguay	LatinAmerica	137	133	-4	-9	122	116	-6	11	146	148	2	-18
Guadalajara	Mexico	LatinAmerica	138	138	0	-5	133	129	-4	-2	134	141	7	5
Monterrey	Mexico	LatinAmerica	139	146	7	0	137	140	3	1	138	149	11	-1
St Petersburg	Russia	CE Europe	140	141	1	-11	139	148	9	-13	137	124	-13	1
San José	Costa Rica	LatinAmerica	141	147	6	7	144	142	-2	8	133	144	11	13
Harbin	China	China Extended	142	142	0	12	153	152	-1	14	125	127	2	4
Kuala Lumpur	Malaysia	Asia-Pacific	143	135	-8	-16	146	141	-5	-3	131	121	-10	-9
Minsk	Belarus	CE Europe	144	149	5	-2	148	156	8	0	135	136	1	-3
Córdoba	Argentina	LatinAmerica	145	137	-8	-27	138	130	-8	-10	148	135	-13	-30
Bogota	Colombia	LatinAmerica	146	153	7	1	143	153	10	-19	144	155	11	14
Rio de Janeiro	Brazil	LatinAmerica	147	140	-7	-12	134	131	-3	-21	150	142	-8	-2
Bangkok	Thailand	Asia-Pacific	148	143	-5	1	136	138	2	-1	151	147	-4	3
Sao Paulo	Brazil	LatinAmerica	149	144	-5	-15	141	139	-2	-21	149	145	-4	-4
Brasilia	Brazil	LatinAmerica	150	145	-5	-9	150	150	0	-14	147	138	-9	-4
Medellín	Colombia	LatinAmerica	151	160	9	0	160	168	8	-15	141	151	10	10
Cape Town	South Africa	Africa	152	151	-1	5	140	143	3	-11	157	153	-4	14
Kiev	Ukraine	CE Europe	153	154	1	-7	142	144	2	-12	156	159	3	-4
Panama City	Panama	LatinAmerica	154	150	-4	-1	155	147	-8	-14	152	150	-2	1
Durban	South Africa	Africa	155	156	1	5	152	159	7	-2	153	152	-1	12
Johannesburg	South Africa	Africa	156	158	2	6	151	160	9	-9	159	156	-3	10
Jakarta	Indonesia	Asia-Pacific	157	155	-2	7	158	151	-7	-26	154	157	3	21
Tbilisi	Georgia	CE Europe	158	161	3	-6	159	161	2	-2	155	160	5	-8
Quito	Ecuador	LatinAmerica	159	152	-7	-4	157	146	-11	-4	160	154	-6	-4
Lima	Peru	LatinAmerica	160	157	-3	-1	161	155	-6	-10	158	158	0	4
Tunis	Tunisia	Africa	161	164	3	6	156	157	1	9	164	166	2	-3
Hanoi	Vietnam	Asia-Pacific	162	159	-3	4	163	149	-14	-7	161	162	1	5
Ho Chi Minh C	Vietnam	Asia-Pacific	163	163	0	8	169	162	-7	-1	162	165	3	2
Asuncion	Paraguay	LatinAmerica	164	162	-2	9	168	164	-4	4	163	161	-2	7
Casablanca	Morocco	Africa	165	169	4	4	167	170	3	-6	166	167	1	6
Mumbai	India	India Extended	166	167	1	-5	164	166	2	-9	171	171	0	-8
New Delhi	India	India Extended	167	165	-2	-9	162	163	1	-3	175	172	-3	-18
Bangalore	India	India Extended	168	171	3	-3	165	167	2	-2	173	174	1	-13
Hyderabad	India	India Extended	169	174	5	-1	166	172	6	5	170	173	3	-15
Santo Doming	Dominican Repu	LatinAmerica	170	168	-2	-14	170	169	-1	-6	167	164	-3	-17
Rabat	Morocco	Africa	171	172	1	3	171	171	0	2	168	168	0	5
Cairo	Egypt	Middle East	172	170	-2	0	172	174	2	-6	172	163	-9	2
La Paz	Bolivia	LatinAmerica	173	166	-7	-3	173	165	-8	-4	174	169	-5	-15
Manila	Philippines	Asia-Pacific	174	173	-1	-11	174	173	-1	-28	169	170	1	-1
Accra	Ghana	Africa	175	175	0	0	175	175	0	0	165	175	10	2

Figure 11. Attractiveness (Magnetism – Profitability) Comparison 24 vs 23 and Trending 24→20. Source: Author

6.8 Attractiveness vs Employability

The world is now, more than ever, being fueled by talent and human resources. With fast growing economies, and constant rivalry to be number one, cities are constantly racing to prosper both economically and socially.

However, with globalization, a great advantage rises for those who are talented (Parilla and Liu, 2019). A massive pool of opportunities from which to pick. Those wanting to develop their career in tech will probably try to work in Silicon Valley or Shanghai, while those interested in finance will aspire to grab a job in New York or London. (Haqqi, 2021)

As part of our model, we are interested in understanding to what extend the overall Attractiveness of a city impacts on its ability to attract talent. Although professional opportunities are a very strong attracter of human capital, we believe that a cities appeal is characterized by more than that.

Employability is extremely related to talent. Talent attraction is, together with profitability (high wages, low taxes) what makes Cities topping our Attractiveness ranking. One of our points of interest arising from this study was to find out whether a city's attractiveness influences in any way the amount of talent the city attracts.

To analyze this, we have combined two sources with same weight. On one hand, The Global Talent Competitiveness Index, INSEAD 2023 (Lanvin and Monteiro, 2023), where we take the Employability index, as a proxy to know the easiness to find skilled employees and talented educated citizens in a city. This is quantified by indicators about skills gaps and labor market mismatches and by the good provision of professionals by local education systems. On the other hand, we take LinkedIn Talent Insights report for each studied Metropolitan Area. This report gives us three main indicators to be equally weighted and combined. First, Hiring Demand (measuring the level of activity from recruiters in the area in the past 12 months), then % Jobs posted vs Total amount of professionals (measuring the jobs availability in the area), then Talent net flow (Professionals won or lost in the past 12 months vs total). These three indicators really offer a picture of employability situation in that area, based on the activity from demand and offer, and net talent win or loss. Only creative professionals have been studied (according to Pf. Florida's approach). Let's look at top25 at Figure 12.

City	Country	LinkedIN Talent Insights NC	Employability GTCI NOR	Employability NOR
Dusseldorf	Germany	10,00	7,51	10,00
Luxembourg	Luxembourg	10,00	7,43	9,98
Hamburg	Germany	9,30	7,51	9,40
Osaka	Japan	8,50	3,80	7,93
Berlin	Germany	7,40	7,51	7,79
Singapore	Singapore	6,57	9,99	7,61
Dallas	United States	6,05	9,13	6,98
Munich	Germany	6,25	7,51	6,81
Basel	Switzerland	5,19	9,35	6,29
Zurich	Switzerland	4,99	9,35	6,12
Geneva	Switzerland	4,56	9,35	5,76
Marseille	France	5,26	6,32	5,71
Bangalore	India	6,00	2,84	5,60
Bern	Switzerland	4,32	9,35	5,55
Stuttgart	Germany	4,64	7,51	5,43
Denver	United States	4,07	9,13	5,29
Houston	United States	4,05	9,13	5,28
Las Vegas	United States	3,92	9,13	5,17
Phoenix	United States	3,78	9,13	5,05
Eindhoven	Netherlands	3,94	8,38	5,02
Prague	Czech Republic	4,48	6,06	4,99
Seattle	United States	3,63	9,13	4,92
Warsaw	Poland	4,38	6,05	4,90
Bordeaux	France	4,12	6,32	4,74
Vancouver	Canada	3,42	8,94	4,70

Figure 12. City Employability. TOP 25 Source: Author

Employability is led by Western European cities, primarily Germany, followed by the most innovative cities in the US, Canada, Singapore, Japan and Switzerland. Compared to last year, Europe (and especially Germany and Northern Europe) continues to outperform the US, which was the clear winner in 2021, but fell in 2022 and has remained so in 2023. Ongoing restructuring and layoffs at major US tech companies reduced talent attractiveness, while European stimulus boosted employment attractiveness in Northern Europe. It is worth noting the variability of this picture, which we can date back to 1 January 2023. The INSEAD study uses data from 2021/22 and continues to position the US ahead. LinkedIn data is more current and reflects this shift between the US and Western Europe. Perhaps the average we indicated is true. However, as 2023 and 2024 progress, we see the German locomotive slowing down and US technology companies strongly dominating the stock market, recovering hiring. We will study this in the next 2025 Observatory.

