9-15-2019

Community Participation in City Planning and Development: Towards Enhancing the Pedestrian Experience

Amro Anabtawi

RIT

Community Participation in City Planning and Development: Towards Enhancing the Pedestrian Experience

By

Amro Anabtawi

A Capstone Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Science in professional Studies: City Science

Department of Graduate Programs and Research

Rochester Institute of Technology

RIT Dubai

September 15, 2019

RIT

Master of Science in professional Studies: City Science

Capstone Approval

Student Name: Moahmed Amro Anabtawi

Capstone Title: Community Participation in City Planning and Development: Towards Enhancing the Pedestrian Experience

Capstone Committee:

Name	Designation	Date
Dr. Abdulla Ismail	**Professor**	

Name	Designation	Date
Dr. Sanjay Modak	**Assistant Professor and Chair**	

I Abstract

This project is about developing a digital platform that facilitates collecting, processing, and utilizing input from community members to enhance the quality and experience of their own built environment based on their life pattern, preferences, or aspiration and in consideration of the urban requirements that are associated with their needs. As such, the platform is meant to enhance public participation in planning and urban development decisions and practices aiming to meet the needs of the community members.

Focused on the pedestrian experience, the proposed platform is meant to complement the ordinary channels of communication between community members and city planning authorities. The platform would be supported by an interactive geo-mapping capabilities that identifies city elements and allows the users to evaluate performance or suggest improvements. This practice of active user input will legitimize decisions and create a higher level of transparency between community and decision makers.

Keywords: Community / Citizen Participation in Planning, City / Urban Planning, City / Urban Development, Community Members, Pedestrian Experience, Information and Telecommunication Technology, Internet of Things

II Contents

III Dedication & Acknowledgement

A special feeling of gratitude to my parents, wife and son. I dedicate this project to my family and my many friends who have supported me throughout the process. I will always appreciate all they have done.
I also dedicate this project to the professors who assisted me to accomplish this project and to all the great people who supported me during my study in RIT.

1. Introduction

Cities, the places where most of the human beings are living and will continue to live are rapidly increasing in number and size in order to accommodate the majority of humans in the following few decades. The needs of people residing in cities are different based on their preferences, decisions, priorities and trade-offs that are influenced by their background, age and experience.

Today's cities will continue to face a variety of problems including environmental, economic, social and cultural. These challenges will continue to be the major concerns of future cities. Therefore any scheme in developing future cities should rely on the three pillars of Economy, Environment and Social in addition to integrating the available technological aspects.

Public Participation has emerged as a major effective means to enhance the quality of life and urban development (Refer to Chapter 3). PP contributes to strengthening civil society, enhance the quality and nature of decision-making, and contribute to social stability, welfare and happiness.

Public Participation will also result in higher legitimacy for the decisions which will eventually reduce chances of conflicts. In addition to that, it will contribute to the quality of decisions that are taken and adds value to the available methods of identifying problems and their causes, and to the considerations and evaluation of the available options. Through participation, people will also learn about their built environment and be more aware of the problems that are facing them which will result in a higher level of awareness.

Community and resident contributions to planning and urban decision making varies widely across world cities. While in some cities it is noted that public participation has a

positive and effective impact on the urban planning process, such participation lags behind in other urban centers.

The contribution of residents to planning decision making was and still an important factor that has been neglected in many modern cities where even practices like community mapping are ignored or not fully utilized.

When cities were smaller, it was possible to solicit resident input in a direct and simple, community based manner and there was always a room for improvement or to correct any faults without interrupting the city growth. Nowadays, cities accommodates multi millions and the growth is immeasurable, resulting in more challenges to plan for expanding or improving current built environment.

Generally, people tend to be rational beings that make wise decisions about their personal and family lives. They learn to think critically and conduct themselves so as to optimize their welfare and peaceful existence in their urban context/setting.

Nowadays, almost every individual is able to read and navigate through maps which can be used as an essential tool for collecting information and communicating with the city planning authorities and decision makers.

The contribution of residents should be utilized and encouraged especially with the rise of internet-based services and social networks platforms, which can provide a greater chance for positive and valuable feedback.

The tool proposed in this paper is about collecting information from community members to contribute to shaping and developing the quality and experience of their own built environment based on their cultural values, personal and collective preferences, and general aspirations for prosperity and happiness. It is also meant to

enhance public participation and user input into developing and evolving the city as the needs of the people are changing.

The proposed platform will enhance the ordinary channels of communication between community members and city planning decision makers. It will also legitimize decisions and create a higher level of transparency between community and decision makers since all decisions will be put to the proof with the people.

2. Community, People, and the City

2.I. Cities as Locus of Human Civilization, Innovation and Progress

Throughout mankind's history, people were hunting animals or gathering any edible plants they can find around them. Therefore, they used to frequently move from spot to another where they can have better chances of finding food or hunting. Until about 10,000 years ago, humans began discovering the advantages of settling after learning about selective breeding and basic horticulture. [1]
With the discoveries of irrigation methods and soil tilling around 3,000 years BC, for the first time in history, people could depend on a consistent supply of food making permanent settlements conceivable. [2]

People living in homesteads [Figure 1] with farms surrounding their homes, farming their lands and eating what they plant can have a relatively decent quality of life according to the previous centuries life standards; which was the preferred scenario of the majority of people before the rise of cities.

Figure 1: Homestead showing family in yard outside of house, Washington, ca 1906

Urban communities in 2000 BC were very dense and anyone would be surprised to know that some cities population densities were twice as high as some of the densest cities of today with all the negative social and hygienic effects that would result from high-density cities. The main reason was the lack of infrastructure or means of transportation where all the city elements must be within a walking distance while the other main restriction was the need of having fortification and walls that surround the city in order to protect it from foreigners and any possible attacks. [3]

This started to change with the rise of the Roman empire where they started to develop basic infrastructure to overcome some of the limitations but the real game changer was the industrial revolution when new innovations conveyed on a mass scale enabled urban areas to extend and coordinate further setting up police, fire and sanitation divisions just as street networks and later power connection.

In modern history, people were able to build a happy family or a small community in homestead-like communities but it was not possible to be part of a civilization. With the

rise of the industrial revolution, machinery were introduced to farming and for the first time in history, there is a surplus of food which gave a chance to some people to look for other professions and sources of income other than producing food. The conditions in the Gulf region were not that different [Figure 2].

Cities are powerful because they allow people to work together, they give a chance to those who does things better to focus on what they do best and in return they can obtain their essential requirements of food, clothing and shelter. This formula raised the living standards and gave the community better chances to satisfy their needs by providing them with a wide range of services and products in a relatively close proximity to where they live. [4]

Figure 2: Dhows at Dubai creek in 1960, Dubai, as part of a developing urban remarkable existence, United Arab Emirates

Throughout human history, people have chosen to build their cities around the sources of freshwater and other natural resources and in many cases in close proximity to water

bodies which allowed them to use it for transportation but the needs and priorities were dramatically changed since the invention of the steam engine, the rise of the industrial revolution and the following technological achievements.

