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SIPA 9000 U035 Capstone Workshop, Spring 2022

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Table of Contents

Introduction.....

NYC as a living lab.....

Findings/lessons from our interviews....

Thoughts about a framework.....

4 cities.....

- *Seoul (Sangji)*
- *Aleppo (Asaad)*
- *Gaziantep (Selim)*
- *Bucharest (Theo)*

Conclusions.....

Literature Review.....

Capstone Faculty Advisor Foreword

The comments in this Foreword are meant to provide context and background for this report and of the project. They are Faculty Advisor observations made throughout the semester while working on this important project with this remarkable team.

The Capstone Team

The team was composed of individuals with very diverse backgrounds, covering several fields and regional expertise, specifically in East Asia, the Middle East and North Africa (MENA), and Europe. All are based in New York City (NYC) and know the NYC metropolitan area well, and hence were able to use NYC as an excellent “living lab” for the project. Similarly, they were able to interview relevant locally-based subject matter experts.

The Project

The client for this project was the United States Military Academy (USMA) at West Point Department of Geography and Environmental Engineering (GEnE). The client designed this project to support the Urban Studies Community of Interest (CoI), which is based in USMA's Center for Languages, Cultures and Regional Studies (CLCRS). The Urban Studies CoI includes an interdisciplinary team of military and civilian geographers (from GEnE), social scientists, and linguists who study emerging urban challenges and seek to develop innovative concepts and approaches for interagency and multinational responses. The Urban Studies CoI, and GEnE in particular, has served as the principal hub for Urban Studies in the U.S. Army and the Department of Defense since at least 2015, and this is the third Columbia University School of International and Public Affairs (SIPA) Capstone project that USMA GEnE has sponsored.

The Terms of Reference (TOR) for this Capstone project defined the project's purpose as seeking to develop a better understanding of the burgeoning field of “urban informatics”, such as

that related to Smart Cities efforts, “to better contextualize how innovation, connectivity, and information flows enable governance and impact a city’s stability.” Ultimately, the goal was to enhance understanding of “how emerging information technology can assist in the analysis, management, planning, sustainability, and stability of cities is imperative to the future of cities.” In sum, as described in the TOR, the purpose was to better understand the phenomena and provide recommendations for curriculum development.

Capstone Project '22 Context

Several significant, unique factors impacted the research focus during the Spring ‘22 semester. In addition to many other factors, the continued COVID-19 pandemic (particularly the Omicron variant) affected the team’s ability to meet in person. However, most significant to this project was the major geopolitical development of the brutal invasion of Ukraine on February 24th, 2022. This outrageous action has resulted in massive refugee flows and the broad civil use of information technology (IT) in defense of Ukraine, particularly in cities such as Kyiv and Kharkiv. In essence, this was an opportunity to look at “urban informatics” in a unique context that was highly relevant to governance, stability, and civil defense. This was, of course, on top of other ongoing refugee crises, mainly that involved Syria. This major geopolitical event—the Ukraine invasion is the largest war in Europe since WWII—was a major catastrophe and drew tremendous interest globally and on the team. It was also clear that this project was highly relevant to understanding critical aspects of the Ukrainian and international response to that crisis.

Capstone Project '22 Overview

The nature of this project was to explore the intersection between two very impactful and widely recognized “big trends”, specifically those of dramatically increasing global urbanization plus the accelerating advancement and democratization of technology (especially IT). The former has significant but under-studied implications for the role and management of cities (including vis-à-vis the nation-state system), and the latter is rapidly unfolding in many ways, including the growth and adoption of artificial intelligence and machine learning (AI/ML), expansion and 4th generation (4G) and 5th generation (5G) mobile telecommunications, the metaverse, additive manufacturing, etc.

Extraordinary opportunities emerge from these trends, particularly from the advancement and democratization of technology. There is tremendous potential for “open, collaborative, and distributed governance”, as pointed out by Stephen Goldsmith and Neil Kleiman in their 2017 book A New City O/S: The Power of Open, Collaborative, and Distributed Governance. This fits in well with reaching desired goals of greater inclusion, equality, prosperity, and stability across diverse communities globally. There is likewise an opportunity to enhance urban resilience and civil safety. Indeed, on that last point, this opens up the possibility for a more modern, participatory form of “civil defense”, such as an evolution that existed during World War II and the Cold War. Similarly, we are already seeing remarkable innovation and increasing collaboration across sectors, including among and between the private and public sectors.

There are also potential challenges and risks with the rapid adoption of these technologies at scale within cities, and this is an often-underappreciated aspect of the trend. These include the potential manipulation of data and misinformation and disinformation. Similarly, there is the potential for unintended consequences, such as allowing these technologies to facilitate overly centralized power and its attendant abuses—this can become a challenge to the very democratic developments that the technology was meant to facilitate. For example, there is the context of “gray zone” conflict and hybrid and irregular conflict warfare, where an adversary can easily transcend borders and directly engage another’s society and systems. Many implications of this necessitate further study, as highlighted by recent geopolitical events in Eastern Europe and elsewhere.

Team Approach

In addition to a review and assessment of the relevant literature (much of it emerging), the team used the last two years of SIPA Capstone projects sponsored by the client as background reference and source material. This does not mean that the team was bound to that material or limited by it. Quite the opposite, as the team used its strengths and interests to pursue their collaborative research. Similar to the previous USMA GEnE Capstone projects, this project primarily drew on the strengths of the students’ work in the International Security Policy (ISP) and Urban and Social Policy (USP) concentrations at SIPA. However, it also drew on other coursework and the regional and professional expertise of the team.

The team also considered models that the client is already using or familiar with, including but not limited to those from the U.S. Army and DOD that cover urban typology, characteristics, factors of stability/instability, etc. One particular model is worth highlighting. In the project sponsored by the client in Spring '20, the Capstone team developed the GENETICS/ACE model. The GENETICS framework is meant to be a more nuanced and improved way to analyze urban resilience and stability, focusing on the factors of Governance, Economics, Natural environment, Energy, Technology and communications, Infrastructure, Culture and Society, and Security. The model then further explored the ACE dimensions of each factor across a city's Adaptive capacity, Coping capacity, and Expectancy benchmark. For this year's Capstone, Team '22 essentially focused on "T" (technology), and primarily examined aspects of where it intersected with "G" (governance) and "C" (culture/society, the human element of a city) in the model. Put another way, the team did not only look at the technology involved with urban informatics but looked more holistically at the people, policy, and technology (PPT) together.

Finally, the team took an approach based on case studies for many reasons discussed above. This reflected an optional task in the TOR, "Develop proposals for developing future case studies for different urban environments, varied across geographic regions and levels of development." This was a highly effective approach, especially given the previous, ongoing crises from the wars in Ukraine and Syria. Hence, the team opted to vigorously work on case studies from diverse regions and city typologies based on the team's expertise/experience (East

Asia, MENA, East Europe) and further focused on cities with the current or historical experience of significant migrant/refugee flow. Importantly, this also reflected that the team members had a great deal of experience working with or studying migrant and refugee flows. On that point, I should highlight that one of the students was a Syrian refugee who also had a tremendous experience with the remarkable Syrian “White Helmets.” The case studies chosen were: Seoul, a highly integrated city with a past refugee crisis (and a potential crisis in the future); Bucharest, a moderately integrated city facing a refugee crisis (from Ukraine; and Aleppo/Gaziantep (Antep), “twin” cities (formerly one city), that are loosely and moderately integrated (respectively), and are directly impacted by the Syrian refugee crisis.

Introduction

Our City

As globalization continues, rapid technological advancement and innovation have allowed individuals to be more productive and provided transport efficiency, safety, advanced health care, and clean access to resources. These factors attract many individuals to migrate to cities. Although innovations and technologies could bring comfort and well-being to ensure cities’ sustainability and safety, it is essential to implement laws and regulations based on cities’ circumstances. Because individuals have different socio-political, cultural, and religious backgrounds, implementing technologies and innovations could be even more challenging. This paper aims to analyze how innovations and technologies have brought benefits and challenges to cities like Seoul, Aleppo, Gaziantep, and Bucharest. We chose these cities as excellent but by no means exhaustive examples that cover various metrics. They also aligned with our professional

areas of experience. We have attempted to use these learnings to unearth ideas that practitioners can use in developing a better understanding of the city and its relationship to technology.

NYC as a living lab

Our access to information through both Columbia faculty and the wider community has allowed us to consider the role of technology in New York City's urban crisis response systems, and how technology intersects with human flows both in terms of acute crisis and other challenges that present problems of human flows such as immigration and emigration (or the abandoning of neighborhoods under some conditions.)

Our Interviews- Questions and Findings

We have conducted extensive interviews to gather information and analysis of

- ☐ the role of technology in city response to crises of various kinds,
- ☐ the systems that exist today that did not exist at the time of recent crises, such as Sandy and the terrorist attack on 9/11.
- ☐ capabilities that leaders think would be useful for tomorrow.
- ☐ the downside risks those technologies might present in increasingly digitally dependent, densely populated areas.

Takeaways

Technology as a factor in city response to crises is a means, not an end. The investment in technology should follow this learning: build or buy to meet a need or a desired new capability, not the other way around.