We have analyzed the City Attractiveness by more than 100 indicators, including emotional and rational components. But, how much pure Employability is related to City Attractiveness? We have concluded that investors/companies go where talent is, no longer the other way around. So, a city well prepared and equipped with talent will attract investors which will make the city to thrive. McKinsey (Cassim et al, 2020) positioned workforce upskilling as one of four main growth plan factors for 2020-25, together with Green energy investment, Digitalization and new technologies and Resilience of supply chains and security of essential goods. They point to a 30% of potentially automatable tasks and a very waving demand patterns pushing to hundreds of millions of skilled workers to switch jobs. In this context, enjoying an over the average skilled population makes a city resilient to these fluctuations and competitive enough to leverage the new opportunities and growth potential.

But let's compare our Employability and Attractiveness results. In order to understand the relationship - between these two indexes. Final Correlation number R^2=0,4217, which is high and means a strong association between the two concepts. Improving Employability (by improving citizen skilling) seems to be a clear driver for all cities over the average line, moving top right. For those performing better in Employability that in Attractiveness, other concepts described in our Observatory like Magnetism or Cost of life should be considered the main levers to activate. (See figure 13)

But, let's remind that professional opportunities are not definite drivers when choosing a city, although they definitely help.

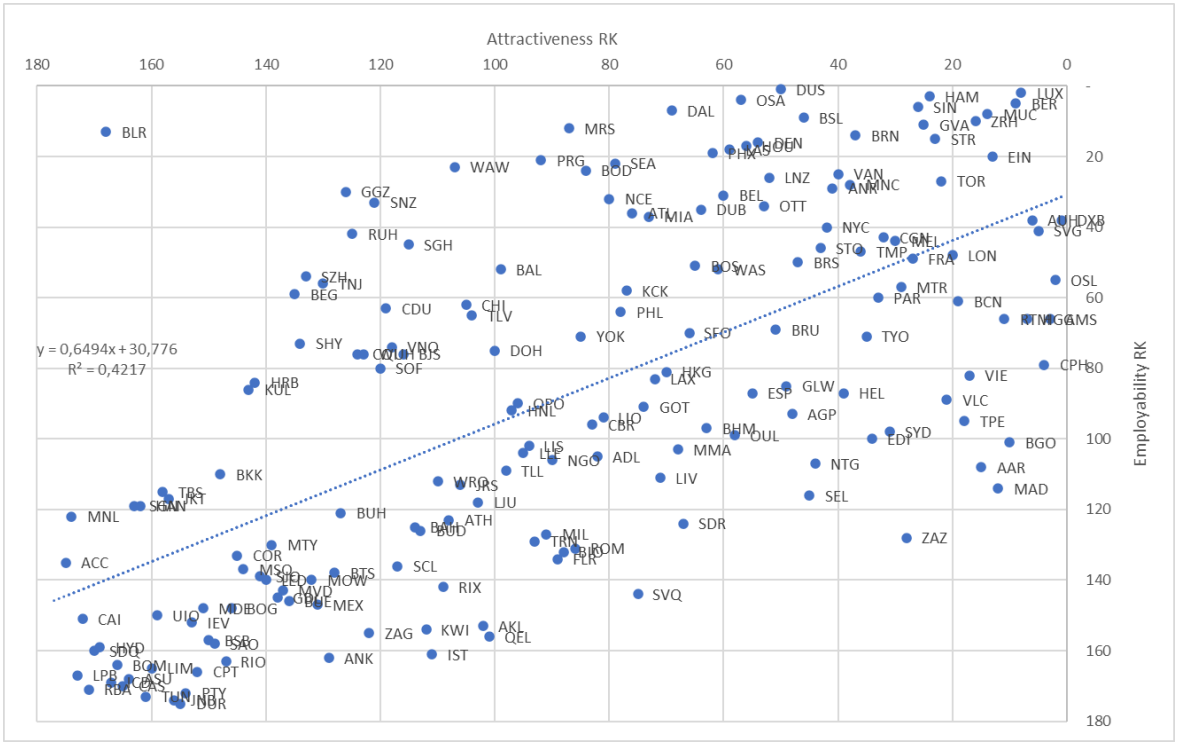


Figure 13. City Attractiveness vs Employability. Source: Author

7. Conclusions

7.1 Balancing City Magnetism and City Profitability

The key is to find a balance between transforming the essence of the city (its physical and virtual shape) while improving its benefits and services. The two aspects feed off of each other. A city's essence determines how the services provided should improve, while the new services have an impact on transforming the city's essence. The transition to an information- and knowledge-based economy represents both a revolution, due to its new acceleration and blistering speed, and a challenge as we try to balance the concept of an attractive and accessible city with social and environmental progress. (Van den Berg, Van de Meer, Oligaar, 2006)

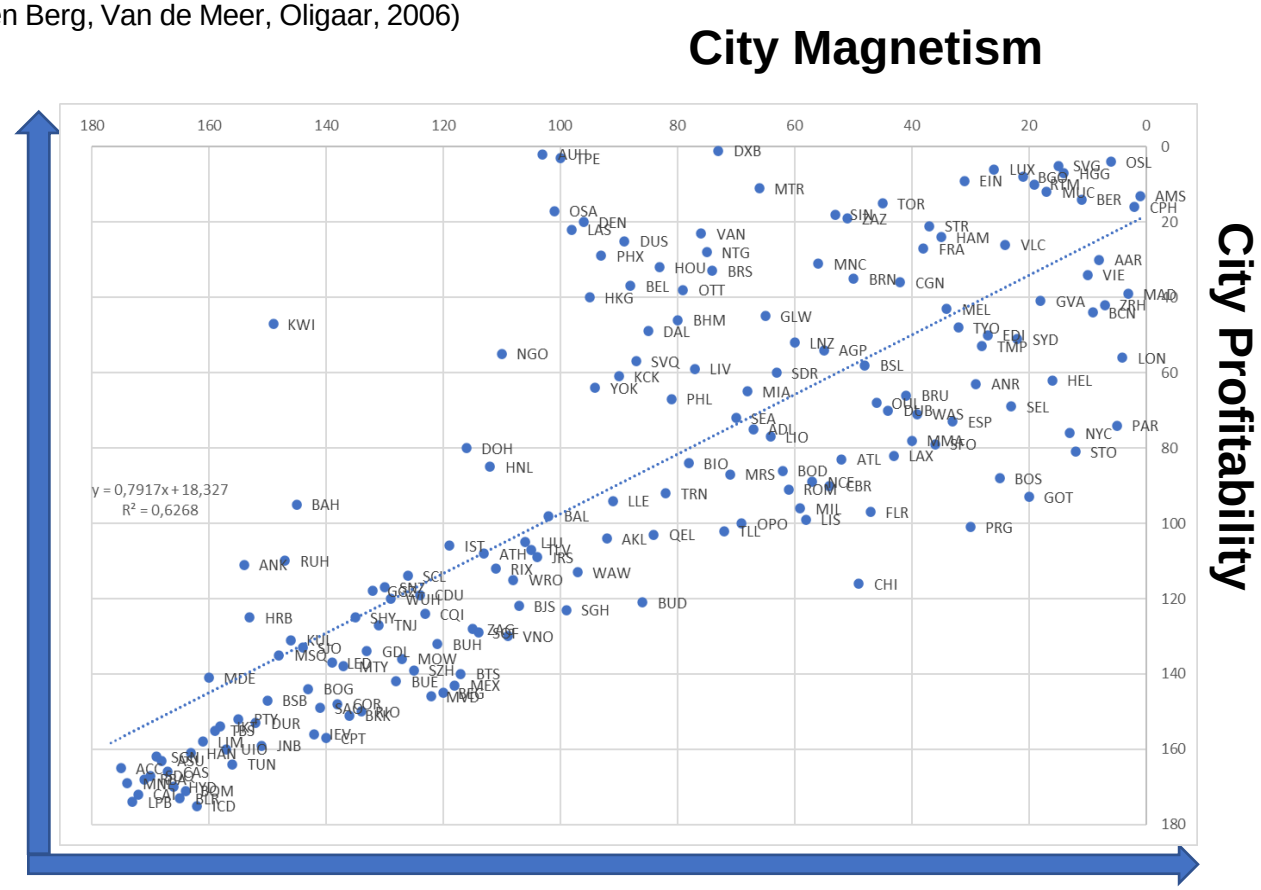


Figure 14. Balancing City Magnetism and City Profitability. Cities in UNLOCODE three letters nomination. Source: Author

The magic quadrant is in the upper right (see figure 14) where we find cities with top positions at Magnetism and Profitability. These are mainly cities in the Advanced area of the ranking. These cities compete hard day after day to stay there, to gain positions step by step, making a huge investment. The message for them is clear: keep investing, keep progressing.