Figure 3: Naif Souq in the 1960s, Dubai, United Arab Emirates. Like in other world cities, the Souq (marketplace) is the primary engine of innovation, urban growth and development

With cities now producing surplus food as well as tools crafts and other goods, there was now the possibility of Commerce and interaction over longer distances and this trade flourished so did technologies that facilitated it like carts ships roads and ports. Of course, these things required even more labor to build and maintain so more people were drawn from the countryside to the cities as more jobs and opportunities became available

Nowadays, the needs of people are different based on their preferences, decisions, priorities and trade-offs which are influenced by their background, age and experience. However, there are many common needs among the majority of people choosing to live, work or visit a certain city. [5]

2.II The World is Becoming Increasingly Urban

Due to the demographic changes in the modern history, the 21st Century is referred to as the urban century. Through most of history, the human population has lived a rural lifestyle, dependent on agriculture and hunting for survival. In 1800, only 3 percent of the world's population lived in urban areas. By 1900, almost 14 percent were urbanites, although only 12 cities had 1 million or more inhabitants. In 1950, 30 percent of the world's population resided in urban centers. The number of cities with over 1 million people had grown to 83. [6] [Figure 4] illustrates the distribution of world cities with over 1 million in population.

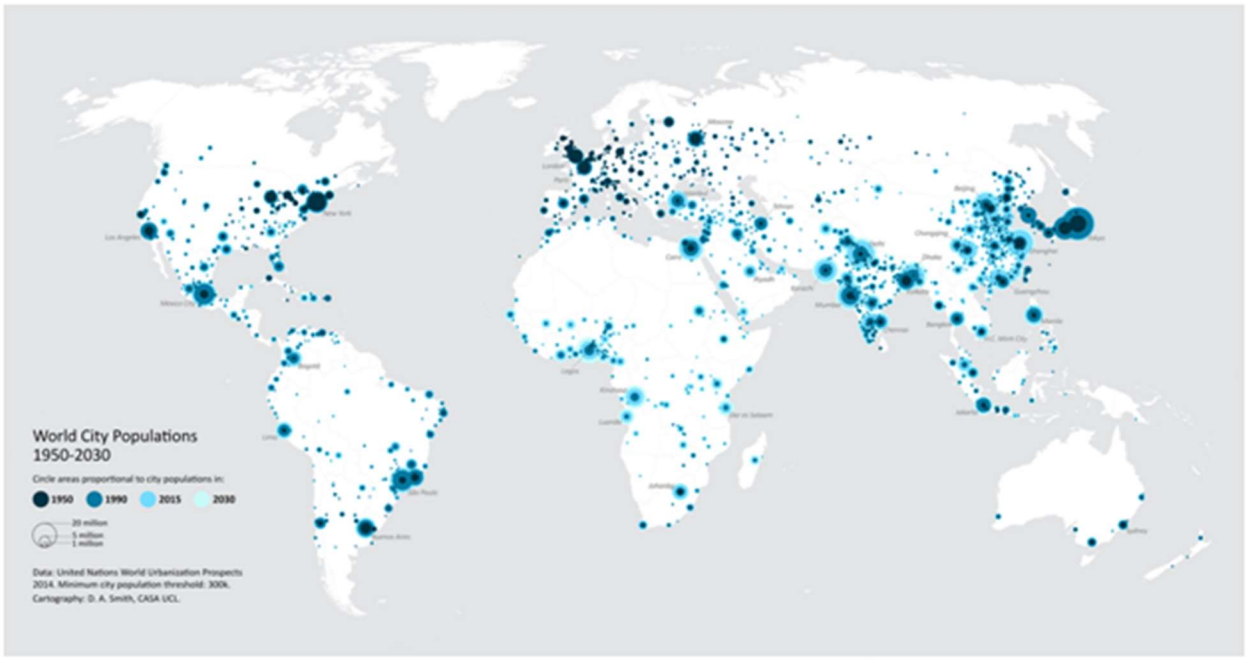


Figure 4: world cities with over 1 million in population (estimated 2014)

Today, 54 percent of the world's population lives in urban areas, a proportion that is expected to increase to 66 percent by 2050 as illustrated in [Figure 5].The urban population of the world has grown rapidly from 746 million in 1950 to 3.9 billion in 2014. [7]

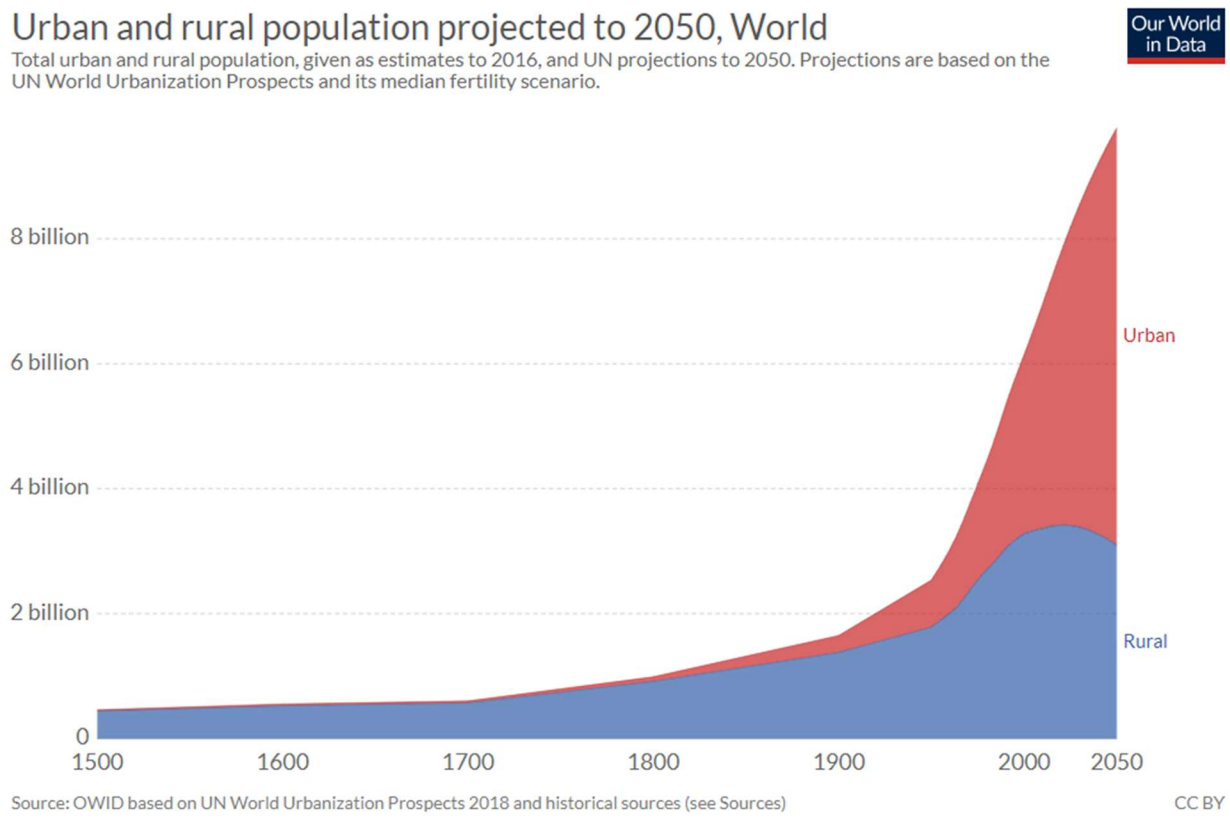


Figure 5: Historical global trends in urban/rural populations.

With more than 50% of human beings living in cities, it is becoming more eminent that we are urban species and cities are providing the way of living that the majority of people are aiming for.

Being an urban dwellers allowed humans to acquire their needs from goods and services in close proximity and with less effort compared to living in rural areas which eventually raised the quality of life and increased the competitiveness of the cities.

World population is currently more than seven billion and is predicted to top out around 10 billion most of this growth will occur in the urban areas of the world's poorest countries.