It is critical to distinguish between technology to enable everyday work and crisis response technology. New systems will require time to adopt- it is possible to innovate in a crisis, but framing the adoption of new technology as part of the mandate for preparedness is critical. It is also essential to listen to the field about what is not working- technology, even along the new dimensions, can be complicated. A crisis is a time for simplicity.

Mobile command centers that can remain connected and offer connectedness to the field appeared to be the most desirable investment.

Understanding and communicating about plan B is imperative. This can involve an alternative or simply integrating the low and high-tech options.

There is a distinct difference in the functions and considerations (benefits and risks) for technology used in a government-to-government capacity and a government-citizen pathway. In our interviews with FDNY Chiefs Joe Pfeifer and Thomas Currao, we explored mainly government-to-government use of technology. For example, how could the FDNY and NYPD have had better communication streams on 9/11? Or how could data from private helicopters on the scene have been more effectively used by first response functions? In our interviews with Mayor Nutter and Alexis Wichowski, we explored the dimensions of Government to citizen dialogue and vice-versa. The first pathway was built around capability, speed, and advancement.

The major obstacles to implementation were turf sharing and adoption. On the latter pathway, the main concerns were credibility, both of the data and of the agency, and how to blend the key metrics of practical, accessible, and reliable information. Here, we discussed what a “Plan B” might look like. The Plan B conversations, as it turned out, also reached back in meaningful ways to the government-to-government uses of technology, where there seems to be a fault line of how to move forward without moving so fast that we relinquish our resilience if the destabilizing event takes out, even temporarily, our ability to communicate.

A limited sample of notes from the following interviews are included as an appendix.

- ☐ Professor William Eimick - via Zoom 9 February 2022 (Wednesday)
- ☐ Chief Thomas J. Currao, FDNY - via Zoom 7 March 2022 (Monday)
- ☐ Chief (Ret) Joseph W. Pfeifer, FDNY - via Zoom 7 March 2022 (Monday)
- ☐ Mayor Michael A. Nutter-via Zoom 12 April 2022 (Tuesday)
- ☐ Professor Alexis Wichowski-via Zoom 19 April 2022 (Tuesday)

Three City Types: Seoul, Aleppo/Antep, Bucharest

Seoul, South Korea

Seoul is the capital city of South Korea, and as the world develops innovative technologies rapidly, Seoul continued to strive for people’s prosperity and nature’s sustainability. As Seoul’s population grew and people became more desperate to live better, Korean people began to form a pertinaciously fast-paced culture. In just a few decades, Seoul transformed from an impoverished city ravaged by the Korean War to one of the world's most prosperous and

high-tech metropolitan cities. Seoul, in particular, is a leader in terms of tech adoption. With citizens' high interpersonal trust in the government, the Seoul Metropolitan Government has implemented technologies that would ensure safe, fast, and convenient lifestyles for its citizens.

As Seoul's population density grows, the Seoul Metropolitan Government has painstakingly tried to implement and manage new technologies to ensure safety and convenience for its citizens. Seoul's population is already hooked up and connected to new tech. These include high-tech security cameras, AI technologies, express trains and subways, 5G internet, rocket delivery system, high-tech cell phones, apps, e-sports, or microtransactions. Even today, to combat the Covid-19 pandemic, the Seoul Metropolitan Government has developed an app that would keep track of individuals who Covid infects and provide quarantine spaces, food and water, and necessary medical support to the people.

The Population and Human Flows

The population of Seoul when it was established as the capital of the Chosŏn dynasty in the 14th century was about 100,000. It doubled in size by the 17th century, then remained stable until the end of the 19th century. It grew steadily from the beginning of the 20th century and reached 900,000 by the end of World War II. After 1960, the population dramatically increased, and by 2021, the population of Seoul reached 9.7 million people, roughly around 20 percent of South Korea's entire population. Due to globalization, many foreigners are drawn by the modernized technology and culture that Seoul provides in Seoul.

As of 2022, Seoul and South Korea have faced difficulty maintaining the population due to the decrease in the birth rate. According to the Korea Herald National report, the average number of children that each woman bears came to 0.81. This rate is the lowest among the thirty-eight OECD countries (Organization For Economic Cooperation) (Yonhap, 2022). Such gloomy demographics epitomize South Korea's death rate surpassing the birth rate. Many young individuals face difficulties getting married and having babies due to prolonged economic competition and skyrocketing housing prices (Yonhap, 2022). As South Korea does not possess natural resources like other developed nations, its economic growth heavily relies on human resources (Yonhap, 2022). A decrease in the working population epitomizes the potential undercutting of economic growth. It could be harmful to Seoul's endeavor to maintain its status as one of the world's most innovative and technologically advanced cities. In 2020, Seoul's working-age population, aged between 15 to 64, accounts for 72 percent. However, with a continuous negative birth rate, this number would drop to 53.5 percent in 2070 (Yonhap, 2022). On top of that, due to the continuous spread of Covid-19, the number of incoming foreigners also decreased dramatically. Undoubtedly, implementing innovations and technologies are important aspects for Seoul. The Seoul Metropolitan Government needs to implement policies and strategies to stabilize the economy and encourage young South Koreans to have families and children.

The History of Seoul

Seoul's contemporary development can be divided largely into three phases: the city full of ashes and destruction in the 1960s, drastic economic development and reformation in the

1980s to 90s, and the contemporary metropolis city of Seoul that attracts a myriad of innovations and technologies of the modern golden age. From the 1960s to - the 1970s, Seoul faced serious urban issues such as traffic congestion, environmental pollution, and housing shortages due to the extensive population inflow and lack of social infrastructure (Seoul Solution, 2022). To resolve such issues, the Seoul Metropolitan Government focused on rebuilding basic infrastructures by expanding roads, building apartments in illegal settlement areas, and constructing the Cheonggye Overpass and Yeouido Island (Seoul Solution, 2022). Many Korean individuals went abroad to learn skills and techniques, brought them back to South Korea, and contributed to rebuilding the city.

As consecutive brutal events such as Japanese imperialism and the Korean War caused great harm in Seoul, it was extremely arduous to restore the broken city by constructing the basic infrastructures. However, in the span of 10 to 20 years, Seoul began to experience drastic changes and embrace the democratic agenda and economic development (Seoul Solution, 2022). During the 1980s - 1990s, the Seoul Metropolitan Government implemented a series of active urban improvement and city beautification policies. It attracted many foreign direct investments by hosting Asian Games in 1986 and the Olympic Games in 1988 (Seoul Solution, 2022).

Meanwhile, a general development plan for the Han River was established, and Gangbyeon North Road and Olympic Road were built along the riverbank. At the same time, to respond to the explosive population growth and the increase in the number of middle-class

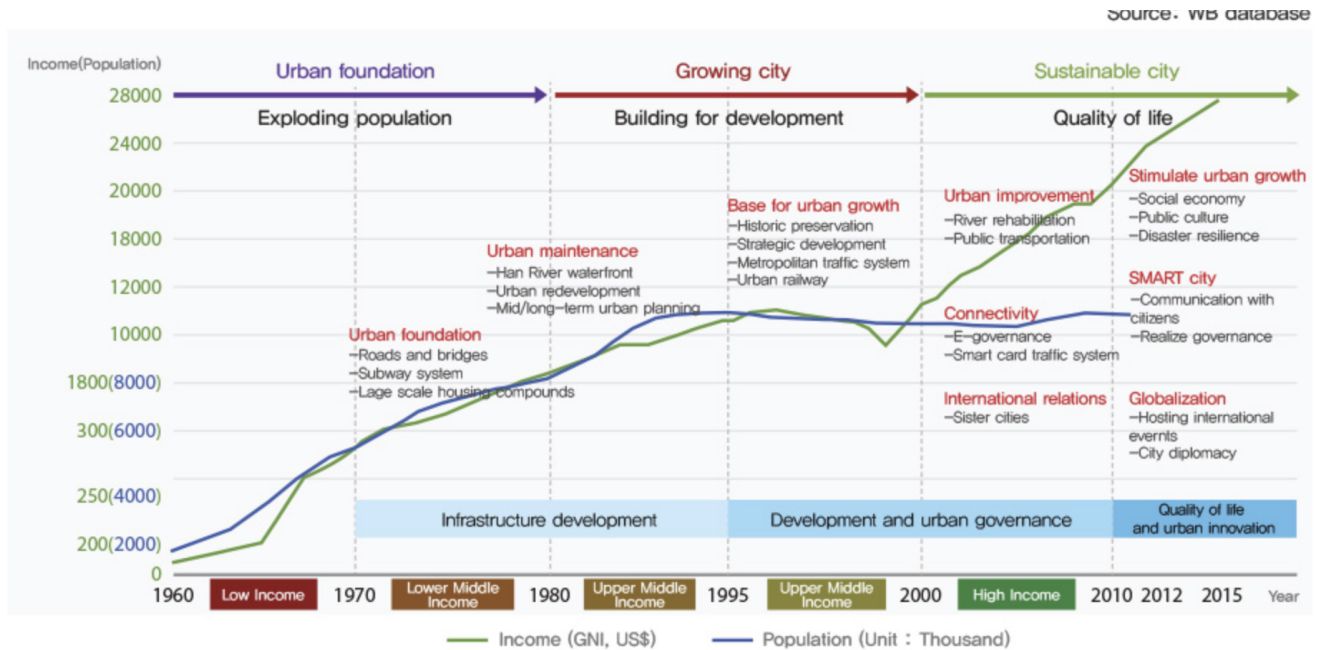
individuals, Seoul opened subway lines 2 to 8 and built large-scale apartment complexes in Gangnam, Mok-dong, Godeok-dong, Gaepo-dong, and Sanggye-dong (Seoul Solution, 2022).