In the lower left quadrant, we see cities with low magnetism and low profitability. These are Emerging and Starter cities. Our message is again clear: 'fix the basics'. In the upper left quadrant, we find cities with low magnetism but high profitability. They are mainly some less-than-magnetic US and Japanese cities, as well as some very industrial, German cities, UAE, Doha, Hong-Kong and Kuwait. They have the opportunity to improve and evolve and move into the magic quadrant if they invest in achieving social sustainability, improving their dynamism, cultivating their identity (they are massively doing), and designing an attractive future plan that is connected to their citizens. In the lower right quadrant, we find cities with high magnetism but low profitability. Those are cities with a great identity but extraordinarily expensive like NewYork, Paris, London, Stockholm, Boston. Many Southern Europe cities must improve the provision of citizen services and the economic equation (taxes hell), or they run the risk of falling behind in overall attractiveness. This looks to be true of Italian and Portuguese cities with high Magnetism, but poor Profitability.

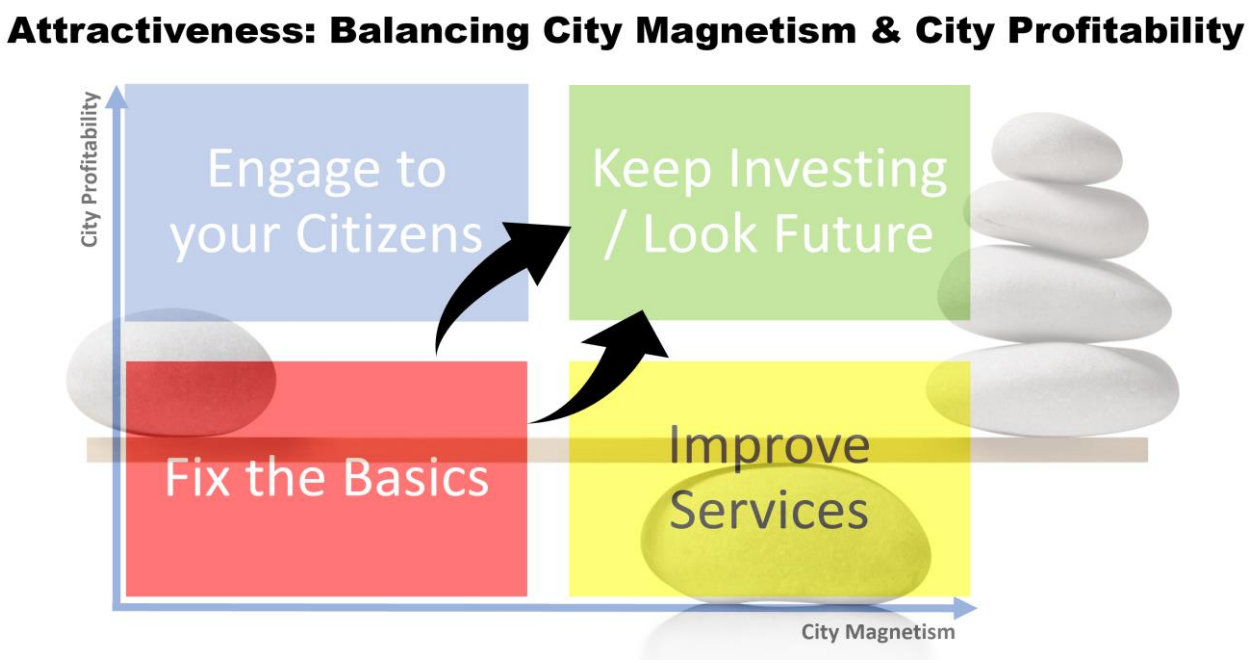


Figure 15. The balance between City Magnetism and City Profitability. Areas and Magic Quadrant. Source: Author

7.2 Cities of Future. The AI enabled City.

Technology has been and continues to be our faithful ally to respond to all these challenges. At the end of 2022 / beginning of 2023 we were spectators of an unprecedented technological revolution: the emergence of generative artificial intelligence (GenAI). This new technology broke all records in mass adoption with 100m users in just two months (1m in first 5 days!) (McKinsey, 2023). We are therefore in 2024, the year of the massive incorporation of artificial intelligence in the management and development of our cities. We can consider artificial intelligence as an essential assistant to improve all our internal processes, relationships and communication with citizens, and analysis and prediction of physical and social events. We are going to explore how the different artificial intelligence proposals mark our digital transformation strategy in the city.

Accelerated technological adoption

These new announcements of disruptive technologies only further accelerate the already accelerated incorporation of these innovations into our lives and the necessary processes of change (exponential or turbo boost technologies) (Diamandis & Kotler, 2020). We think that we are at a time in which many technological developments that have been perfected for years are going to reach a disruptive moment: virtual and augmented reality as the basis of the metaverse, 3D printing, digital twins, Blockchain, nanotechnologies, biotechnologies and neurotechnology, robotics, autonomous systems, 5G and 6G communications and a new era of artificial intelligence will, combined, bring new lifestyles and production systems that are extraordinarily efficient and respectful of the planet.

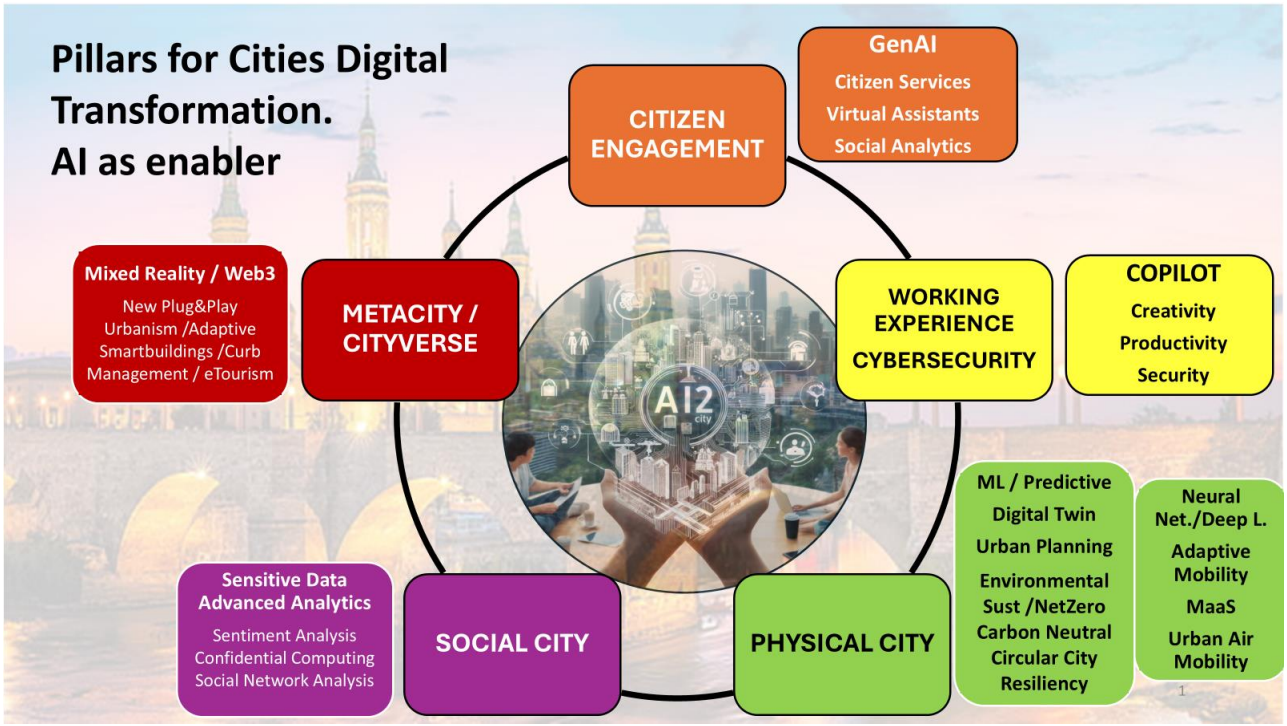


Figure 16. The AI enabled City. Central image generated with DALL-E AI.
Source: Author

IA everywhere in the Digital Transformation Plan

A City Council's Digital Transformation Plan can take advantage of the latest technologies (and especially Artificial Intelligence) to develop a more inclusive, efficient, sustainable, innovative and attractive city for talent and investment.

Five areas of work stand out (citizen services, internal efficiency, environmental management, social environment and new technologies in MetaCity). Let's explore this mapping (see figure 16).