The current world population of 7.6 billion is expected to reach 8.6 billion in 2030, 9.8 billion in 2050 and 11.2 billion in 2100, according to a new United Nations report being launched recently. With roughly 83 million people being added to the world’s population every year, the upward trend in population size is expected to continue, even assuming that fertility levels will continue to decline.[8]

2.III Considerations in City Development

What should be considered in developing future cities?

To answer this question we have to identify the characteristics of future cities and compare it to the cities which we are living in today. This will help us to draw an image for future cities and define its characteristics which will lead us to identify the major issues that has to be considered in developing cities in the future.
Imagine a city of the future. Do you see happy people, clean streets, driverless cars, large screens everywhere and robots doing all the work? Actually, there is no scientific way to know how future cities will look like but we know the problems of today's cities and the best utopian way to imagine future cities is to overcome these problems.
Almost half of the world's population currently lives in cities, and by 2050 that is projected to increase to 75% which is expected to worsen the problems of cities which we are facing [9]

Today's cities problems are either economical, environmental or social and these will continue to be the major problems in future cities. Therefore any scheme in developing future cities should rely on these three pillars. Economy, environment and social aspects in addition to the technological aspects and restrains.

- Environmental considerations

Visions of a green city often include skyscrapers where living and office space vie with floating greenhouses or high-rise vegetable patches and green roofs, as we try to combine urbanization with a return to our pastoral past.
Renewable energy will take a major role in future cities and technology will allow electronics to consume less energy. Renewable resources and smart grids are major players and the streets should be pedestrian-friendly with less cars.
Future cities are greener, carbon-neutral and smarter in utilizing resources.

- Social considerations

People should be given the power and their voices must be heard. A great city with oppression or corrupted government would be a fairy tale. People are smarter and more educated than before and in order to build a successful city, community members should be effectively engaged in decision making, while enabling local actors in government, business and the community to build a harmonious and creative environment to live and work. Affecting policy action is much easier at the city level where policymakers are closer, physically and culturally, to their people than national governments. [10]
Future cities are platforms for democracy, cultural dialogue and diversity.

- Economical considerations

All cities lawmakers want their local economies to grow. However, economic growth does not automatically provide a better quality of life for the people and can often harm the environment.
A stable growth based on smart planning and depending on the available resources is essential to avoid fixing the problems which might occur from unsystematic growth.

- Technological considerations

Future cities should embrace technology to work as a nerve center which will depend on a network of IOT devices that will provide a host of data about the performance of the city. This will allow the city systems to work as a one body and ultimately work more efficiently.

Imagine a city built on a raised platform to allow its "digital plumbers" easy access to the system of advanced technologies that run it. In any future city, a robust digital infrastructure is essential to manage the physical resources and ensure that the city will be livable and sustainable over the long term. [11]

Cities are complex entities that share some common properties. There is no ‘one size fits all’ solution, but all cities have scope to improve efficiency, make greater use of

renewable resources and improve the environment for innovation, with significant economic as well as environmental returns.

Cities were found to provide a physical proximity for people's activities and needs which can be summarized into three major categories: inhabitation, work and recreation. The other main aspect that characterizes the city is the correlation between these activities and the residents. Accordingly, the characteristics of a successful city can be summarized into two focal points:

- Provides a good location and vicinity for habitation, work and recreation.
- High quality infrastructure and public services.

The other important factors that attract people to a certain city include the need for security and the political stability and without them, none of the other needs can be satisfied. The other essential need is the infrastructure and transportation. Since the main concept of building cities is to provide the needs of the residents in a close proximity, there is no point of having a place close to you without being able to access it due to poor infrastructure. Having a proper public transport system is also essential and will allow easier access to different products and services around the city. [12]

2.IV Living in The Digital Age

Beginning with the mid twentieth century, civilization began to enter the digital age. The first transistor was invented at Bell Labs in 1947. John Barden, William Shockley, and Walter Brattain won a Nobel prize in 1956 for this invention. It contained a semiconductor germanium that works as an electrical switch. This switch conveys information in a binary form encoding. The simple conduction of one and zero values relates to switching 'on' and 'of'. This invention was the light to "Information and Communication Technology (ICT)". [13]

The semiconductor transistor was just the start. Between 1958 and 1959, a joint work between Jack Kilby from Texas Instruments and Robert Noyce of Fairchild Semiconductors introduced the invention of an integrated circuit. Multiple transistors formed an integrated circuit. These circuits were intended to provide editable data storage. "Memory chips" invention was rewarded with a Nobel Prize in Physics in 2000. Unfortunately, Robert Noyce was deceased in 1999. [13]

This was the second success for ICT, and its expansion was outstanding in most countries. ICT introduced the founding of cellular phones and the internet, which became a powerful tool for community usage in all fields - public and private. A tool that raised level of education, easy access to information and research development. ICT continuous growth extended to all countries, even third world nations. A significant game player in economic development where it's compulsory involvement is inevitable and proved as an effective investment. The below graph illustrates the ICT growth from 1990-2014, which was created by Stiroh, Ho and Jorgenson (2008) to demonstrate the total factor productivity (TFP) over the years. [13]