Consequently, due to this large-scale infrastructure development project, Seoul could secure a significant level of urban infrastructure networks such as public transportation, roads, and water and sewage systems. However, ruthless development also produced severe side effects such as destruction of the natural environment, damage to historic properties, and collapse of communities (Seoul Solution, 2022).

Generally, it took more than a century for many European countries to industrialize. However, Seoul rapidly grew out of the ashes of the war and developed into a global megalopolis in just half a century (Seoul Solution, 2022). In the 21st century, Seoul has advanced into an innovative city where 10 million people live comfortably, and the continuous development of technologies and innovations attracts many individuals worldwide. In the 2000s, in response to the development of information technology and citizens' demands for quality of life improvement, Seoul's urban management policy shifted toward creating a sustainable city with advanced IT technologies (Seoul Solution, 2022).

Along with park creation projects such as the Cheonggyecheon Restoration Project and the Seoul Forest Creation Project, the Seoul Metropolitan government embraced digitization. In response to changes in the social environment, such as the recent slowdown in economic growth and an aging population, Seoul is changing the paradigm of its urban regeneration policy. The graph below vividly epitomizes three phases of Seoul's transformation. It also depicts the

population growth and how Seoul's goals have changed from focusing on urban foundations to creating Seoul into a sustainable city.





City's development, Industrialization, Korea's Rapid/Efficiency Seeking Culture

After the Korean War, and the replacement of the military regime in the 1990s, the civilian government realigned its direction to develop the national curriculum to create democratic citizens. Korea has gradually changed its national identity as globalization introduced new social changes. Rapid technological growth and advancement gave global attention to Korea to be recognized as an IT powerhouse. An inflow of innovative thoughts and ideas allowed Korea to experience the golden age of the 21st century. In 2022, according to the Bloomberg Innovation Index, Seoul is positioned as one of the most innovative cities in the world (Dayton, 2020).

To confront the rapidly developing society, the current government continues to work toward shaping curricula to allow Korean citizens to foster global talents and abilities so that Korea can be more competitive in the globalized market.

On the other hand, globalization has greatly influenced the formation of policy and political tensions and debates between the older generation and the newer generation: construct a unique identity to cope with modernized society versus maintaining and preserving the ancient traditions as well as deeply rooted Confucian values (Gaubert, 2021).

Recently, the Seoul Metropolitan Government announced that Seoul would be one of the first major cities to enter the Metaverse. In Metaverse Seoul, it intends to create a virtual communication ecosystem for all areas of its municipal administration. This would include economic, cultural, tourism, educational, and civic service (Gaubert, 2021). “The metaverse refers to a shared 3D virtual world where all activities can take place using augmented and virtual reality equipment. Recently, these platforms have gained popularity as people have shifted their activities online, especially amid the COVID-19 pandemic” (Gaubert, 2021). In the next few sections, this paper aims to introduce Seoul’s technologies and innovations and how these technologies helped Seoul to be recognized as one of the most technologically advanced cities in the world.

5G Network and Fast Internet

Seoul have world-class rapid internet and 5G network services. Before 1995, only one out of hundreds of individuals in Seoul could have access to the internet. However, due to the continuous efforts of the Seoul Metropolitan government to build necessary infrastructures and

education initiatives, nowadays, the vast majority of individuals in Seoul have internet access (Connect, 2017). It is almost impossible not to find internet access in Seoul. With the growing popularity of the esports and gaming culture, many corporations have competed to provide greater and faster internet-related services.

The government's timely and well-executed internet policies gave it a huge head start, and they are continuing to pay off. In 2022 Seoul has the highest coverage of 5G network globally, with 95 percent 5G network coverage in Seoul (Fletcher, 2021).

By comparison, New York City has 74.1%, Zurich has 45.6%, and London has 43.7% 5G network coverage.

Aura Intelligent Systems

As the development of the 5G network continues in Seoul, and there is a notable innovation that would enhance Korean citizens' safety and comforts by utilizing drones, autonomous mobiles, and digital raiders. Although Aura Intelligent Systems was founded in 2019, the company has developed innovations in radio technology, robotics, and Artificial Intelligence, and Aura's radar technologies are already used in automotive and industrial safety, security, traffic management, and agriculture sectors. Their goals are to allow hardware and wireless spectrums to be efficiently utilized in the cities. With the widespread use of the 5G network, Aura has been able to efficiently utilize the high-precision imaging radar in remote sensing, tracking, and navigation for unmanned vehicles in challenging urban environments like Seoul.

Seoul Metropolitan embraced complete digitalization and claimed itself as the metaverse innovative city. There are a growing number of unmanned convenience stores, robot waiters, facial recognition in airports, and various other innovative infrastructures in many parts of the city. Since Aura's digital radar and intelligent software provide high-resolution 5D information (3D location, Doppler, and Signature), with the wide range of 5G network in Seoul, implementing these technologies would enhance the sustainability and safety of these technologies in the city even further.

Rapid and Efficient Subway Services

Seoul's notable innovation is the public transportation system. Due to Seoul's high population density, to prevent heavy traffic jams, Seoul metropolitan has pertinently tried to create fast, efficient, cheap, and widely accessible public transportation for its citizens. Among many public transportation systems, the subway and train are popularly known for their reliability, efficiency, safety, and cleanliness (Railway technology, 2020). In Seoul, the subway is the most widely used public transportation. It serves nearly ten million inhabitants and even reaches the provinces of Gyeonggi, Incheon, and northern Chungnam (Railway technology, 2020). The first line was built in 1974 when Seoul was beginning to develop basic infrastructures. As the Seoul Metropolitan Government continuously strived to provide a better quality of life for its citizens, nine more lines have been built in the city (Railway technology, 2020). The subway has an average of 50 miles per hour, and the total length of the subway line is approximately 327.1km, including 290km underground.

Additionally, Seoul's subway system is not only efficient and fast, but it is incredibly cheap. For each passenger, each ride costs around \$1, and for young children and old individuals, the subway is free.

Consequently, this has allowed citizens to reach every part of the city without worrying about financial hardships.

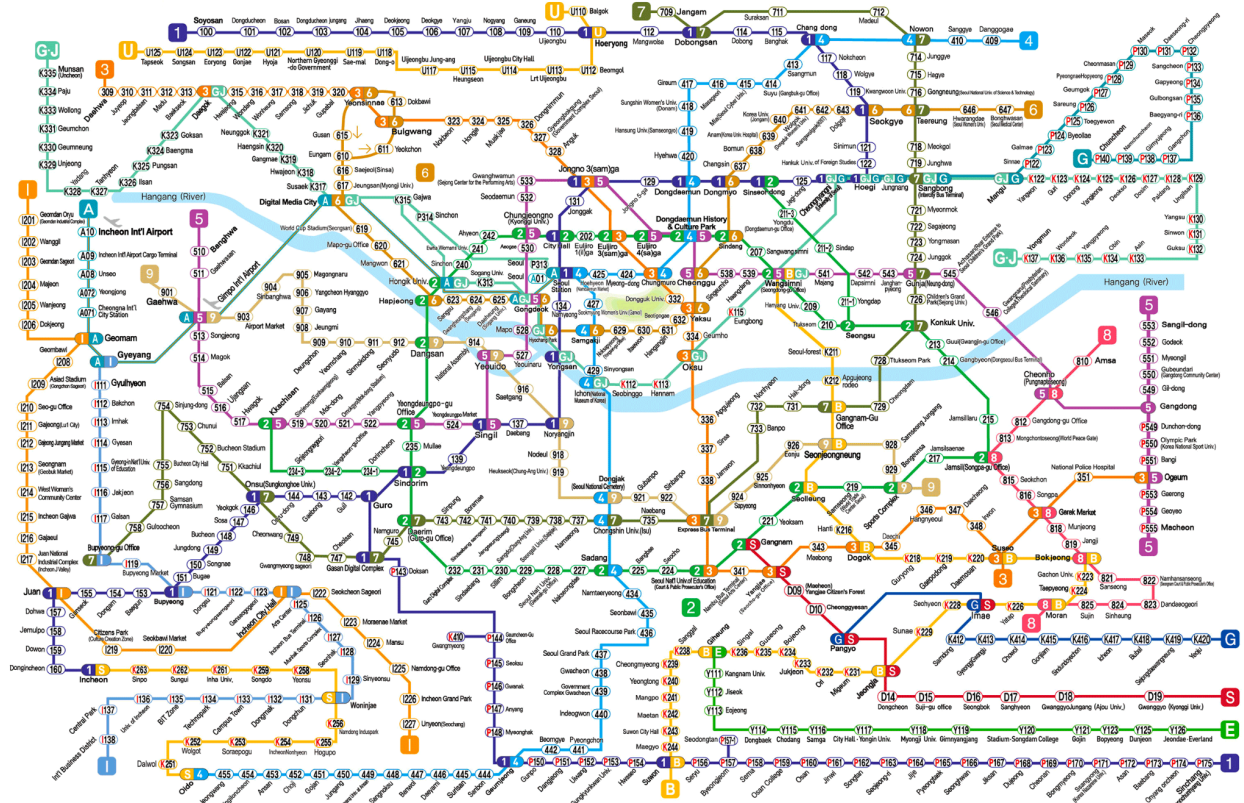
What's also great about Seoul's subway system is that it is safe and efficient. In other megacities such as New York City, there have been many accidents of passengers getting pushed or hit by the subway.