In this way, Improving communication and electronic service to citizens (Single platform of services and applications, ChatBot virtual assistants, etc.); Boosting efficiency in administrative management (with new collaboration tools and internal assistants); Managing the urban physical environment (generating an accurate inventory that serves as a basis for the construction of digital twins to optimize operations and decision-making); and Better understanding the social and human environment of our citizens (detecting needs by neighborhood and situations of vulnerability) appear as the four fundamental pillars. In addition, the use of advanced models based on metaverse technologies to optimize interaction with citizens represents a line of exploration and incorporation of new technologies as they become consolidated. All based on AI.

We cannot forget a critical aspect: it must be used responsibly and ethically, achieving the excellent improvements that it can bring, but always with control, administration, respect for the identity of citizens and their sensitive data and avoiding possible abuses or unwanted uses.

AI-based Digital Transformation Plan. Why.

The City Council’s digital transformation plan is necessary for several reasons:

• Operational efficiency: Digital processes are more efficient than traditional manual processes. They help reduce errors, improve speed, and cut costs. For example, using digital systems for paying taxes, applying for permits, or filing complaints makes these processes faster and more accurate.

• Access to services: With digitalization, city council services can be available 24/7 and can be accessed from anywhere with an internet connection. This increases accessibility and convenience for citizens.

• Transparency and accountability: Digital systems make public administration more transparent by allowing online tracking of city council expenditure, ongoing projects, and other data. This can help prevent corruption and improve public trust in government.

• Citizen participation: Digital channels can facilitate citizen participation in local government decision-making. This can be through online assistants (chatbots), online surveys, discussion forums, e-voting, etc.

• Adaptability and resilience: In times of crisis such as natural disasters or pandemics, a city council with a strong digital presence can continue to function and provide services to citizens despite the difficulties.

• Sustainability: By reducing the use of paper and other physical resources, digital processes are more sustainable and environmentally friendly.

• Data analysis: With the use of digital systems, large amounts of data can be collected and analysed to assist in decision-making, city planning and the improvement of services.

The Citizen. Digital Services

Citizens are increasingly digital, and therefore expect to receive from the public administration the same quality of digital services that they receive from the private sector. Citizens demand fast, fluid and integrated digital public services that adapt both to the use of technology in their daily lives and to their experiences in stores. It is essential to place people at the centre of every process. In the case of Public Administration, we must avoid the risk of simply re-implementing digital processes on top of pre-existing paper-based procedures. Digitalisation involves rethinking the entire service from a human-centred design perspective. So, it is necessary to focus on the citizen experience, anticipate their needs, ensure maximum accessibility to services and their transparency. Citizens expect a personalized service that, based on all the information available about that person or simply based on their current life situation, provides them with a unique experience, with all the necessary services integrated and provided through the most popular digital communication tools. Citizens expect to be not only named, but to be recognized and known proactively, accompanied, helped without having to ask for support. It is necessary to make life easier for citizens, using automation to ensure the reliability and simplicity of the services offered. For this purpose, AI plays a fundamental role. AI can be applied to various areas and challenges of new digital services experience to citizens such as:

- o Virtual Assistant / Chatbots / Multilingual Q&A: AI assistant with natural language processing (NLP) to provide critical information (disaster response, healthcare, social services, etc.) or simply keep citizens up to date on service offerings, new local policies/regulations, cultural agenda, and any other service.

- o E2E Call Center Intelligence / Customer Service / Intelligent Routing. Integrated into websites and applications to instantly provide service and support to citizens. This can help reduce response times and improve the overall experience. The solution should use advanced technologies such as bots&AI, Workflow and Business Process, Citizen 360º vision, and Service Intelligence. Thus, Virtual Agents enable Self-Service, AI Driven tools provide agents with the right information and help them in resolving cases, AI Driven Analytics improve the Citizen Experience by anticipating their needs and making predictions about future trends, allowing easier detection and correction of problems.

- o Conduct Surveys / Feedback / Social Mkt: Conduct surveys and collect feedback from citizens on various services. Generate content for Social Mkt campaigns. Improve all types of external / citizen communication.

- o Personalized Recommendations based on life events. Provide personalized recommendations to citizens based on their life events, specific needs and preferences.

- o Virtual Meetings / eDemocracy. Support virtual meetings and consultations between citizens and government representatives, making it easier for citizens to access services and get answers to their questions.

- o eTourism / Multilingual Services. Provide real-time language translation services, making it easier for citizens / visitors who speak different languages to access tourist services / recommendations or proposals.

- o Provide real-time information on physical conditions to citizens/visitors. Monitor physical conditions, such as traffic, air or water quality, and provide real-time information to citizens.

Once again, transparency, ethical use of data and artificial intelligence are essential. In the age of the platform economy, data is the basis of digital services. It is therefore necessary to promote the dissemination of technologies that allow their use and sharing in an open, secure and transparent way, as well as to encourage the use of machine learning and AI techniques (for example, analysing the use of services by citizens, generating new profiles based on usage analysis, etc.). In addition, it is necessary to ensure the correct use of data and an "unbiased" AI.

These types of multilingual services are fundamental in the advanced management of the new eTourism systems, as well as participatory democracy tools (eDemocracy). We can additionally integrate all communication with citizens, social networks, generate campaigns or social marketing, and even make recommendations based on their life facts. So, this new technology contributes to achieve the ambitious targets of Digital Rights.

Three trends are observed on this citizen Digital Rights crusade:

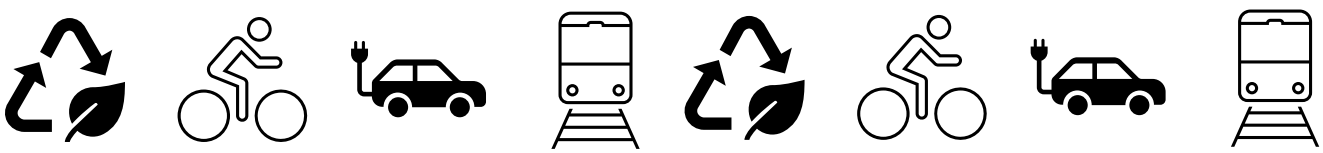
- Data-driven technologies have intensified Digital Rights concerns. We have witnessed the rise of manifestos/ governance frameworks claiming to help cities in the greenfield of digital rights-based policymaking. For instance, the Cities' Coalition for Digital Rights (CC4DR) have developed a framework used by European cities such as Amsterdam and Helsinki.
- No citizen left behind. Demonstrate fairness, openness, consent, equality and transparency. Discuss potential inequalities caused by digitalization (aka. the digital divide).
- Participatory Democracy. Cities are expanding their Urban Data Platform with means to collect citizen feedback, opinions, and adapt the new applications to their needs and preferences.

GenAI can help adapt the public and private services we enjoy to give us the best possible personalized experience. For this reason, most cities are rethinking their services for citizens, incorporating personalization techniques learned from the retail market and complemented with social marketing.

The Civil Servant. New AI-based way of working

The decisive incorporation of AI tools in the civil servant's workplace brings an extraordinary improvement in the efficiency, creativity and productivity of the civil service, through rapid access to information, advanced document management, content integration, summary and simplification of documents, assistants in procedures and improvement in collaboration and teamwork. For this purpose, Artificial Intelligence is used in Assistant mode (AssistiveAI / Copilot).

Here artificial intelligence behaves like an assistant, like a shadow that helps multiply productivity. The AssistiveAI, or also called copilot, offers us a comprehensive and correlated vision of all the information pieces that I might need for the development of my work at any given moment: all the information available at my fingertips, the correlation of concepts, generation and creativity of new materials relying on GenAI, and the analysis and monitoring of all information exchanges that occur on our network, which is obviously crucial for cybersecurity management. Productivity practically improves. The quality and integration of concepts, products, people, and processes allows obtaining the maximum performance from the knowledge that the organization owns. It allows you to spend less time on communication and dissemination of information and more on creativity, generating new information and taking advantage of the knowledge base.



Some examples of usage scenarios are:

• Text Generation / Handling: Create articles, stories or code from textual instructions. Anything that can be described with text, language, voice, can be used as a semantic token and trigger, search for information and generate new text based on that input or prompt.

• Form Processing. Support for RPA. Process forms and requests automatically, reducing the need for manual processing and improving efficiency. Assist RPA (Robotic Process Automation) systems in managing any type of information that can be represented in semantic tokens, connecting processes, relating tasks and accelerating the effectiveness of RPA.