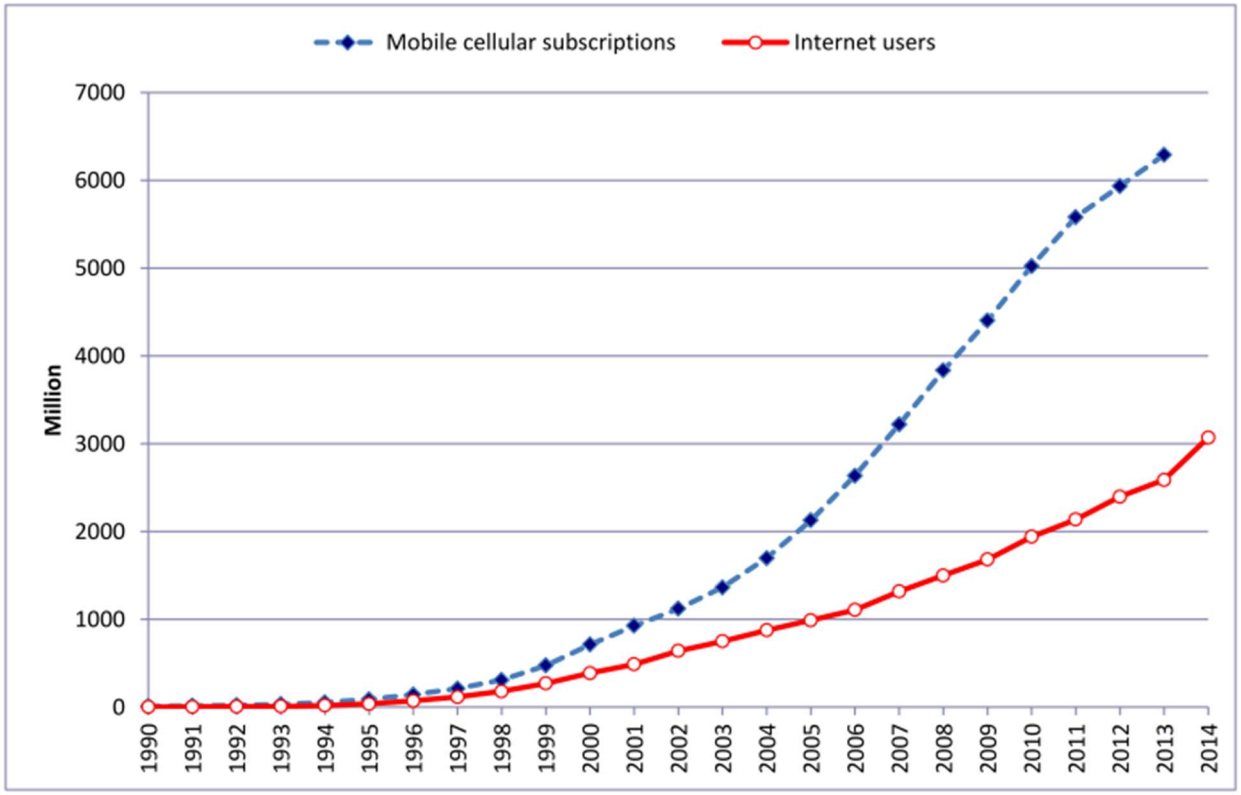


Figure 6: Mobile Cellular and Internet Users

Private businesses picked up the fast pace of ICT growth. In parallel, the public sector started to realize that their consideration of electronic platforms is a step to the future and a successful way to enhance their customers' satisfaction. Public services delivery methods are always considered time consuming, bulky and mostly incompetent. The rise in smart devices and internet users [Figure 6] allows for a transformation to digital platforms which can creates more economic opportunities that businesses and community would benefit from. The empowerment of ICT is a complete fulfilment for all community segments. [13]

2.V Big Data and Internet of Things (IoT)

Collecting information from communities to cultivate better living standards was a strong objective. However, the research verified and conducted information to produce beneficial results. Unfortunately, these results did not practically reflect on the current citizens' partialities and requirements. Research utilization is very essential when used wisely with community involvement. [14]

It is relatively easy to reach out to a small community in order to collect individuals preferences and utilize this information in future developments. However, in a large city, it is catastrophic to consider accurate individual standard with continuous population expansion. Balancing between population growth and improving the individual environment is a tough challenge.[14]

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. [15]

Figure 7: Information and Communications Technology and a representation of the Internet of Things

The capability of collecting information in every field was growing enormously, where competition between businesses become extravagant. This resulted in a decline in manual research capacity and facilitated the introduction of improved equipment to store and process data. The revolution of computers provided the ability to absorb unlimited information and gave a huge leap in the industry of Information and Communications Technology. [14]

Figure 8: Navigating through smart devices and virtual maps

Nowadays, people are increasingly IT literate. They are able to interact with digital technology devices, to search for data, to read and navigate through maps, and utilize the capabilities of fast-evolving sophisticated applications.

IT and the IoT and the related smart city technologies have recently emerged as fundamental forces to improve the value and quality of the urban experience and address the challenges of living in cities in the 21st Century.

3. Community Participation in City Planning

3.I. Background

The evolution of cities was based on the interaction of people while the urban built environment is the arena where these interactions took place. One of the primary challenges of good cities design is to maximize interactions between people and places while minimizing friction.

Figure 9: Dubai Gold Souq, Dubai, United Arab Emirates.

The contribution of residents was and still is an important factor that has not always considered as a priority in many modern cities. There is an increasing necessity to

encourage and utilize community participation to create a more sustainable and healthy relation between people and their cities.
The available tools of internet-based services and social network platforms can provide a greater chance for valuable feedback that can be translated into more habitable and sustainable cities.

Knowing that the best person to know what the city needs are its inhabitants, they would also be the first to identify a problem as well as the source of many innovative ideas or solutions.

In City Planning, the most genuine and evident way to evaluate the impact of a new development is to build it and measure the people's reaction. The proper way to overcome this is that the people’s voice must be heard about projects and ideas which will impact their daily life and activities in order to provide a detailed assessment to the concerned authority prior to starting the project.

Public Participation in decision-making process will result in higher legitimacy for the decisions which will eventually reduce chances of conflicts. In addition to that, it will contribute to the quality of decisions that are taken and adds value to the available methods of identifying problems and their causes, and to the considerations and evaluation of the available options. Through participation, people will also learn about their built environment and be more aware of the problems that are facing them which will result in a higher level of awareness. [16]

A random group of people who possess varying degrees of knowledge and insight is often smarter than any single person in the group and the decisions they would make are more reliable than leaving the decision in the hands of one person, no matter how smart s/he is. [17]

Groups are remarkably intelligent when there is a diversity of opinion, independence, decentralization, and aggregation in decision making. Even if most of the people within

a group are not especially well-informed or rational, it can still reach a collectively wise decision. [17]

3.II Community Survey and Mapping

Community Mapping is a practice where a group of employees/volunteers collects information about resident's opinions and suggestions by physically meeting them and recording their inputs on maps in a usable way that can help the decision makers to have an overview about the community expectations and aspirations [Figure 10].

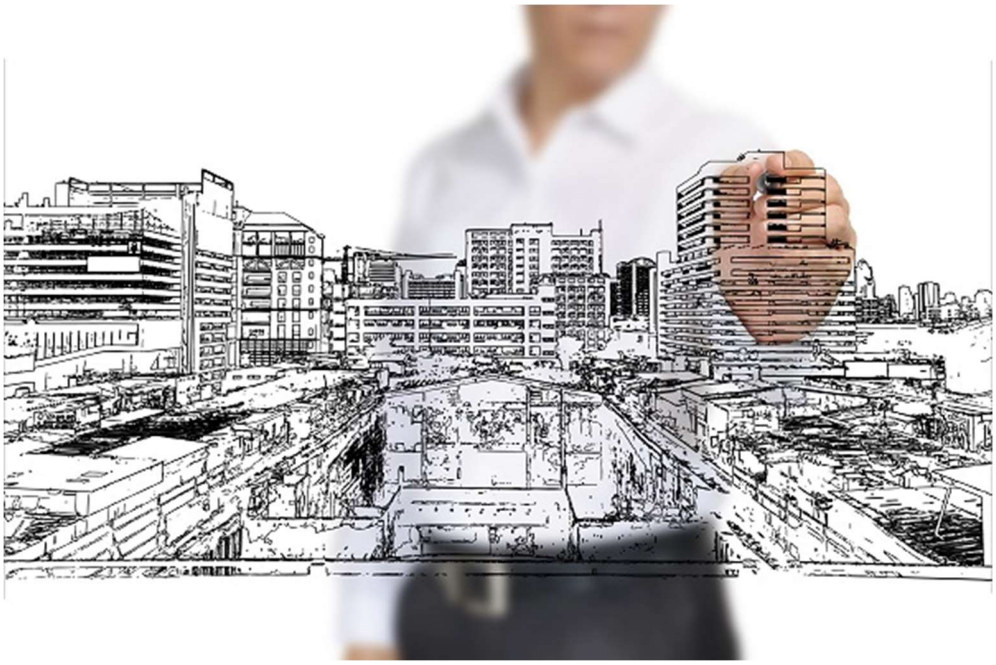


Figure 10: Urban Planning and Development Scene can be altered according to the community expectations and aspirations

Community mapping lets people think together graphically, instead of verbally. It tells the stories of what is happening in our communities, and every community has stories, recent or long buried, in the lives and landscapes of our common ground. [18]
"Maps, like theories, have power in virtue of introducing modes of manipulation and control that are not possible without them. They become evidence of reality in

themselves and can only be challenged through the production of other maps and theories.” [19]

Community mapping provides a base to experiment and analyze the requests and requirements of the people in order to be considered in the planning process and included in the intentions of local governments.