Moreover, although millions of tourists visit the city, it can be challenging for tourists to get used to the subway system due to the language barrier. To prevent such issues, the Seoul Metropolitan government decided to implement subway platform screen doors to separate the platform from the train tracks so that no passenger would experience tragic subway-related incidents.

Moreover, in many parts of the subway station, there are many information desks and signs that are translated into widely spoken languages, so the tourists could have less confusion in using the subway services. The pictures below show the cleanliness of the subway and how platform screen doors are properly installed at every subway station in Seoul. The subway map on the bottom epitomizes how Seoul's subway could allow citizens to reach almost every major

part of the city.





Interpersonal Trust and Technologies

It is important to ensure credibility and trust between organizations and people. During the Covid-19 Pandemic, to prevent the spread of Covid, the Seoul Metropolitan government required all travelers from foreign countries to download a high-tech app that would allow the government to track people, to provide necessary quarantine housing, and provide food, water, and other essential goods. In some other democratic nations, many individuals perceived wearing masks, and following the social distancing and quarantine rules as violating their freedom, so they often protested against the government. However, in Korea, individuals subversively followed the government's policies on wearing masks, social distancing, and quarantine. This

was possible because Korean citizens' interpersonal trust in the government has been sufficient to allow the government to manage and monitor individuals' privacy.

Not all cities have the same interpersonal trust in the government, and this prevents cities from implementing certain types of technologies. An illustrative comparison here is with another East Asian city, Shanghai. In Shanghai, to prevent the spread of Covid 19, the Chinese government recently (early 2022) decided to lock down Shanghai completely. Since China is not a democratic nation, there is no obligation for the Chinese government to ensure individuals' fundamental civil or human rights (Gan, 2022). Because Shanghai had been locked down for several weeks, individuals expressed their frustration and anxiety.

Consequently, angry mobs began to rise and markets and houses were destroyed and robbed, and many individuals were injured in these incidents (Gan, 2022). The different scenarios between Seoul and Shanghai epitomize how cities' socio-political backgrounds and circumstances determine whether certain technologies and innovations could be implemented in cities or not.

Aleppo, Syria.

Aleppo is the principal city of northern Syria, with about 5 million people (which accounts for 24% of the Syrian population). Regionally considered one of the highest dense cities, the density percentage is around 247/sq mile.

The history of Aleppo:

Aleppo is one of the oldest inhabited cities in the world. The city's establishment goes back to 12200 years ago (12th century BC), which is why [UNESCO](#) listed the city as a world heritage site.

Aleppo has served as a center of power and trade throughout its long history. It has played an essential role in the different empires, kingdoms, and states of the Syrian region. Aleppo's location on the borders with Turkey, which turned out to be a gate for worldwide transportation, attracted the industry from all over the country to locate in Aleppo.

At the end of World War I, the French and British set new borders, cutting Aleppo off from its center regional trading roles and placing it in the Syrian state. Aleppo was the second biggest city.

Aleppo has played a central role in the Syrian war. Just as Aleppo served as the center of Muslim resistance during the crusades, Aleppo became a center of resistance to the Assad regime. It was a target of destruction from all sides.

The population and human flow:

Aleppo in the last 100 years of the census shows a significant growth rate despite all that the city has been through; in 1950, the population of Aleppo was 362500, then fifteen years later in 1965 it went up to 1937858, and in 2005 it reached 2.3 million people. Including a diversity of ethnicities and religious groups such as Armenians, Kurds, Assyrians, and a majority of Muslim Arabs.

The prosperity of the industry in Aleppo opened many opportunities in different fields. And that attracted many people and families to move toward the city, either trying to find a job or have a dream of starting their project.

The Syrian war devastated the population of Aleppo, with more than 70% of the people forced to evacuate. Today Aleppo is only 50% of its pre-war population. Even people who can go back are not doing so, due to the lack of services and the bad condition of the city.

City's development and the industry in the city:

Aleppo is at the crossroads of road and river trade and has played a powerful trading role under the Ottoman Empire and the newly constructed Syrian state after World War I. as a city (same as other cities) was never specially treated or developed, even with all the private industry, which increased the national GDP. According to an official statement from the Syrian government in 2012, the contribution of Aleppo alone was around 24% of the national GDP.

Under the Syrian State, the city has never seen significant infrastructure and transportation development. The only available transportations are buses and taxis. Therefore, residents had to use private cars, making the traffic worse over time as more people moved toward the city.

Law enforcement and government services were getting less delivered over time as well, as, with the expansion of the city, the Syrian government was more focusing on security than services, even for the essential services such as the internet and telephone. With the increase of the population, those services started to be on-demand which the government is not able to provide; it reached a limit where the waiting for a telephone line could be 20 years due to the expansion in the number of houses and residents, and limited services in the city.

The immigration to Aleppo:

Aleppo has witnessed waves of refugees from different places. Between 1923 and 1925, when about 40,000 Armenian refugees came from Turkey, escaping the massacre they were facing there, found in Aleppo, a shelter after they passed the Turkish borders. That topped the city's population to 210.000 people (where refugees represented 25% of the city's population).

Another kind of immigration to Aleppo was internally immigrating from other cities, from the countryside to the city, from people looking to find a better chance in life or studying (as Aleppo's university has become one of the most prominent universities in Syria).

Opposite immigration happened in Aleppo after the beginning of the Syrian revolution due to the brutal force was used by the Syrian regime starting in 2012. Aleppo was the city that witnessed the most significant number of bombed barrels. According to The Syrian Network for Human Rights [SNHR](#), the Syrian regime has dropped at least 70,000-barrel bombs since July 2012 and until December 2017.

That brutal force pushed millions of people to leave the city; the population dropped from 3.4 million to 600,000 within months. Some of those people went back to the city, but once again, the services from the government were not being delivered.

Even after people started to return to the city, the municipality and law enforcement returned to the same old ways of running the city. With an increase of the security forces, not the service provided, on the contrary, people living there, even though it's been five years since they moved back to the city. However, they still suffer from the lack of essential community services.

Aleppo and the reconstruction:

Using the visual documentation of the city before the war, could help in the rebuilding of the city in the future when the sanctions are revoked, and the government is being trusted to rebuild the country. Preserving the historical image of the city should be a priority regarding the age of the city and the landmarks it has.

Media and technology can help in that by collecting and archiving all accessible data of the city. Still, due to the high density of the city, it will not be easy to do it inside the city right away.

As it was explained in the introduction about the city, Aleppo's primary density was centralized mainly inside the city.

Meanwhile, the rural areas were abandoned due to the lack of investment by the government to develop those areas. And during the last 11 years, the rural areas have been under heavy bombardment for a long time.

Building smart villages in those areas where it helps decentralize the density and encourage the population to move to the suburbs will be very helpful in many ways, such as:

- 1- Reduce the density inside the city and encourage the population to move to the suburbs where they can find all of their needs right now.
- 2- Replace the displaced camps with permanent residential houses in smart villages so people will go back to their towns after many years of displacement and living in camps and tents.
- 3- Reduce the demands on the services inside the city such as transportation, daily goods, and governmental services, making it more functional.

4- Moving the big factories from the city toward the suburbs and transferring the huge industrial city to be away from the city will help develop Aleppo's quality of life and make it more livable.

Using a [study](#) on small areas in Azerbaijan to reconstruct areas hit by war. The project is still in its early phases, so learning from it and expanding it by twisting some country-related issues. Then the project can be implemented in other cities like Aleppo.

Back to the city of Aleppo. The damaged part of the city is still mostly abandoned due to the massive destruction where buildings and neighborhoods were totally wiped out.

Therefore, using the footage archive and satellite imagery will help redraw the city's shape as it was.

The use of technology on the two sides of the conflict:

From a personal experience, working with an organization such as the White Helmets, we provided services and helped the citizens who live in areas out of government control, where they have no functioning government to deliver services.

The White Helmets used the technology on different levels, and that shaped its results to be better than the government ones. Starting from responding to the emergency calls when there is an attack, where White Helmets will arrive at the targeted location in a matter of few minutes, meanwhile, the Syrian government's response time is a few hours.

The reason behind that is the type of management. While the government is using a very strict role of command, putting the first responders under the control of the defense ministry where you have no flexibility, the headquarters' locations are based in specific areas where the government already had buildings, so it is distributed depending on political agenda.