• Document Management (BPA / EDM). Manage the complexity associated with massive document assets (classification, taxonomy, extraction, summarization, relative documents, rewriting/paraphrasing, multilingual, inclusivity, sentiment analysis,…)

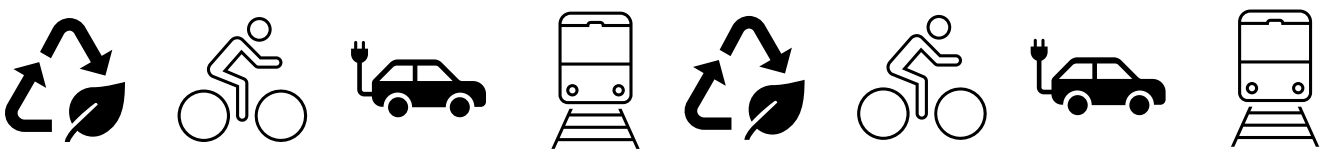
• Internal Training. Develop / Create internal training tools and resources, such as online courses, educational games and quizzes. Create guides, procedures.

• Internal Information Manager. To help employees with internal policies, applicable laws, search for related documents that exist in the organization. Help stay compliant/updated.

• Generate / Create new Information. Based on external and internal documents, draft new policies, purchase proposals, write initiatives or specifications for acquisitions,…

• Simplify / Explain Administrative Procedures / Create internal Training Guides on internal applications. What do I have to do? Interpret and explain complex administrative procedures. Guide through the complexity of procedures and applications. Understanding complex legal documents, laws, etc.

• Also at the level of internal use, AI is especially suitable to combat the threat of cybersecurity: Cybersecurity Assistant, permanently analyzing the flow of information and access, alerting of possible threats and automatically responding to known risks, always using the latest technologies and information available worldwide. In cybersecurity environments IA behaves like a guardian, monitoring access, information flows and detecting anomalies. The impact of ransomware attacks on local administration reaches 58% (Wray, 2022). It is an organized crime whose income is already comparable to drug trafficking. Therefore, we face a challenge of extreme importance, since criminals are trying to cause maximum damage and attack the environments with the most sensitive and vital information for the city operations. Accepting extortion and paying is not an option. Nor is it the paralysis of public service. Therefore, cities must organize a specialized response to manage this situation. If we add to this the difficulty of hiring highly qualified personnel, we find that the only solution is to rely on externally managed systems, main Cloud providers that guarantee the necessary data protection and security and advanced AI-based tools protecting the operations from end user device, tools to overall systems and data centers. Back up systems and decentralized servers (Cloud) for redundancy, are necessary to protect the city from outages. Shadow IT: Non approved tools and software not managed by IT Department reach more than 60% of cloud services in large organizations, according to Capgemini. They pose a threat when not securely integrated within the wider city IT ecosystem. The well accepted BYOD (Bring your own device) is many times turning on *Bring your Own Disaster* if not well managed. Identify, Respond, Recover, Protect/Detect and Sustain has proven to be the virtuous cycle to keep the city digital assets safe. (WEFORUM, 2022)



Physical City. Digital twin.

Managing the modern city, its spaces, its elements and its dimensions requires the use of simulation models. Just as Digital Twin systems are applied to the modelling and maintenance of machinery, factories and all kinds of complex components, these systems can also be applied to an entire city. As we increase the automation of many public systems and services, we need to have comprehensive management that allows us to incorporate new technologies, new innovation processes and, above all, that allows us to develop simulations. Based on an IoT platform that manages the different physical dimensions, we need to be able to test in a virtual model the different alternatives to solve a physical problem in the city, without having to bother citizens or invest public money in physical tests (brick and mortar?). To do this, the use of virtual models such as Digital Twins represents a huge advance in decision-making and in the optimized resolution of the main challenges of the city. It is about virtually representing the physical world with a digital twin that models the relationships between people, places and devices. Real-time 3D models of the built environment of cities enable scenario analysis by simulating the potential impact of natural disasters such as flooding, adopting generative design principles for developing new cities, optimizing energy savings and solar capacity, and saving costs by operating cities more efficiently and effectively.

With Digital Twins, we combine disparate data into a federated environment that reflects current conditions and predicts future ones for inspections, reporting, and insights. We can see assets and projects 24 hours a day from anywhere, know the elements of the city: what they are, how they work and when changes are needed. We can visualize, simulate and monitor, use immersive visualization, gain analytical visibility. Gain insights through artificial intelligence (AI) and machine learning (ML). Gain decision support during design, construction and operations. Improve decisions. Encourage standard data models (NGSI-LD) and MIMS to enable integration, future development tools and adaptation of new solutions.

A digital twin will allow us to evaluate alternatives to any circumstance (for example, given a pollution problem in a square, to be able to evaluate changes in traffic) without wasting time and resources physically testing those alternatives. The digital twin, with its AI-based algorithms, will allow us to determine the best solution in terms of performance, costs and inconvenience to neighbours in order to, once again, make well-informed and data-based decisions.

The results are excellent in three areas:

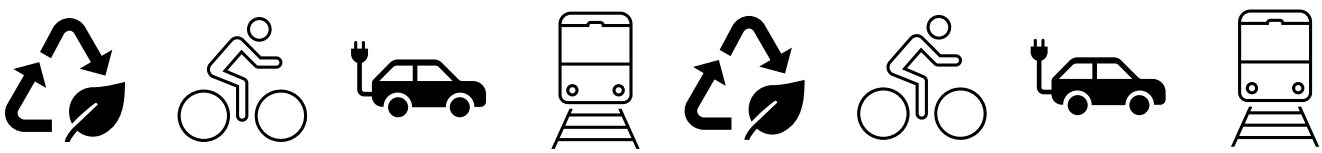
1.- On the one hand, it allows us to integrate data of a very different nature such as traffic, weather, infrastructure and other resources to innovate in areas such as Urban Mobility, emergency management and energy use. This way we can experiment with the details of the physical city without having to modify it.

2.- The second area is innovation. We can test the benefits that new structural elements, engineering, urban planning and other infrastructure possibilities would bring us. This offers us the opportunity to accelerate and multiply inspiration, ingenuity and tenacity in our city management.

3.- Finally, and as the most important area, it is worth highlighting simulation. We can try the different alternatives to solving a problem, eliminating the need for physical experimentation, saving the costs associated with the use of physical elements and works, and avoiding inconvenience to neighbors. These simulation techniques allow us to make the best decisions without the cost associated with testing, with the guarantee that the city's predictive model tells us that they will be the most appropriate. (Deblaere, Eitel-Porter, Krüger, & Purdy, 2002) For example, we have a pollution problem in a plaza. We have different alternatives, such as closing some adjacent streets, pedestrianizing others, or diverting vehicles through some alternatives. We can try all of them, and finally determine the optimal one, without having to cause any disruption to the normal life of the city. Additionally, we can evaluate the consequences of each of them on the other parameters of the city, such as traffic, noise, etc. (Many cities are using these advanced technologies to face their main challenges, such as Helsinki in energy, Gothenburg in resilience and urban planning, Porto in water management, Antwerp in joint traffic and pollution management, and many others. (Bentley, 2020)

Main solution scenarios:

- Infrastructure coverage planning - light poles, 5G, wi-fi, video surveillance
- Resilience and emergency response - real-time view of city assets and resources
- Green infrastructure management - monitoring and maintenance of green spaces
- Sustainability and circularity - digital twins enable renewable energy to be maximised and recycling to be optimised.
- Smart energy - AI can be used to optimise energy consumption and production, increase the efficiency, reliability and resilience of the energy grid, as well as to facilitate the integration and adoption of renewable and distributed energy sources, such as solar, wind turbines, positive energy districts (PED), and explore new alternatives such as hydrogen.
- Management of taxes associated with the use of public space (terraces, signs, carriage passage, etc.)
- Other Services such as Water (network, quality, purification), Tourism, Urban Planning (City 15'), Health (impact of city conditions on public health), Recycling and Circular City, etc.
- Urban Mobility deserves special mention due to its complexity and relevance. We will intensively use AI algorithms for model generation and Digital Twin technologies. Some usage scenarios are:
- Vehicle electrification and smart mobility deployments - simulation of impact on air and noise pollution to inform policy.
- Analytics. Mobility patterns. Urban Mobility Intelligence. This type of solution allows for personalised traveller advice by combining multiple mobility services. It also allows for situational analysis and the design of future improvement strategies.
- Adaptive traffic. AI algorithms. Captures the entire road network through AI cameras located on mobile elements such as buses. Granular visibility of network activity is obtained, identifying traffic problems and their root causes. With all live network information, including details on traffic conditions, pedestrians and micromobility users, a dashboard adaptively optimises road usage, giving priority and time of use to some over others. Continuously optimises a city's mobility thanks to deep reinforcement learning AI technology. Prioritise traffic lights based on your city's traffic conditions, needs or response scenarios.
- MaaS (Mobility as a Service). Comprehensive payment for transport services from A to B, integrating all available systems and being able to choose between the fastest, most sustainable or cheapest. MaaS solutions make it easier for cities and transit agencies and operators, campuses and corporations to introduce new mobility services for their citizens by using a range of tools, including mobility apps, mobile payments, urban mobility analytics and on-demand and pre-scheduled transit. Integrated metropolitan payment systems are also in demand, responding to personalised individual needs.
- Digital Twin. AI can be used to optimise traffic flow and management, reduce congestion, pollution and accidents, as well as improve the accessibility and affordability of public and shared transport, such as buses, trains, taxis and bicycles. Also to enable new air mobility (drones, air taxis, eVTOLs, etc.).
- A particularly AI-intensive scenario is New Air Mobility. Urban air mobility is a trend that is transforming the way we move around cities. Some key aspects related to this trend are:
- Drones and Freight Delivery: Drones are being used to transport goods in urban areas. In the near future, we could see drones delivering medicines and other products on our streets.
- Air Taxis: Air taxis or air taxis are aircraft designed to transport passengers in urban environments. These vehicles, known as eVTOLs (electric vertical takeoff and landing aircraft), operate with electric propulsion systems and can take off and land vertically, from vertiports. Their high automation and reliability even allow them to operate without the need for a pilot.
- Traffic Reduction: Air mobility can alleviate road congestion and reduce travel times.
- Sustainability: Electric eVTOLs contribute to the reduction of emissions and the efficient use of energy.
- Virtual Infrastructure: Unlike physical roads, the infrastructure for air mobility is mainly virtual and does not require expensive construction. Furthermore, cities have to design their urban airspace, that is, the highways on which these devices will fly.
- Regulation and Future: Although there are still regulatory challenges, many cities are looking to implement flying taxis in the coming years. Since January 2023, the use of these aircraft is permitted not only for emergency or security purposes, but also for the transport of goods, and in the future, passengers.



Physical City. Urbanism Management

Artificial intelligence applied to the virtual representation of reality is fundamental in new urbanism. The support of high-resolution LIDAR-type cameras allows us to have a very high-resolution image of the entire city and, through artificial intelligence algorithms, to be able to detect each and every one of the elements that compose it, its position and its dimensions, that is, have a complete inventory of the city. Based on this inventory, we will be able to carry out modern Curb Management, allowing us to analyze the parameters of environmental management, trees and green spaces, elements associated with traffic and Urban Mobility, and even elements associated with taxes for the use of public space. This technology applied to buildings and combined with GIS and BIM systems allows us to think about plug&play urbanism where I can adapt the buildings and physical structures of the city to the changing needs that citizens propose to us, managing to generate more human and habitable cities. and equipped with the necessary services for the ideal 15 minutes city. Furthermore, this type of technologies will allow us to add intelligence to new and existing buildings (Smartbuildings).

ChronoUrbanism. 4D City. 3 Distances (15' City…). Postpandemic Cities are moving towards the postCar paradigm and the 4D Cities (adding time as main dimension). Distances are no longer measured in miles/km but in time to go. That way, we can observe Cities reallocating resources and lifestyles around these three main distances:

	Distance (t) / (km)	Mean	Benefit	Concept
Metro/Regio polis	90' / 350km	Transportation	International Hub	Compete 4th Ind. Rev.
Villages	15'-20'/ 10km	EmicroV, Bike	Quality Life	95% all you need (job)
District	1' / 1km	Walking	Social	Superblocks

We observe the city with different approaches according to its function, its role in the global urban ecosystem, and its capacity to serve the citizen. In this sense, the efficiency of public transport determines the real size of the city. In this way, if we consider 90 minutes as the maximum commuting time that a citizen is able to invest to access his job (it is the average time in a city with one of worst traffic in the world: Los Angeles, USA), we conclude that all reachable area in less than 90 minutes by public transport should be associated with the same metropolis. This is the actual psychological size of a city. In this way, Madrid is assimilated to the Community of Madrid (Region) and more, Paris is associated with Île-de-France, we observe Big London occupying the entire England's southeastern quarter, we could assimilate the Benelux to the same single large Metropolis, etc. This concept of metropolis enables cities to become hubs of international influence in the global competition for talent. In a context of peace and economic stability, cities compete to retain and attract talented citizens. At the beginning of the fourth industrial revolution, cities interact and play this competition internationally, within their blocs / civilizations and above the countries in which they are located. If we zoom in detail, we find the concept of the 15 minutes city (15CITY, 2021). This concept, developed by Professor Carlos Moreno for the city of Paris, aims at the generation of Villa-cities where citizens can find 95% of the things they need, including their work, at a distance of less than 15 minutes using public transport or micro electric vehicles. From the very well-connected grouping of villas you get the metropolis. In this way, the concept of suburb, ghetto, is avoided, and social inequalities are fought. Each villa must have minimum standards of quality of life and services. Zooming in once again we focus on the concept of district, and within the district we talk about the 1 minute city (Peters, 2021). This concept, proposed by the city of Stockholm, tries to encourage the development of areas of social interaction within the districts at very short, walkable distances. It is about building social spaces for the elderly, children, parking and charging micro electric vehicles and other social functions all within our district. Also associated with this concept of proximity urban development we can find the concept of superblock. Initiated in Barcelona, a superblock is a grouping of blocks where traffic is only allowed on its perimeter. Inside, we develop elements of social coexistence such as boulevards, benches, tree-lined elements, etc., allowing only the superblock inhabitants domestic traffic and the provision of merchandise. These superblocks are already being tested in various cities such as Barcelona, Ghent, and there is an ambitious plan for Madrid and many more.

By redesigning our streets and squares we can reduce the space dedicated to cars and add more social spaces, recovering playgrounds, environments for social, cultural and creative life.

Piazza Dergano, Milano. (from cars to children) Source: City of Milano

Physical City: Complex Urban Mobility models.

Finally, when we talk about complex dynamic models such as traffic management, we must turn to the most advanced AI environments: neural networks and Deep Learning. With these technologies we will be able to build an Adaptative mobility model in real time, advanced Mobility as a service (MaaS) systems that combine the information available at all times with all known knowledge and experience. Furthermore, cities have the challenge of designing from scratch the new models of urban air mobility (drones, air taxis and eVTOLs) that will represent a revolution in the rapid and sustainable distribution of goods and the movement of passengers.

PostCar City. Urban mobility is one of the most dynamic, fast changing, citizens appreciated-by concepts and the one that faces the greatest challenges. It must combine: an economic sustainable and emission-free service, with the psychological effect that pushes citizens to use individual means of transport (we are experiencing a back to heavy traffic), together with the appearance of new individual vehicles and flying machines. Also, new shared mobility services are offered. Clearly, Urban Mobility tends to consolidate a service model offered by more or less autonomous and shared electric vehicles. It seems clear that the owned vehicle model is going to become obsolete due to the concept of mobility as a shared service. (Thompson, 2015) Large manufacturers face the challenge of offering mobility as a service and maintaining a huge fleet of vehicles that must respond quickly and flexibly to the demands of citizens. And all of it stored no one knows where, but ready at the user's door when they demand it. A Renault's manager pointed to this concept applied to the Paris metropolitan area: it is physically impossible to store more than 1 million cars around, ready to be used on the weekend, and hire a legion of operators who park them near users on Friday and pick them up after Sunday…and if they are autonomous, it would be worse, as they can spend all their batteries life trying to park, but consumer demands always rules. Will see.

Physical City. Environmental Sustainability & Resiliency. Carbon Neutral, Circular City.

Urban environmental sustainability models are fundamentally based on the reduction of emissions from transport and buildings. Both elements can reach 75% of a city's emission and their AI models combine.

Post-Covid cities face the challenge of sustainability with the aim of the European Green Deal and parallel initiatives across the world (like California's AB32 Global Warming Solutions Act, UK Climate Change Act, and others). Cities are the fundamental pillar to combat climate change. Every modern city sets itself the objectives of Carbon Neutral and Circular City. The economic recovery will be slower or faster, depending on the good analysis and prioritization in the use of recovery funds. But whatever its speed, it will be green. European cities are leading, once again, this global process. In this sense, the initiative 100 Carbon Neutral cities by 2030 of the European Union is framed (EU, 2022). Copenhagen leads urban initiatives with the goal of being Carbon Neutral by 2025. Furthermore, Copenhagen sets this goal not only for city operations, but also for emissions from all citizens, becoming the first world capital to pursue this status. Other European cities mark 2030 as the final destination of their Carbon neutral initiatives within the global European Green Deal framework for 2050.