All these different ideas, thoughts and suggestions can be addressed into a GIS database, which can then be processed by an analytical tool to find the most appropriate solutions to achieve the highest level of satisfaction. [20]

There have been many attempts in European cities and it turned out that the process is way more difficult than expected. These experiences were embedded in the Local Agenda 21 (Chapter 3.III). Faced with a common interests and threats, people of different backgrounds tend to organize themselves, but as soon as the threat is over, the structure they have built up tends to fall apart. Nevertheless, community organization, capacity building, and access to finance remain key issues in participation. [21]

A high level of communication as well as extensive information is mandatory to facilitate public participation. In addition to that, it requires a high level of involvement by authorities for consultation and moderation. [21]

3.III Local Agenda 21

Local Agenda 21 (LA21) refers to the general goal set for local communities by Chapter 28 of the ‘action plan for sustainable development’ adopted at the Earth Summit in Rio in 1992. Chapter 28 is an appeal to ‘local authorities’ to engage in a dialogue for sustainable development with the members of their constituencies. [16]

This discourse looks for another cooperation procedure where the correspondence between experts and every single stakeholder goes past existing and customary discussion. Commonly LA21 is consequently a participatory reform. What is unique about LA21 as a participatory reform is that Chapter 28 of the Agenda was created at the supra-national dimension. LA21 is being actioned in more than 6,400 local authorities in 113 countries. [16]

Figure 11: Steps of Local Agenda 21

Knowing that LA21 is a supra-national activity it leaves significant space for cross-national variety regarding how, when, and why, the LA21 implementation ends up.

Agenda 21 does not elaborate on how local communities should apply the content of the Agenda. Chapter 28 does not include a manual on how to involve communities, hence, each community should find its own way. There is a general assumption that local authorities can act in effectively with the people because they know their people

very well and they play a vital role in educating, mobilizing and responding to the public to promote sustainable development [16]

Participation is essential in LA21 processes. Chapter 28 requires that local authorities are responsible for encouraging and organizing the dialogue among people, local authorities and the private sector. The argument behind LA21 is that without public participation, any decisions taken will not be considered legitimate because it does not respond to the needs of the people or values their input. [16]

Public participation should be in the core of the decision making process because it gives the local authorities the necessary information about the people's needs and helps them to make the correct decisions. [16]

Non-participation	Traditional	Semi-open	Open	Ideal LA21
Problem/goal	Problem/goal	Problem/goal	Problem	A community's contribution to sustainable development
↓	↓	↓	↓	↓
Development of plan	Development of plan	Development of plan	Facilitation process	Facilitation process
↓	↓	↓	↓	↓
Draft	Draft	Consultation with relevant actors	Stakeholders formulate problems, goals and solutions	Community formulates problems, goals and solutions
↓	↓	↓	↓	↓
Final plan	Public enquiry	Draft	Public debate	Public debate
	↓	↓	↓	↓
	Final plan	Public enquiry	Draft	Vision
		↓	↓	↓
		Final plan	Public enquiry	Public debate
			↓	↓
			Final plan	Draft LA21 plans
				↓
				Public consultation
				↓
				LA21

Figure 12: Planning forms / LA21 processes at the local level

3.IV UAE Experience In Community Participation

The United Arab Emirates is a constitutional monarchy state and consists of a federation of seven emirates. Each of the seven emirates have their own set of rules when it comes to urban planning. The Capital, Abu Dhabi, have taken a few steps toward involving community members in making decisions related to planning and the two examples which will be described in this section are called (Majlis) , which is an Arabic word for Board or Council. [Figure 13] captures a view of a community participation session conducted by the Abu Dhabi Urban Planning Council.

[Figure 13] A community participation session conducted by the Abu Dhabi Urban Planning Council

Shahama Majlis

This Majlis was held inside a tent in the rural territory of Shahama in June 2008. This specific Majlis united the inhabitants of the Shahama and Bahia. This district consists of four neighborhoods. These are: New Shahama, Old Shahama, New Bahia and Old

Bahia. These neighborhoods are mostly inhabited by Emirati Nationals who live on private plots granted to them by the UAE government. Around 25,000 individuals live in these areas. Amid the Majlis, the people of Shahama and Bahia drew in with both nearby and universal organizers so as to decide a successful future vision for the area. Individuals representing all sectors of the community men, women, youth, old, businesspeople, instructors, widows, single men, and different natives of various financial and political classes all took part in the Majlis. They spoke about their issues and proposed solutions. Further to that, the people and planners who attended the Majlis, came up with a master plan for the planning of the district [Figure 14].

They shared, organized and changed different thoughts. Some of the thoughts which were pondered amid this Majlis included arrangement of reasonable housing, lighting of roads and improvement of transportation, arrangement of entertainment facilities and other various ideas. Both local assets and local issues were considered by the organizers and the neighborhood's residents. Toward the finish of the Majlis, the organizers came up with a "consensus plan" which could be utilized in managing the arranging of the Shahama and Bahia areas. [22]

[Figure 14] The people and planners who attended Shahama Majlis came up with a master plan for the planning of the district

Al Ain Majlis

Al Ain Majlis is another gathering which was held in May 2011 at Al Ain's Al Hil. The residents of Al Ain signed an allegiance document which was introduced to the Presidential Court and the UAE government. In spite of the fact that this specific Majlis vary from the one which was held at Shahama, it needs to be pointed out that the demonstration of loyalty to the leader of the UAE shows that the residents of Al Ain are in line with their government and their leadership. Therefore, they feel spoke to in the improvement plans embraced by their legislature. This is dissimilar to for a situation where the people are blaming or opposing their government. Under such conditions, the people feels that the legislation authorities did not include them in the decision making process of crucial planning and future developments. [23]

Bani Yas Park

Another aspect of public participation was explored by a study which was conducted by three students of Al Hosn University regarding the development of Bani Yas park which included analysis of a quantitative data obtained from individuals on a voluntary basis. [24]

4. Precedent Studies

What follows are selected case studies that demonstrates the capacity of community members to contribute in shaping the urban experience and the planning decision making.

4.I. Case 1 - Fix My Street

When it comes to utilizing available modern tools and technologies, there have been few attempts to involve city inhabitants in the process of maintaining their cities such as “fix my street” which is an application that allows people to report issues or damages to their streets and post them along with a photo so the local authorities can take an action to fix it. The website claims that it covers the whole of the United Kingdom and can be accessed as a web page or through the mobile application.