From the White Helmets' side, it follows decentralized management where centers are distributed according to the geographical need, and the highways and roads to use to maintain the shortest responding time for any incident.

In addition to that, the White Helmets used the GoPro cameras and installed one on every helmet so they can document and review every second of the operations and see what went well and what can be done better, further use for that data was to document the war crimes and the military attacks on the civilians and on the first responders, these data were valued and used by the United Nation, Security Council, and many investigation committees and newspapers around the world.

Conclusion:

During the past decade, Aleppo has been one of the most disrupted major cities in the world. It has suffered from the destruction of infrastructure, the destination of the population, and the loss of essential services and jobs.

It is a prime example of the challenges of managing a big city through war and under authoritarian regimes where their main focus is on keeping the iron grip on the citizens, instead

of working on providing the best services and adopting new ways of managing the cities with the technology showing up in the world.

Thus, the lack of investment in technology and infrastructure did not stop the people from moving to the central city but made life in those cities more difficult.

Investing in expanding the city and developing the rural areas around the city would reduce the density and make people move to the suburban areas instead of living in the high density cities.

Global Refugee and Migration Crisis (general notes)

- As of 2020, there are 84.3mn forcibly displaced refugees and migrants according to the UNHCR (not accounting for the recent Ukrainian crisis)
- This figure is not accounting for the internally displaced
- Of the international refugees, only 15% are in the developed nations
- The remaining 85% are in developing countries with limited resources to deal with the unprecedented nature of the refugee inflows.
- Such countries include Turkey, Jordan, Lebanon, Bangladesh, and Colombia
- The imbalance increases the risk of instability in the host countries
- The flows increase exacerbates existing anxieties and creates new ones in the society.
- Such anxieties create fertile grounds for political exploitation.

- The resistance toward neither admitting more refugees nor shouldering the financial and administrative burden contributes to the western sentiment.
- Furthermore, reluctance to act against forcefully internal or international perpetrators encourages them to use irregular mass immigration as a weapon.
- In 2016, the UN's Global compact On refugees was prepared/signed; however, the implementation and follow-up have been limited.
- The analysis shows that armed internal and external conflict, the rise of organized crime, and climate challenges will continue to contribute to the global migration.
- They are creating challenges in providing public goods and services and creating conditions for social cohesion to minimize domestic and international vulnerabilities.

The new trend: Urban refugee inflows:

- The latest crises show that the destination countries utilize three strategies to manage irregular, mass, and forced migration:
 - **Refugee camps:** Experience show that refugee camps are either a stop-gap measure or a way to signal that the "newcomers" are not welcome. Especially the developed countries such as Hungary and Greece use them to isolate the newcomers with disastrous conditions, ripe with crime and lost generations inside the camps that can reach or even exceed the size of the adjacent population. Information about the population inside (numbers. Demographics, origin, needs, etc., are limited, and so are the services. One wonders if this is by design to discourage further inflows.

- o **Allocation of refugees by a predetermined quota:** This method of administration was implemented with excellent efficiency by Germany in the 2014 and 2015 Syrian refugee crises. The country used the Konigstein Quota developed in 1947 to finance public works postwar based on the share of population and taxes. They used the same formula to allocate refugees to avoid overconcentration in urban centers and stretch available resources at the urban level. The approach needs a great deal of planning and necessary technology for information gathering and documentation. It has pros and cons, but it was one of the best implementations. That said, one could argue that the relatively few numbers of refugees – 1.5 mn to a population of 90mn in one of the wealthiest countries– make the task more manageable. Sweden and Switzerland are other successful examples.
- o **The Turkish experience** has been a combination of the two and has been unique. It is hard to say that it was a conscious choice: in 2011, the Syrian refugees in Turkey were 11,000 thousand, and Turkey was prepared to host up to 300,000 refugees at refugee camps near the border. The proximity to the conflict zone, the lightning escalation, and the tactics used by the regime resulted in an unprecedented influx both in magnitude and speed. It quickly became apparent that refugee camps would not be enough, and proper processing proved impossible by the sheer volumes and not enough people to process.

- o Turkey unofficially allowed the refugee populations remarkable freedom to travel in the country and settle in places they found reasonable. The result was the concentration of Syrian refugees in urban environments, either in metropolitan areas like Istanbul (5.6%), Izmir, Adana, and border cities like Antep (25%), Urfa, Kilis (80%). In parenthesis is the Syrian population as a percentage of the total population of these urban centers.

The role of technology in refugee Flows:

- The recent refugee flows illustrate the use of technology for the refugee flows, be it in Myanmar, Syria, or Afghanistan.
- Use of maps and smartphones.
- Smartphones as the primary source of information about identity and human flows.

Security and public safety concerns:

- Terrorist attacks: The refugee inflows result from the domestic regimes forcing their citizens out of their homes en masse. Suppose part of the rationale is to vacate these areas and control them by force. A second is to create instability in the neighboring country, especially if perceived as hostile. Then it is natural to think that regime elements are free to roam on the porous border. An explosion of terrorist activity in Turkey (particularly Antep and Istanbul) and European capitals confirm these suspicions.
 - o 2012 Antep bombing

- o 2016 Antep suicide attack (56 dead), the most significant terrorist attack in turkey to date, came the day after Turkey announced its intention to implement a safety corridor inside the Syrian border.
- o 2015 Suruc/ near Antep suicide attack: 35 dead, 104 injured
- o 2016 Istanbul Suicide attack. 16 dead
- o 2015 Istanbul airport attack: 45 dead, 216 injured
- o 2017 Istanbul night club attack: 39 dead, 57 injured

In the same period, several attacks in European major urban centers like Berlin, Paris, Brussels, and Nice were facing attacks.

Such attacks on urban and indeed state vulnerabilities show the importance of the use of technology and the collection of data.

- Despite the anxieties of the local population, the refugee inflows did not result in increased criminal activity. According to a recent microanalysis (source) controlling for various factors, the crime rate in the refugee population remains below average. Possible explanations include the dire consequences of getting caught, including swift deportation.

Technology and digitalized data collection:

- After the initial shock, the central government initiated an immense effort to collect information on the newcomers with the participation of local governments.

- The initial data collection and provision of a temporary ID started in 2013.
- The information collected consisted of biometric and demographic data, place and date of birth, father's name, mother's name, marital status, fingerprints, household size, school-age children, skill set, and occupation.
- Registration process
- Restriction of travel freedom (after the overconcentration of the refugee population in urban centers)
- A massive update campaign started in 2015-2016, replacing the initial IDs with the new ones.

The Old one

GEÇİCİ KORUMA KİMLİK BELGESİ		
ADI :	:	الاسم :
SOYADI :	:	التلقب :
BABA ADI :	:	اسم الأب :
DOĞ. TARİHİ :	:	تاريخ الولادة :
DOĞ. YERİ :	:	مكان الولادة :
CİNSİYETİ :	:	الجنس :
AİLE NO :	:	عائلة العائلة :
ŞAHİS NO :	:	رقم الهوية :
İKAMET YERİ :	:	مكان الإقامة :
YABANCI KİMLİK NO 99		

The new one

T.C. GÜCÜKORUMA KİMLİK BELGESİ	
	ANKARA 1 Güç Koruması Müdürlüğüne teslim edilen bu belge sadece ANKARA 1 bünyesinde geçerlidir. Başgarihi: Başbakanlık/Güç Koruması Müdürlüğüne teslim edilmiştir. Bu belge, Türkiye Cumhuriyeti Anayasası ve diğer kanunlarla düzenlenen hak ve özgürlükleri korumak için kullanılır. Bu belge, Türkiye Cumhuriyeti Anayasası ve diğer kanunlarla düzenlenen hak ve özgürlükleri korumak için kullanılır.
Yabancı Kimlik No: 99	Adı: [Blank] Soyadı: [Blank] Baba Adı: [Blank] Doğum Tarihi: [Blank] Doğum Yeri: [Blank] Cinsiyeti: [Blank] Aile No: [Blank] Şahıs No: [Blank] İkamet Yeri: [Blank]

T.C. İÇİŞLERİ BAKANLIĞI AFYONKARAHİSAR VALİLİĞİ GEÇİCİ KORUMA KİMLİK BELGESİ بطاقة الحماية المؤقتة			AFYONKARAHİSAR İl Göç İdaresi Müdürlüğü'nce tanzim belge sadece AFYONKARAHİSAR ili dahilinde geçerlidir. kaybolması/bulunması halinde düzenleyen makama bildirilmeli/teslim edilmelidir. هذه البطاقة التي نظمت من قبل مديرية إدارة الهجرة في المحافظة صلحة فقط في هذه المحافظة. في حالة فقدان أو العثور على هذه البطاقة يجب تسليمها إلى الجهة المنظمة لها.
Yabancı Kimlik No / رقم الهوية الأجنبية Adı / الاسم Soyadı / القاب Baba Adı / اسم الأب Anne Adı / اسم الأم Doğum Yeri / مكان الولادة Doğum Tarihi / تاريخ الميلاد Medeni Durumu / الحالة المدنية Aile No / رقم العائلة Uyruğu / الجنسية Kayıt Tarihi / تاريخ التسجيل	99254681235 ŞEHİNVAR SAMI KAMİL EMİNE ŞAM 13.10.1960 BEKAR 170 SURİYE 29/12/2016		
30/12/2016 AFYONKARAHİSAR VALİLİĞİ GÖÇ İDARESİ MÜDÜRLÜĞÜ			

Use of technology in cash-based assistance programs.