The proper management of matter and, in general, waste, make up the basic pillars of circular cities. Reduce, Reuse, Recycle, Regenerate and Redesign are the 5 R's that mark the direction of development of a modern and sustainable city from the point of view of matter. Therefore, any city that intends to be minimally attractive for talent must prioritize the objectives of environmental sustainability (Carbon neutral and Circular economy).

It is clear that extreme weather events are becoming more frequent (droughts, downpours, extreme temperatures, cyclones, sudden changes in climate, etc.) and the increase in global temperature is already becoming more evident. The construction of climatic shelters allows an important reduction of the risk that affects people vulnerable to heat. The intelligent use of the phenomena of convection, radiation and heat conduction enables efficient temperature regulation in buildings and energy savings. The intelligent maintenance of buildings plays a fundamental role, firstly because they are responsible for 40% of a city's carbon emissions, secondly because glass towers cause an additional greenhouse effect and thirdly because the efficient management of these buildings can help generate more climatic islands. The use of traditional remedies such as blinds, balconies, use of white paint have always worked in this regard. Cities are investing in the construction of forest crowns that allow lowering the temperature of the city while facilitating leisure (running a marathon without leaving the parks). Another issue to take into account is the use of asphalt. Research is being carried out on new materials that reduce the heat that this type of floor radiates. Also, the use of the subsoil and underground spaces as shelter from inclement weather is also proving tremendously valuable. Another clear threat to cities is excess water. The water floods can sink buildings and so on. To combat its effect, the concept of the sponge city is created.

A sponge city is one that allows water to be absorbed and managed, evacuating its excess and avoiding damage. In this sense, there are cities like Barcelona that have built huge underground spare tanks to mitigate the effect of heavy rains that devastated the city due to its steep slope towards the sea. Another fundamental element is to design green infrastructures that filter and drain the water to the subsoil. Much remains to be learned from the efficient management carried out by the Netherlands. On the contrary, those cities with a water deficit must learn to manage it. We are seeing how cities that traditionally have a surplus of water have suffered a summer of drought and even the impact of forest wildfires. Their water storage and distribution systems were unprepared for these dry spells due to poor storage and outdated distribution infrastructure with huge leakages. Additionally, the efficient use of water and its recycling are essential to achieve a self-sufficient city. Here the example to follow is Tel Aviv. And once again, the use of the latest technologies in digital twin simulation allows us to design cities that are resilient to climate change. Examples of this are the digital twin projects for water management in Porto and Goteborg or for efficient energy management in Helsinki.

Social City. Social knowledge and associated services.

Through AI we can also improve the Social Knowledge of the city.

Some use scenarios are:

- Analysis of large amounts of information looking for patterns, relationships, and trends. Social Knowledge. Confidential analysis of information about citizens, improving decision-making and policy formulation by public authorities, offering a personalized service adapted to each citizen, their circumstances and the existing previous information about their preferences. Analysis of the social situation of the city, detecting vulnerability indices by areas and neighborhoods and supporting the prioritization of investments and data-based governance (data-driven City). (Generative AI / Confidential Computing)
- Knowledge Base. Create a knowledge base of frequently asked questions and answers, reducing the burden on citizen service representatives and improving the experience.
- Predictive Analysis. Analyze data and provide information on areas where improvements can be made in citizen services. This can help governments make informed decisions by anticipating risks, improving forecasts,…
- Fraud Detection. Detect fraud and suspicious activity, helping to ensure the integrity of government services and protect citizens' personal information.
- Semantic Analysis. Interpret, understand and find users from multi-format, multi-language and even handwritten documents (folksonomy,…) (mainly aimed at document-intensive services such as Justice, Health, Permits,…) Identify problems/people at risk by combining dispersed information. In this chapter we can incorporate all the detection of patterns, anomalies, observable trends by analyzing all the enormous amount of documents that a city owns.
- Decision-Making Support. Provide decision-making support to employees, helping them make informed decisions on how to allocate resources and improve services.
- New Social Digital Twins. Digital twins allow the simulation of solutions to all types of physical problems in the city. From now on, they must incorporate citizens, the social part, as fundamental elements to serve, to adapt services, spaces and urban possibilities to the needs and aspirations of citizens. We are going to start to learn about urban social digital twins, first incorporating general data (sociodemographic) and later, as technology allows, more specific and individualized data, creating a model by segments or tourism and in the future, a model of each individual in their relationship with the city.

These analyzes will allow us to know our citizens and personalize the service we offer them. City managers need to know the citizens social situation. It is urgent to activate and analyze the historical data available on citizens in order to determine the different levels of economic and social vulnerability in which they find themselves, mapped by district. In this way, city managers can balance budgets and prioritize serving those who need it most. It is not easy to find a common definition of the term vulnerability. Each city can find different approaches to this situation and analyze it from different angles. Also, special importance must be given to the groups at greatest risk: the elderly, children, women at risk of gender-based violence, homeless people, immigrants, etc, as studied by EU Social Challenges in Cities (Mulvik et al, 2022) More general analytics can also be done to identify the level of poverty, happiness, vitality and mental health (which has been greatly impacted by the pandemic). This georeferenced social analysis is very useful for building the ideal 15' city, identifying the necessary services by distance. It should be noted that a city barely uses 9% of its data at daily operations. The remaining 91% is historical data that is not analyzed, and in many cases, it is not known how it can be accessed or integrated. Modern cross-platform database systems allow you to integrate all these different data sources or silos to get the information you need. At the same time, the advanced cooperative and confidential analytic systems allow guaranteeing anonymity and GDPR compliance to extract aggregated information, respecting the citizens sensitive data. Initiatives like (SmartCities4All 2015) try to reinforce the attention needed to provide systems, tools and services that can be used, accessed and operated by all, making the city inclusive from the new technologies and services approach. Once again cities must be human-centered as explained.

Dream of Virtual City. City in the Metaverse. MetaCity

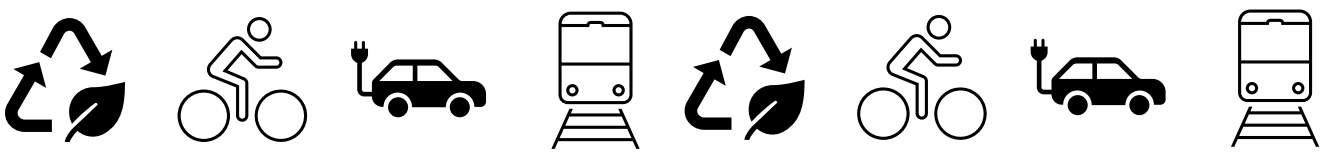
AI allows the city to use Mixed Virtual Reality, combining images or real physical position with virtual images and interactions. This type of advanced system revolutionizes visitor service, such as a combined physical/digital experience (phygital) or an extraordinary richness in the expression of cultural events.

• Advanced interaction: Improving the capacity of AI to interact in a more natural and human way. We are in web3 within the technologies in the Metaverse. The trend is to improve this immersive experience and interaction (not only with special glasses but other senses).

• Tourism and culture. We are witnessing the renaissance of tourism, recovering and surpassing pre-pandemic levels. Electronic Tourism includes the virtualization of all processes and the value chain in tourism and allows all tourism actors (hoteliers, guests, official bodies related to tourism, travel agents, etc.) to be put on the network to offer a combined phygital experience to the tourist. By applying these technologies to tourism, we can offer tourists a *phygital* experience, that is, an experience that combines the physical with the contribution of digital information, helping them discover the city, its service offering and its attractions. But technology has advanced in parallel, and cities want to use it to achieve higher-quality, longer-stay tourism and higher spending per visitor. It is about using the latest technologies to show the attractiveness of our city, provide much faster and more efficient booking services, offer the best physical and digital (phygital) experience while visitors are in the city (by using AR/VR, virtual tours, personalized services, etc), manage the tourism ecosystem stakeholders to run special campaigns and promotions, analyze all the associated parameters with advanced Big Data systems. and finally create a loyalty community using social marketing techniques. A new eTourism for a new physical but digital immersive experience, which for many cities means a boost in the economy recovery

The Metaverse/MetaCity is the next evolution of the Internet with a focus on integrating physical and digital experiences. The future of cities and their residents will include virtual worlds where people can immerse themselves in a virtual simulation of urban reality. While the metaverse is still in its early stages, the continued development of innovations, user adoption, utilization in large corporations, technological advancement and integrations, as well as rising valuations of associated digital assets, are indicative of the continued growth of the metaverse and the likely trajectory toward its destiny as the next third-generation, immersive, three-dimensional Internet. (Web3)

This enormous opportunity for human development has its advantages and disadvantages, but it seems to be consolidating itself as an innovation for the future that we all will live with. The parallelism between the metaverse and the possible literary worlds suggests that the first is assimilated to a virtual city: the MetaCity. This concept represents a revolution in the way of operating and offering public services in the city, in the social relations of its citizens and in their leisure activities. Our city, therefore, incorporates a fifth virtual dimension. It is also a new challenge, a new opportunity to improve the attractiveness of our cities in their global competition to attract talent (in this case from its virtual dimension).. If we observe the parallel development of neurotechnology and remember once again the movie *Avatar* where the protagonist connected his hair with the mother tree uniting in a single community consciousness, could we dream as the American urban planner Jane (Jacobs, 1961) did about a beehive city, where we are all co-creators of it and we can all enjoy its benefits by connecting our minds to the MetaCity? Cities like Doha, Seoul or Singapore are already offering their MetaCities to attract virtual talent. Will we have two cities? A virtual taking care of my body, and a virtual where I develop my creativity and professional career, creating wealth? We still have time to reflect on this.