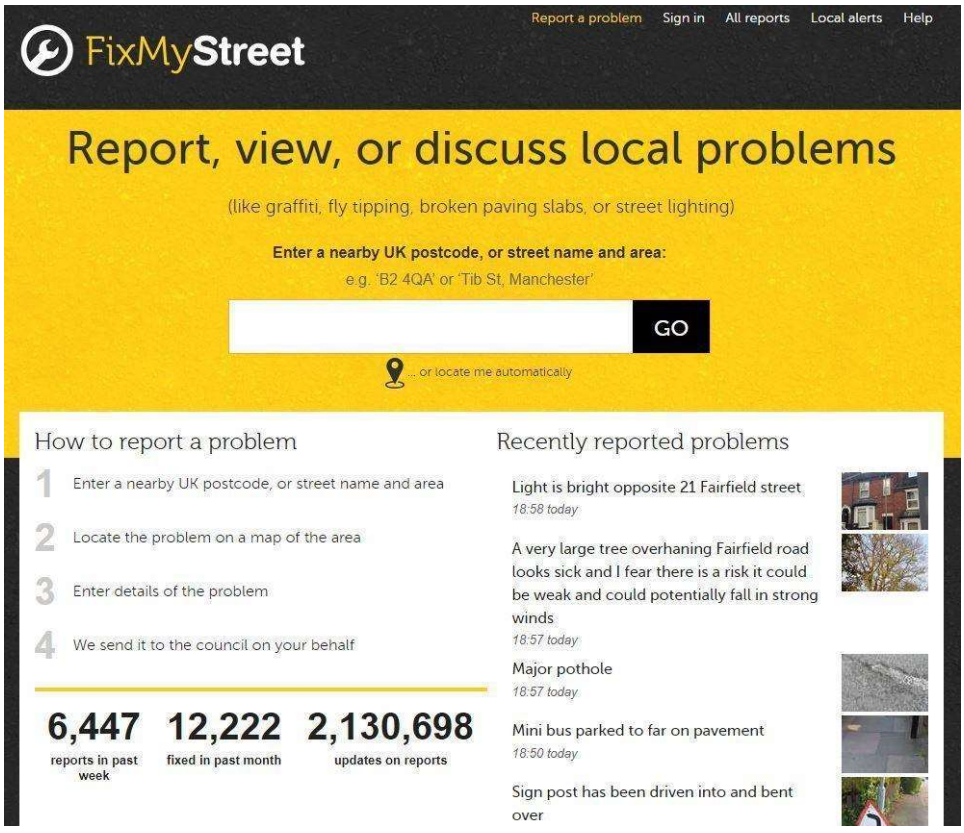


Figure 15: Screenshot of Fix My Street Website https://www.fixmystreet.com/

FixMyStreet offers reporting, viewing, or discussing local problems (like graffiti, fly tipping, broken paving slabs, or street lighting) and in April 2019, FixMyStreet UK main page was showing that the platform received 6,447 reports in the previous week, 12,222 fixed in the previous month and there were over two million updates on the reports since it started [25]. FixMyStreet has also been a smartphone application available for Iphone and Android users [Figure 16].

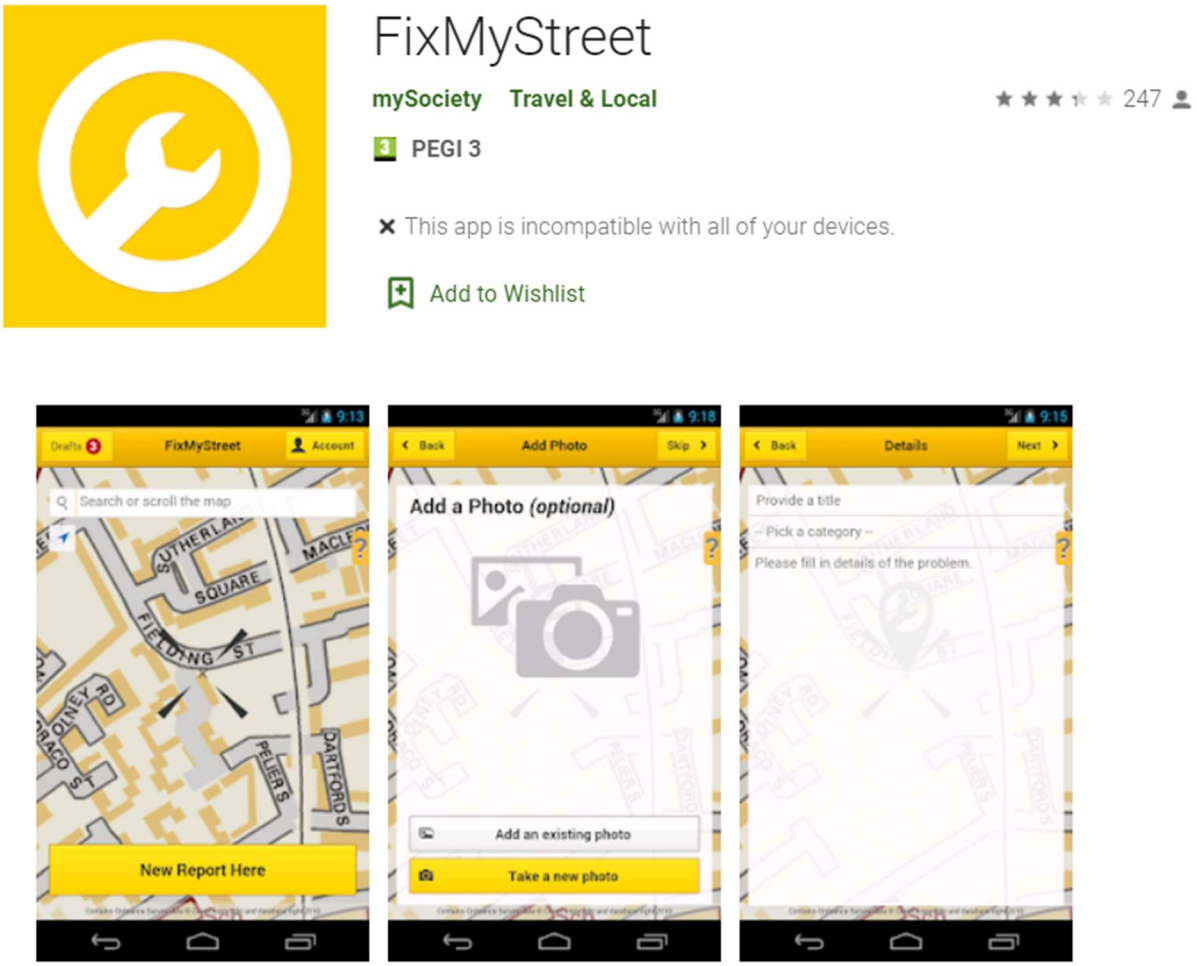


Figure 16: FixMyStreet application overview

This simple idea of reporting the problems directly to the concerned authority saved the government many resources in terms of inspecting and following up and it has proved a major success wherever it was implemented. Such a simple integration between a platform which is directly connecting the authorities with the eager public to share their experience and ideas about their cities in order to make these cities better places for living. There is no doubt that such initiatives provide a reliable and easy platform to connect the public with the city's local authorities for the benefit of all stakeholders.