- Through Kızılay (Turkish Red Crescent), the Turkish government implemented a program to give cash-based assistance to Turkish citizens who qualify.
- Starting in March 2011, the program was extended to provide emergency food support to the Syrians who had to leave their country.
- Proving an administrative success, in 2012, the program was expected to cover all the Syrians under temporary protection status and includes the following subprograms on a single platform

Emergency Social safety Net program (ESSN)	Basic needs	
Complimentary Emergency Social safety net project (C-ESSN)	Basic Needs	
Conditional cash transfer for Education	Education	

In camp food assistance program	Basic needs	
Vocational Course incentive (VCI)	Livelihood	
Vocational course allowance (VCA)	Livelihood	
Supporting survivors of human trafficking	Protection	
Kitchen of hope project	Livelihoods	
Vocational training Incentive (VTI)	Livelihoods	
Adult language training programme (ALT)	Education	

- These programs were implemented with the contribution and participation of :
 - International organization for migration
 - UNDP
 - UNICEF
 - International federation of red cross and Red Crescent
 - Ministry of Education
 - UN World Food Program
 - Ministry of family and social Affairs
- By far, the most significant portion is the Emergency social safety Net program, which is, to a large extent, covered by the funds received from the EU under an agreement—consisting of Euro 3bn + Euro 3bn in two years. A new one is under negotiation.
- The assistance provides TL 150, (or Eur2)1 per month per family. While the assistance is small, it does help to meet basic needs.



Education:

- School-age children are 1.2 million. The average classroom size in turkey is 30: a need 400,000 new classrooms and as many if not more teachers to avoid a "lost generation". As of 2020, 700,000 are under compulsory 12-year education. Still, 500,000 Syrian kids are not in official education programs.
- Satisfaction with education ranks only second to health services among the Syrian population (86% highly satisfied or satisfied)

Health services:

- Health services are free and open to all the registered Syrians (in essence, all the Syrians).
- Health services rank first in terms of satisfaction.

Higher Education:

- 35,000 Syrian youth in higher education.
- The central government made it a policy to prioritize higher education admittance to provide services and serve as a "bridge".

The state of social cohesion:

This is a long debate: But the main points after ten years of cohabitation are:

- 90% of the Turkish population believes that the Syrian refugees will not return.
- The vast majority, 90% of the population, believes that they should be sent back.
- The vast majority of the Turkish population (provide % and source) thinks the two cultures are distinct and not compatible.
- The vast majority of Syrian refugees believe the cultures are similar and compatible
- Contrary to theory, the more frequent the contact, the more distant the Turkish population.
- The attitude of the Turkish public opinion can be summarized as reluctant acceptance.
- The least resistance is to the provision of education and health services
- The border cities presumably sharing a cultural heritage is more resistant and distant to the Syrian population.
- Numbers trump presumed cultural affinity.

Gaziantep – Aleppo

History – Demographic changes (Not the first time!)

- Until the end of the WWI Antep and Aleppo were in the same province, Aleppo being the center (vilayet) and Antep a subdivision (kaza)
- Aleppo was the third-largest city in the Ottoman empire after Istanbul and Cairo. Assad: What was the population)
- Antep had a population of 80,000 (source) before the first world war vs 110,000 Aleppo?
- 30,000 of which were Armenian, holding most of the wealth, who were forced to leave or massacred during the Armenian Genocide.
- After WWI, Antep fell into first English then French mandate. Both brief.
- Historian Umit Kurt claims that the resistance toward the mandate seemed to be the struggle of a group of genocide profiteers seeking to hold onto their loot as it was a fight against an occupying force.
- Under the Turkish Republic, Antep became a province (vilayet). The political power rested with such profiteers under the one-party regime bent on a nationalist agenda, erasing or obscuring identities other than the national one.

Syrian refugees in Antep:

- Antep has proved to be one of the main attraction centers for Syrian refugees.
- According to the registration data, Antep is home to [426,000] Syrian refugees, although the number may be less due to migration to more significant metropolitan areas.

- The Syrian refugees account for 20-25% of the population.
- Antep is one of the areas where education and health services cover almost the entire Syrian refugee population.
- The location of the refugees is uneven. In some districts, Syrian refugees account for the majority of the population and less than 10% in others.
- The Kizilaykart cash-based assistance creates a net inflow to the Antep economy.
- According to the Turkish registration data, a staggering 90% of the Syrian refugees come from Aleppo.
- However, it is not clear whether this population resided in the city of Aleppo or the rural areas.

Interactive social cohesion Model

- Gaziantep municipality created a municipal migration department.
- Gaziantep's Migration Department sought backing by academic institutions and other partners. The objective was to bring together theory and practice in a new, culturally sensitive, scientifically-backed integration model for migrants and host communities. This was a milestone for opening discussions on integration on multiple levels—neighborhood, regional, and national. A key project to develop a model for effective integration was called the "Development of Interactive Social Cohesion Model". This is funded by the Scientific and Technological Research Council of Turkey (TUBITAK), and implemented by the Gaziantep Metropolitan Municipality, Koç University in Istanbul, and Bilkent University in Ankara.

Gaziantep Declaration for Migration

- The International Forum on Local Solutions to Migration and Displacement was held on November 2019 in Gaziantep, Turkey. The Gaziantep Metropolitan Municipality co-hosted the Forum (GMM) and the United Nations Development Programme (UNDP), together with the United Nations Refugee Agency (UNHCR), the UN Migration Agency (IOM), the World Academy for Local Government and Democracy (WALD), the Union of Municipalities of Turkey (UMT), and the United Cities and Local Governments the Middle East and West Asia Section (UCLG-MEWA).

Integration to the labor market:

- Formal employment opportunities remain limited, which is one of the largest hurdles and friction points. The situation helps the informal economy and hurts the formal businesses.

Bucharest, Romania¹



Geographic position



¹ Please note that many of the suggestions in this article are the result of analysis and synthesis by me from sources unrelated to Romania.

The city of Bucharest, the capital of present-day Romania, sits close to the southern border with Bulgaria and a little to the east. A quick look at a map shows it positioned on principally flat ground, with the Carpathian mountains to the north and west and the Black Sea to the east. It has freshwater access through lakes descending from the mountains through the city, across the Wallachian Plain to join the Danube, which flows along the border with Serbia and Bulgaria. As a result of its geographic position, Bucharest is naturally exposed to the east, both to the water and to the border along Ukraine and Moldova.

Romania has a favorable climate of four distinct seasons and is almost evenly divided among mountains, hills and flatter land. As mentioned above, while its mountainous terrain can be a liability in certain crises, it is also an asset. It is rich in natural resources including metals, minerals and fertile soils; it has forests of hard and soft woods, petroleum reserves and a river system that allows for hydroelectricity.

There are liabilities to its position: the variation in terrain in Romania more generally, with the plains at the margins of a central mountainous complex, exposes the peripheral provinces to be more easily cut off from each other, both in terms of supplies and services. Unifying support to one side or the other would require sophisticated mobilization. Its exposure to the black sea is a potential vulnerability as the crisis in Ukraine has moved to the water.

Political history



Romania has long sat at the crossroads of East and West along trade routes which brought a variety of cultural influences, including the merging of the local Dacians with the Romans during more than 150 years of Roman rule. The independent country of Walachia (or Wallachia, spelling debated) was eventually subsumed by the Ottoman Empire. The area remained largely under Ottoman control until 1879 when it was successfully overtaken, after many attempts, by the Hapsburg Empire. From 1941-1947 Romania fought in the second World War, and in 1944 it was occupied by Soviet forces, becoming a USSR satellite nation in 1948. Revolution in 1989 ousted Nicolae Ceausescu and ended 41 years of communist rule. The country was officially entered into NATO in 2005, and in 2007 was admitted to the European Union.

In recent years Romania has sought and enjoyed increased cooperation with other democracies on economic and political development, defense reform, and non-traditional threats such as transnational crime and non-proliferation. The city of Bucharest has been the documented capital city of Romania since the reign of Vlad III in the 1400s, but was likely an important city much earlier than that, and appears to even have some neolithic roots.

While Bucharest is the undisputed primary city and capital of Romania, secondary cities show signs of coming up. Cities like Cluj, Iași, and Timișoara are small hubs of innovation. The question is can they continue to create desirable destinations as “livable cities.” They have cultivated some clustering of high-growth industries, including the “Silicon Valley” analogy for Cluj.

Economic position/EU participation by Romania²



GDP growth in Romania in 2017 was an exceptional 6.9 %.³ This also equated to a GDP per capita at 60% of the EU average. The population growth rate has been declining (-0.6%), and overall is poorer than one might expect, with 20% having no access to clean water and more than 30% with no flush toilet.⁴ Approximately [six million](#) Romanians are living in the diaspora and sending transfers home. These are split between about 70/30 people supporting family members versus account deposits for their assets within Romania.