7.3 Cities of Future. What might they look like?

Transforming City Magnetism may take 15 years or more. This slow but constant evolution should not discourage us from making the transformation. Before beginning the development of a strategy to transform the City Identity / Magnetism, we must recognize our existing advantages, assets, values, identity, heritage, and culture and use them to build upon, to lean on them to begin to thrive. We should think of our city as a house that we want to sell, or rather, that we want to rent to talented citizens. We have to include in that house the most appreciated elements so that talent can live, achieve maximum well-being and develop their full potential, and all this with a reasonable income or cost of living (citizenship contract). Magnetism is the house itself; Profitability is the services available in that house combined with its rent price. Let's pay attention to those lower-Magnetism secondary cities in countries that already have a widely recognized and strong capital city. They can transform themselves and stand out globally if the right political decisions are made and their citizens contribute. They don't compete with their capitals on Magnetism, but their lower cost of living make them more attractive.

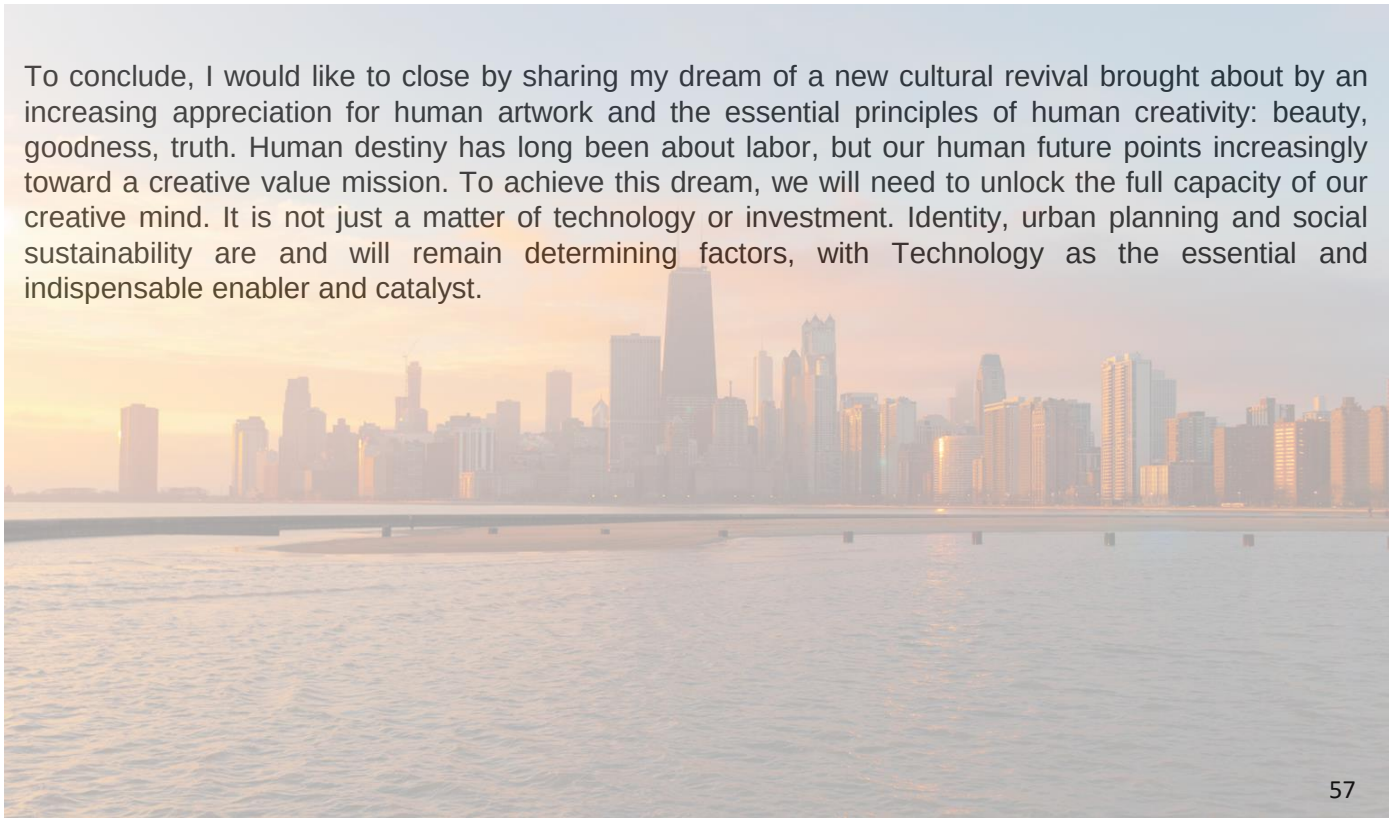
The transformational plan must be the long-term, consensual result of an all-parties debate. A combination of the three fundamental axes is also a must: Urbanism, Humanism and Technology, with urbanism leading and the others supporting and complementing.

And finally, we have the technological side, from investment in innovation to the focus on human capital and the proposal of an ambitious SmartCities plan. The SmartCities Plan fulfills the mission of improving citizen services (Profitability), while also helping in strategy, reputation, and innovation (Magnetism) making it the most powerful tool we have to improve Attractiveness. As we have mentioned, little can be done about fixed issues like geolocation, and changes in Identity are slow and always mid- to long-term projects, and improving economic conditions and net purchasing power is difficult to do quickly. Therefore, the obvious lever, with the most short-term results (even in a 4-year legislature), is to invest heavily in a solid SmartCities plan. Cities that fail in this aspect have either fallen asleep in the glory of leadership (and are now waking up, like the Swiss) or are losing ground by not taking advantage of their excellent magnetism to climb in the ranking (like in Southern Europe). On the contrary, cities with handicaps in Magnetism—either due to lack of history (US), weather conditions (Nordics, Emirates) or long distances (AUS)—can compensate those shortcomings with SmartCities plans that improve their attractiveness, or event thinking about future MetaCities…

A New Model for SmartCommunities

- Human-centered: **Citizen-centric** with welfare and quality of life as the major goal. LOVABLE.
- Sense of **community** (ideally a beehive) with all citizens cooperating around a collective task or project, with a strong sense of unity, belonging and identity. Multiplicity as the new city social paradigm, where the total sum of ideas, opinions, and preferences set the city's evolution.
- **Self-everything**: sufficient in water, energy, matter, people-talent, funding, resiliency...
- **Zero-everything**: car fatalities (zero vision), pollution, carbon, violence, unrecycled waste, unmanaged water, non-renewable energies, crime, inequality, poverty.
- **Sustainability**: social, economic, and eventually environmentally: Carbon negative, Circular.
- City as a **social enabler**: relationships facilitator, inclusive, social diversity, liveable, leisure-fostering and shared activities. Age-friendly.
- **Citizens as co-creators**: permanent engagement, proud to contribute. City as an expression of collective experience. SmartArt as a combination of technology and creativity.
- Megalopolis is broken, walking-distance suburbs/districts, making them next to one another. PostCar City. Superblocks. More spaces for humans, soft heights gradient, boulevards as an urbanism principle, walkable city, bike-friendly. Curb Management. 3 Distances **(90'-15'-1') City**
- **Smart-DataSphere**: AI-driven Digital Twin models monitoring the physical city, simulating potential improvement alternatives, but always understanding living humans and adding Social models. A respectful and ethical technological city, conscious and persuasive city by tracking citizens' psychologies.
- **Agile, Dynamic and Versatile**: Always creating projects, experimenting, listening to citizens, applying feedback, adapting to new circumstances and needs, developing new solutions and starting over again and again. Creativity always as the leading motion.

  "Create opportunities, solve problems, innovate. All three are inseparable." Jane Jacobs
- Open, Respectful, Ethical, based on a **strong identity and values**.



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