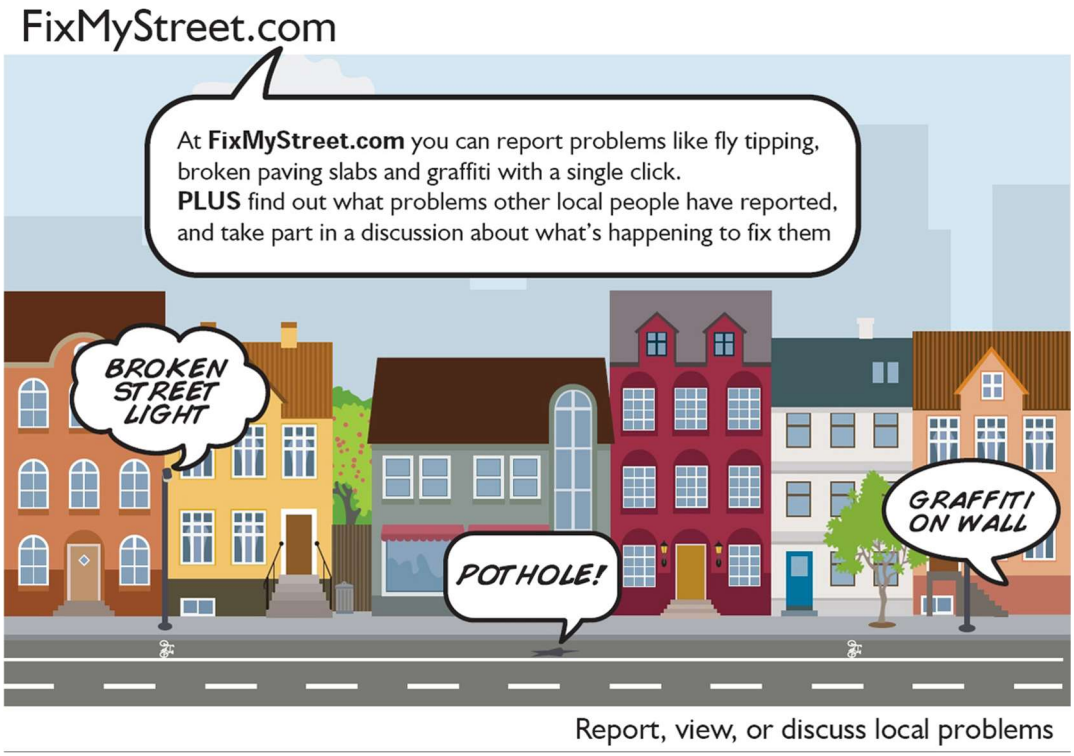


Figure 17: FixMyStreet.com Advertisement

4.II Case 2 - Urban Network Analysis

An important attempt to involve the latest available technologies of sensors and big data analysis in urban design was initiated by The City Form Research Group at MIT which has developed a tool to help urban planners understand how the spatial patterns in cities affect the people who live there.

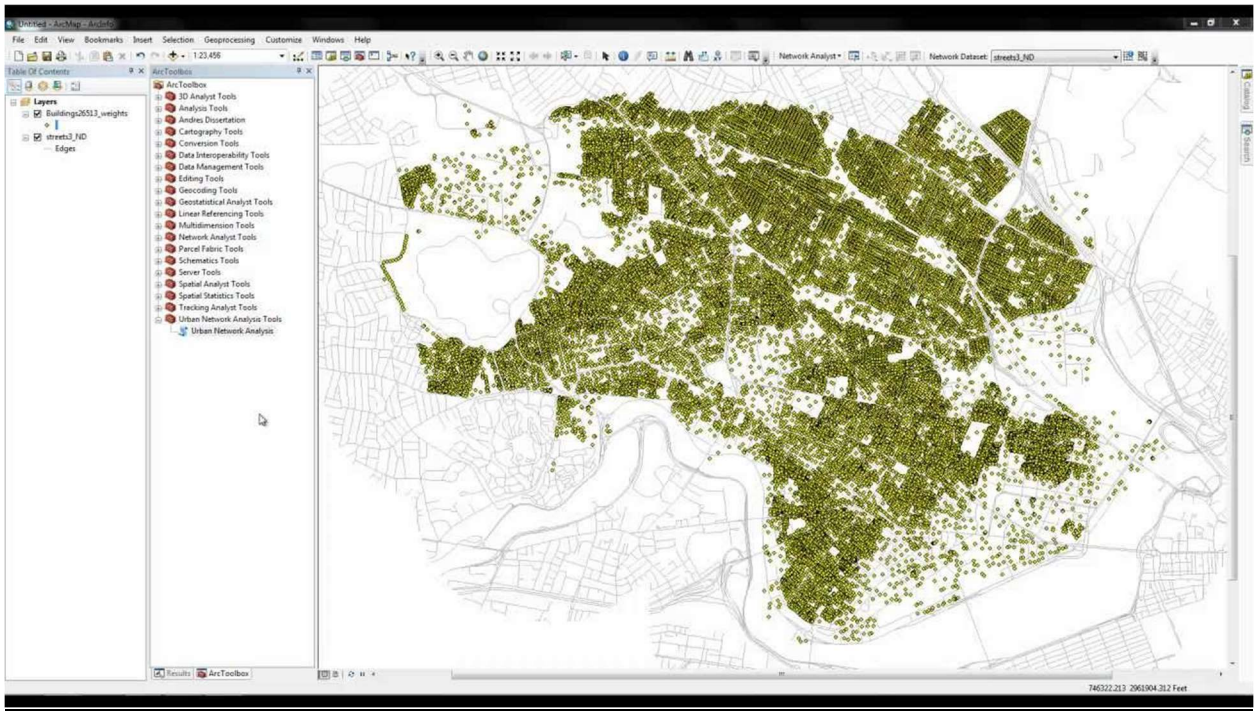


Figure 18: Screenshot of Urban Network Analysis User Interface

The launch of the Urban Network Analysis, an open-source software inspired by social networks and mathematical network analysis methods is aimed to enhance the way urban environments looked at. The tool measures traits such as reach, gravity, betweenness, closeness, and straightness.

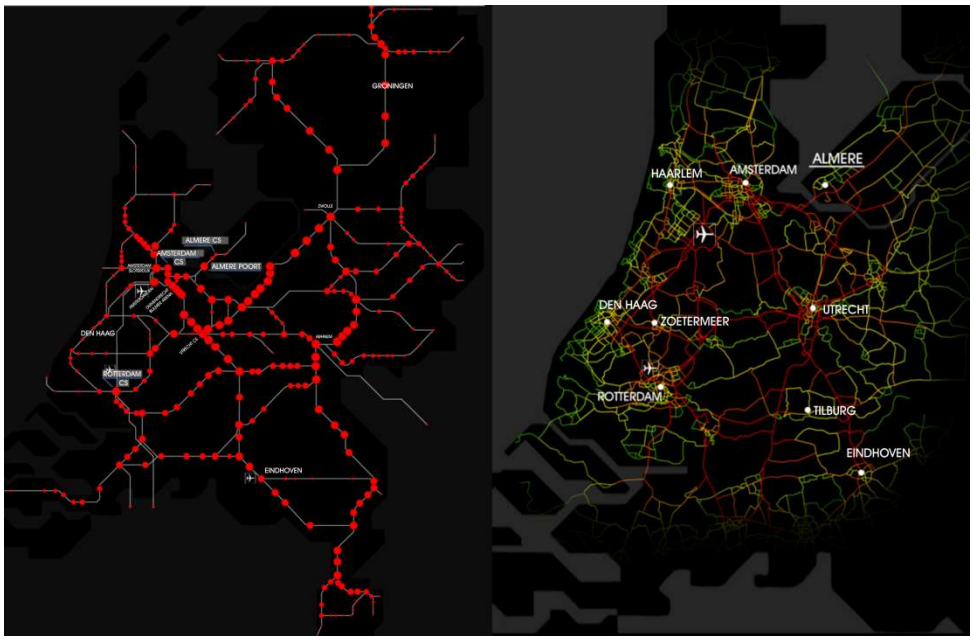


Figure 19: Screenshot of Urban Network Analysis Tool

“The Reach measure can be used to estimate how many destinations of a particular type – buildings, residents, jobs, transit stations, etc. – can be reached within a given walking radius from each building along the actual circulation routes in the area,” said Michael Mekonnen, a course six sophomore who worked on the project. “The Betweenness measure, on the other hand, can be used to quantify the number of potential passersby at each building.” [26] [27]