Romanian exports are almost all to other EU countries. Its imports are also majority EU, with some items of raw materials from China. Romania’s industrial economy is built on

² <https://openknowledge.worldbank.org/handle/10986/29864> (Romania- Open Source Knowledge)

³ Brookings *Romania: Thriving cities, rural poverty, and a trust deficit*, Donato De Rosa and Yeon Soo Kim, Tuesday, June 5, 2018

⁴ *ibid*

middle-stage assembly of industrial parts and products. Many parts of the infrastructure and economy in Romania outside of Bucharest and the other top cities are out of date and not competitive.

Romania and Bucharest have had difficulty with the absorption of EU funds. This is attributable to corruption and a lack of infrastructure to absorb the funds. This latter problem is structural and could aggravate the corruption problem as funds slosh around the economy without immediately being tagged for delivery. This problem has arisen in former Soviet economies, which were not built for the proactive demand for funds that is so integral to a capitalist system. Building demand as a transparent force for efficient allocation is integral to building a successful EU partner or member economy.

<https://oec.world/en/profile/country/rou>

City and Governance



The difference in social agenda between rural conservatives and urban progressives could lead to a lack of cooperation nationally. It could leave more conservative facets vulnerable to disinformation or campaigns similar to the Russian planting of Russian loyalists in Donbas as part of a more significant effort to foment empire-nostalgic populist uprisings.

Bucharest is a bustling European city. With a population of 1.78 million in 2021, it has a bustling metro, with annual ridership of 179,703,000 passengers; about 720,000-weekday passengers. The city is divided into six districts, each with its mayor, with the overarching General Mayor elected as a citywide position. The current officeholders are diverse and representative of European democracy. The General Mayor is Nicusor Dan, a mathematician and progressive activist. The six District mayors for Bucharest will also serve from 2020-2024. I have treated two in-depth below.

- District 1- (Wealthiest district) Clotilde Armand- French, married to a Romanian citizen she met at MIT while studying in the US. Living in Bucharest since 1999. Businesswoman. Has run for this office once before and also served in the European Parliament. Center Right affiliated. Election results have been contested in both directions for the last two elections.
- District 2-Radu Mihaiu. Tech entrepreneur. Worked in the government of Romania as EU Funds Ministry. He is an IT specialist who created the platform systems to improve the absorption of EU funds into Romania. Has created and tried to pass legislation blocking formerly convicted persons from running for office. Not clear if motivated by social conservatism or anti-corruption.

Cultural concerns and Religion

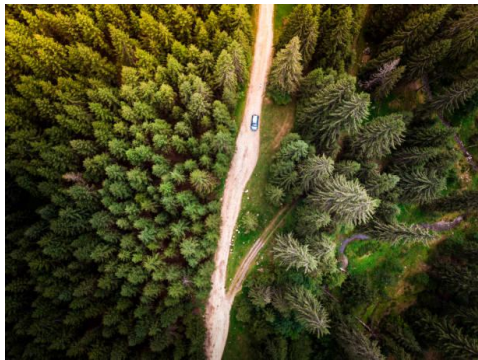


It seems worth clarifying that there is no relationship between the [Romani](#) People and Romanians, other than the relationship that exists between the Roma population and any country where they have resident people. This confusion between the descendants of those nomadic tribes of Indian origin and Romanians is one of phonetics. The Roma have suffered the same racial marginalization and poverty in Romania that they have elsewhere in Europe and beyond. Political and historical contradictions persist in Romania.

The Romanian Orthodox church is autocephalous, and its patriarchate covers Romania and Moldova, and is therefore independent from the Russian church. While we have not investigated the current dynamics of this relationship enough to make broad statements here, this is the kind of civil society dynamic that is important to consider in ongoing considerations of Bucharest's resilience and stability. Measuring the credibility of democratic leaders with consideration for the competing credibility of religious leaders is key to understanding the future credibility of the city or state government. A quick non-scientific look at the Romanian church suggests increasing the popularity of participatory programs such as fasting rituals within the congregation. We also note that young Romanians flocked to the church at the moment of the USSR's collapse. That population may well associate religion with resistance to Russia. In

contrast, the increased partnership between The clergy and the Putin regime in Russia is concerning, and not an atypical political development. The Romanian church remains in communion with the other eight Patriarchates: The original pentarchy of Constantinople, Antioch, Alexandria and Jerusalem as well as the Bulgarian, Serbian, Georgian and Russian.

Migration/Human Flows



There will continue heavy migration from Ukraine: close to a million people have crossed into Romania, representing more than half of Bucharest's total population of 1.78 million people. Poland has taken 3.3 million. Romania and its fellow countries in the eastern part of the European Union resisted any participation in or responsibility for the migration crises facing Europe in the wave of migration, especially from the Middle East and North Africa from 2015-to 2017. This can be attributed roughly to history: the former colonial powers feel a distinct responsibility, however complicated, for these refugees, and it is often in those countries where refugees from these areas will have family or contacts as well. These tables are turning sharply in

the current wave of Ukrainian migration, and there is a real opportunity for the EU to revisit its policies and plans. But in the likelihood that policy is driven by the events and not the other way around, it is important to note that the dynamics of placement beyond Romania for Ukrainian immigrants will be in part formed by the dynamics of these migrations that preceded this one.

How To Think About These Findings?

Human flows out of Romania would be a concern for brain drain, a force which is being heavily counterveiled by recent efforts around improving the absorption of EU funds and investment in emerging industries. While this trend should be encouraged, along with the technological innovation and attraction for the young that it will generate, the cultural unrest from those populations at risk of being “left behind” is a concern that should not go unaddressed. It is of particular concern as human flows into Romania increase. Specific risks include political divisiveness and possible nostalgic nationalism as well as any intersection between those political trends and the church. It is important as migrations move from crisis to structural that integration of technology and adoption of practices follows. This will prepare the population, new and old, for the next destabilizing event, which they will need to approach as an integrated population.

Conclusions and recommendations for Romania and Bucharest

- Cities present considerable friction to citizens’ daily lives, and tech can be a relief. Urban populations are often early adopters. I believe this may also be true for rural populations.

It would be interesting to see if there are joint solutions that can bridge the perception of the gap between rural and urban populations in a place like Romania.

- In order to thrive, Romania needs to absorb its EU funds to build and use better infrastructure. Outreach from the EU or other entities to politicians who understand the absorption problem, such as the mayors mentioned in Bucharest (and their counterparts in the next four cities) would be essential.
- An assessment of which industries are best positioned for success in Romania, and how to match the labor to capital investment would be helpful. Public-private partnerships might be useful here in identification of skill sets and curricula.
- Given the proximity to the destruction in Ukraine and the relative dearth of innovation in Russia under the current regime, a thriving tech and alternative energy sector this far to the East would be beneficial to the entire European effort.
- Technological systems to help with the application for and deployment of EU infrastructure funds will vastly improve Romania's resilience, governance and preparedness for destabilizing events. These might be developed by working with innovation teams across borders.
- Romania's tertiary education attainment is the lowest in the EU, and skill levels make adoption of emerging industries difficult. A possible thought about addressing the matter of skills and migration is to locate migrants where skills are needed. With increased population and funding, perhaps STEM education can improve and vocational training programs will be fully enrolled.

- There may also be some potential to use some brain gain from the Ukraine crisis to enable more success with investment in rural areas that have not so far been able to accommodate emerging industries due to lack of skills on the ground.
- An additional option to support more rural populations is to look to the Italian model of preserving the legacy farmland areas. They use EU grants to support citizens who hold farmland within their family. These grants build hospitality enhancements, help develop product placement for products and enable technical advancements and connectivity improvements.

Conclusions beyond Bucharest

Regarding the use of technology: Many of the following ideas are linked to the general idea that while technology can bring excellent advancements, adoption must be considered part of preparedness.

- As migrants enter, can translation technology be better harnessed to help children in particular maintain fluency in two languages. This will support repatriation of migrants in cases, like Ukraine, where it may be desirable. The ability to maintain native communication within families, as older people find it more difficult to attain new fluency and children are likely to drop their language of origin also could help support successful assimilation.
- We see the usefulness of heavily encrypted digital and backup archives of needed documents. These might include birth records, restoration-specific plans of important

cultural monuments, and even a cultural heritage digital archive for use in city programming after a crisis. See Manar-al-Athar at Oxford.

- Municipal apps can work. I see an outflowing app with reliable information as key to building trust between citizens and City government. This is working in Kyiv.
- Crowdsourcing of information is not good for building city government credibility. I project that any divisiveness is likely to infiltrate these platforms and they will ultimately be more destructive than helpful in the face of any destabilizing event.
- What would it be like to proactively document Bucharest architectural patrimony, or create a digital archive for citizens of Bucharest should they become displaced. What would be included? This is a generally useful thought exercise, and there are obvious risks of misuse, but we see that a voluntary plan provided by city hall might be a popular way to both build trust with citizens and have stronger connections to the population in a crisis. We explored these topics throughout this project.
- Technological platforms for countries that accede to the EU might be scalable to best practice that can be more universally adopted. Would this meet the shortfall or is it cultural as well? The demand for the EU must translate to the individual level. They must understand what they can ask for and how to build demand.
- If this can enable faster absorption which means quicker realization of the benefits of the EU. This in turn means a more complete national attachment to democratic institutions and greater cohesiveness among the member states. This cohesiveness will drive more effective regional security, resilience and disaster response.

Broader Applications of Takeaways Regarding Technology

As shown in Shanghai's examples, nations' socio-political backgrounds and citizens' interpersonal trust in government are essential for implementing technologies and innovations. Technologies and innovations have provided much comfort to individuals worldwide, but they could also be a double-edged sword. Under the Chinese Communist Party's authoritarian regime, the government has utilized the technologies to control and monitor citizens' personal lives and their information. Consequently, megacities like Shanghai have to subserviently follow the Chinese government's order for lockdown, even though millions of citizens' rights have been violated. Going forward, there should be regulations and laws that would protect individuals' rights and values. For the future generation, the education systems should also be ready to teach how to rightfully utilize technologies and innovations.

Keyframes for understanding the introduction of new technology ⁵in loosely or moderately integrated cities:

- must meet the twin bars of ease of use and usefulness, predicated on access.
- cities are hard places to live- they present more friction to citizens' mundane needs, and tech can be a relief.
- credibility and trust are keys to adoption, but usefulness may be even more powerful. The exact pathways about how and why information is shared require a lot of attention and consideration.

⁵ special mention to Alexis Wichowski who spent time with us to probe these concepts and ideas.

Many of the following recommendations are linked to the general idea that while technology can bring excellent advancements, adoption must be considered part of preparedness.

- Cities should consider the creation of a digital archive of needed documents, restoration-specific plans of important cultural monuments and even a cultural heritage digital archive for use in city programming after a crisis.
- could a person's digital identity be encrypted enough to be safe? Could it be designed to splinter if reported stolen? With the unrelated backup residing with the municipality?
- Municipal apps can work to build trust between citizens and City government. This is working in Kyiv. Deliverables must be politically neutral and desirable.
- Crowdsourcing of information bears risks related to misinformation and credibility and being exploited for divisiveness.

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Bucharest Literature Review

I have cited work used in the Romania paper in footnotes. The following works have informed my thinking generally, and I think could be useful to anyone interested in issues around human flows, destabilizing events and their intersection with other factors.

Articles

- *Daniel Susskind Minds The Gaps* Oxford: 2020 Lapham's Quarterly: Technology, Winter 2021; Vol. XIV, No.1; Oxford, Excerpted for the magazine by the author from A World Without Work. (Pages 23-27)
- Eric Ravenscraft article: <https://www.wired.com/story/what-is-the-metaverse/>
- Time article on tech in UKR <https://time.com/6163708/kyiv-digital-technology-app/> ; **Civil Society is Ukraine's Secret Weapon Against Russia**
- <https://www.nytimes.com/2022/04/18/world/europe/ukraine-war-russian-orthodox-church.html?smid=url-copy> Recent NYT article following idea of church influence.

Podcasts and TED talks

- Podcast: Marketplace Tech
<https://podcasts.apple.com/us/podcast/marketplace-tech/id73330855?i=1000549644871>

Books

- The Human Swarm Mark Moffett
- The Perfect Weapon- David Sanger's look at cyber and the civilian.
- Ladies and Gentlemen, The Bronx is Burning. Jonathan Mahler (really just a good background read on arson year in nyc)
- The Power of Trust Sandra Sucher (faculty at Harvard University).

Miscellaneous information of interest

- <https://attack.mitre.org/mitigations/enterprise/> a cyberthreat modeling tool
- Ai Wei Wei Human Flows. This 2017 documentary conceived and directed by Ai Wei Wei explores a human mapping dimension of migration. It is unlike any other look at the migrations of that time (broadly 2014-2018). It allows the viewer to consider for themselves and through accounts the interplay between geography, weather, culture, technology, and individuals.

Appendix A

General Literature Review

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Appendix B

Interview Notes:

Prof Emick

In FDNY tech is a headquarters activity, having the young generation of officers in FDNY is helping a lot with adopting the new technology because they grew up with it.

The decision of using new technology is not up to FDNY, we work with the Mayor's office and other elected officials who decide on those things and the budget as well.

On 9/11, the lack of communication between firefighters and NYPD caused the death of many people, that's why it is important to develop that field and make it better as much as possible.

During the pandemic, emergency calls for the first time were calls for a medical emergency, we were able to connect them to the medical department and initiate a process for that kind of response.

We found a new mechanism for dispatching our responders and the teams, which saved us a lot of time and managed to save more people. Using the communication technologies we have, we started to dispatch the teams the second we hear the call, and then we organize them on the way, we give them all the information they need on the way while they are heading to their location. And that takes a third of the time we used to spend for each operation before.

I believe the new tech and communication systems such as 5G can improve the process of dispatching by improving communication.

One of the things technology can help with is If we can have the feeds of the cameras to be broadcasting to HQ and know where they are, that will save a lot of lives from the people and the first responders. Because then we can see everything happening and locate every responder we have, therefore we will be able to make a better judgment on every step.

The E-medicine project was a tremendous opportunity to see how technology can help in crisis management because many of the responses are medical cases with no need for an ambulance, so they were all treated online from home.

Having more data will help the firefighters make better decisions, it will not trouble us or consume the time of the analysts because of the use of AI to analyze the data.

Every night data comes into the system (which is getting better and better), the next morning the system will give them the weakest 10 buildings which need to be inspected. And same for the police they are using the same system.

Big data and AI, are linked tremendously, will need more cross-sector investments between tech and gov, like Facebook and Google, to help in data management

We are using the technology a lot, but it is not our only method, for example in cases of emergency or of internet outage, people will have radio as a backup, and every HQ will still have some boxes connected by wire.

Chief (Ret) Joseph W. Pfeifer, FDNY

A way that I see the critical work is: Connect, collaborate, coordinate.

On 9/11 when we did get the information from the police helicopter, the 2nd tower was about to collapse, so collaboration between the different agencies is crucial.

Operations and collaboration between other law enforcement, voice video, and data is also very important and needed in responding to big events.

Coordination with the news helicopters during 9/11.

We have info about buildings that can help the operational Critical Information Management System (CIMS). It pulls from the database, like google maps and other platforms. We share that system with NYPD.

Phonebook: we developed it to be another guide: yellow, red, and green

We used to need a vision before having the technology; now we have technology first and then need to see how we can utilize it to develop our work.

We need to think a lot about what technology can help us with, such as: How to use the technology to take the ideas to be a plan. How to know if people are tired.

If we can use the 5G technology to track our firefighters in the work field, that will be tremendous; we lost many responders because we couldn't locate them in the fire and smoke or in collapsing buildings.

Haiti is a country that doesn't have the technology, but our operations there were developed through mapping at the grassroots level, the same after Hurricane Sandy, when we did it with FEMA. So we always need to think about how to become innovative in a crisis.

Chief Thomas J. Currao, FDNY

FDNY Deputy Assistant Chief, Director of the FDNY Center for Terrorism and Disaster Preparedness (CTDP)

Some concerns we worry about when looking into data, and especially open source data:

How old is the data and how accurate is it that is provided through the Citizen app and Waze?

Tech represents the true definition of a double-edged sword; it could be used for good and could be used against you.

We are looking to do social media monitoring during disasters to gather information.

GIS mapping to understand the crowded areas, to know where to evacuate and where to start.

It should always be one of two options when it comes to solving a problem or innovation, either a new way of doing it or developing the ways you already have.

A major challenge is what the data rides on, and then the challenges of sharing the info between agencies. Because each agency has its own system, sharing data is difficult

We are not there yet on transferring photos and videos during dispatching, but if it happens it is going to be a big time saving and information exchange.

Fact checks from social media and vetting the information we gather.

Mayor Michael A. Nutter

Cities are under constant (daily) attack and under-resourced and always behind in adaptation of technology (easily 2 or 3 versions behind).

The patches are coming along but people are open to all kinds of vulnerabilities

Collaboration between agencies is a rare

Governments have giant mountains of information, however they do not know what they know and they do not know what to do with the information, and what they need to know.

That said, you need to make some decisions; what problem we have to solve and what is our constituency.

For mayors: We need to build trust before the crisis: and one can do it by Concise Consistent Communication Authenticity - He used the same formula for 8 years.

Information and communication is critical. For example, with public safety 9 out of 23 precincts were accounting for 65% of the violent crimes and resources needed to be redistributed.

Technology and how to use it: the first step is to determine what to do with it.

Regulation: the governments are mostly late to regulate. For instance, delivery services, ride hailing or autonomous vehicles; because pace of change is exponential.

Apps and 311: What is more important is to find out who is NOT using these services, as those are the people or parts of town that do not have the confidence that they are going to receive the public service and goods that they need.

Tipping point: the end result of a cycle of dysfunction. Community action can happen but at some point the government has to intervene or step down, otherwise governance faces risk of breakdown.

Professor Alexis Wichowski:

consider the differences- are you dealing with Central government versus Municipal government.

Ease and Utility are critical.

What are the cues we follow?

Consider resilience redundancy and situational awareness.