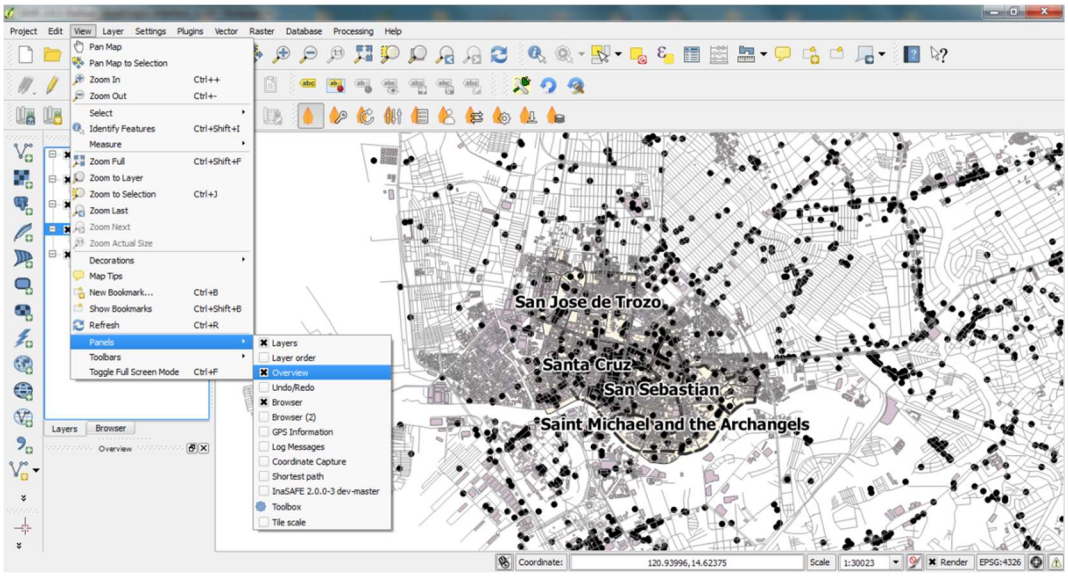


Figure 20: Screenshot of Urban Network Analysis Tool

4.III Case 3 - LocalData

This tool is an ambitious attempt to localize the data collection and decision making which is called “LocalData” and it is built around two main activities: Simple data collection and Custom survey builder.

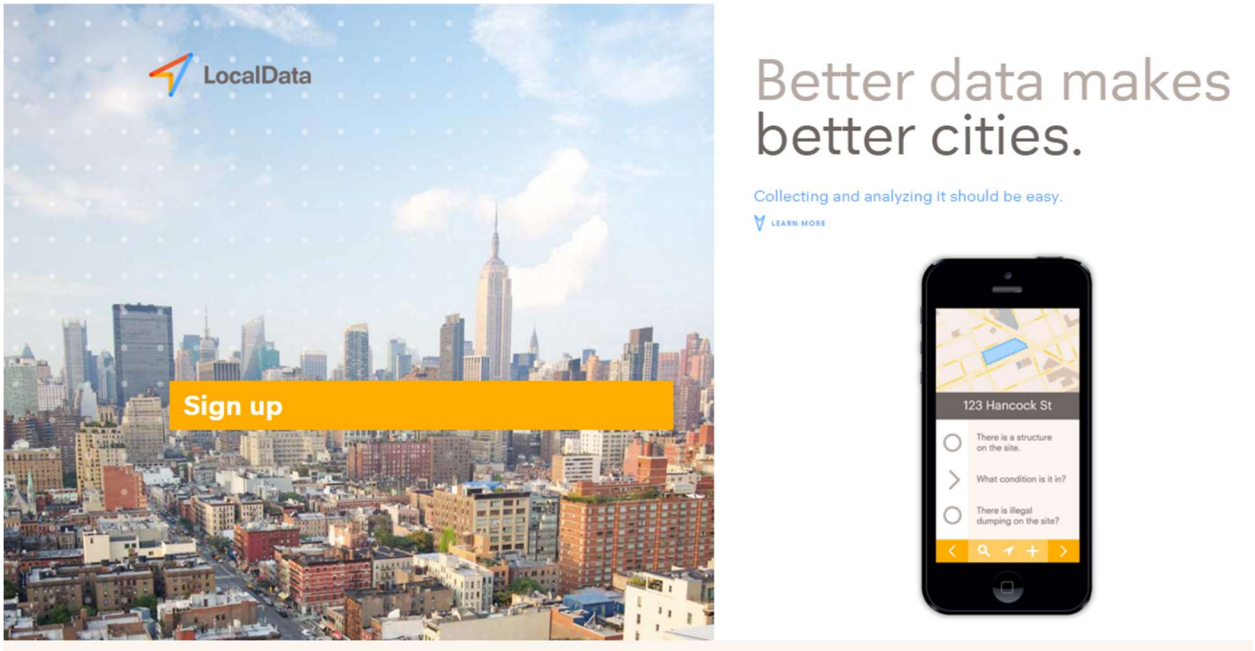


Figure 21: LocalData welcome page http://localdata.com/

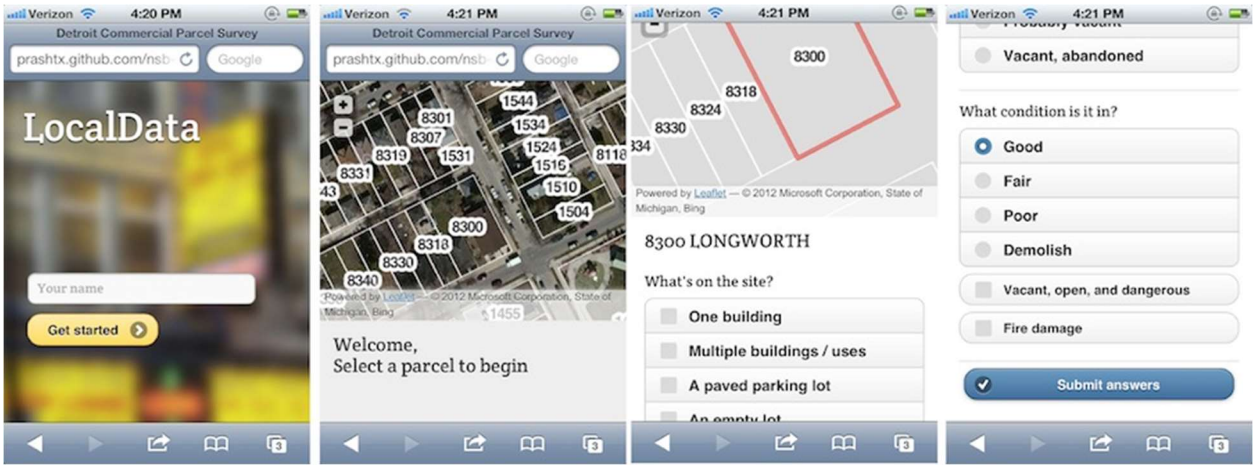


Figure 22: Screenshots of LocalData Application

The platform allows the use of smartphones or tablets to collect data in the field. A simple interface makes it easy to submit accurate information quickly. The app allows to input data on a map to track the progress of collecting the required information. From documenting community assets like urban gardens or playgrounds to measuring the condition of vacant lots, LocalData allows organizers to export the data or view it live and helps to build custom surveys designed to fit project needs. [28]

Figure 23: Local Data, National research & Community Voice

5. Community Participation Project Proposal

5.I. Background

Cities across the world have grown rapidly in number and size and the available methods of sustaining a healthy growth must adapt with the increasingly high expectations of people and their needs.

A qualitative survey questionnaire was conducted in the first quarter of 2018 using Google forms to support the proposal. Over 100 answers were obtained from Dubai residents who had access and chose to participate in the survey. The respondents were from different nationalities and the targeted age group was (24 - 50). The questions were focused on understanding the capacity, desirability, and the willingness of people to share their input with local authorities and city planning council. Respondents were provided with the option to answer either YES or NO. The questions and the answers were as follows:

- Are you happy with the neighborhood which you are living in? 62% yes
- Do you think there is room for improvement in your neighborhood? 96% yes
- Have you ever thought of any practical plans that can enhance the quality of life in your neighborhood? 47% yes
- Have you ever contacted any local authority to suggest any improvement in your neighborhood? 3% yes
- Have you ever received a positive response? 1% yes

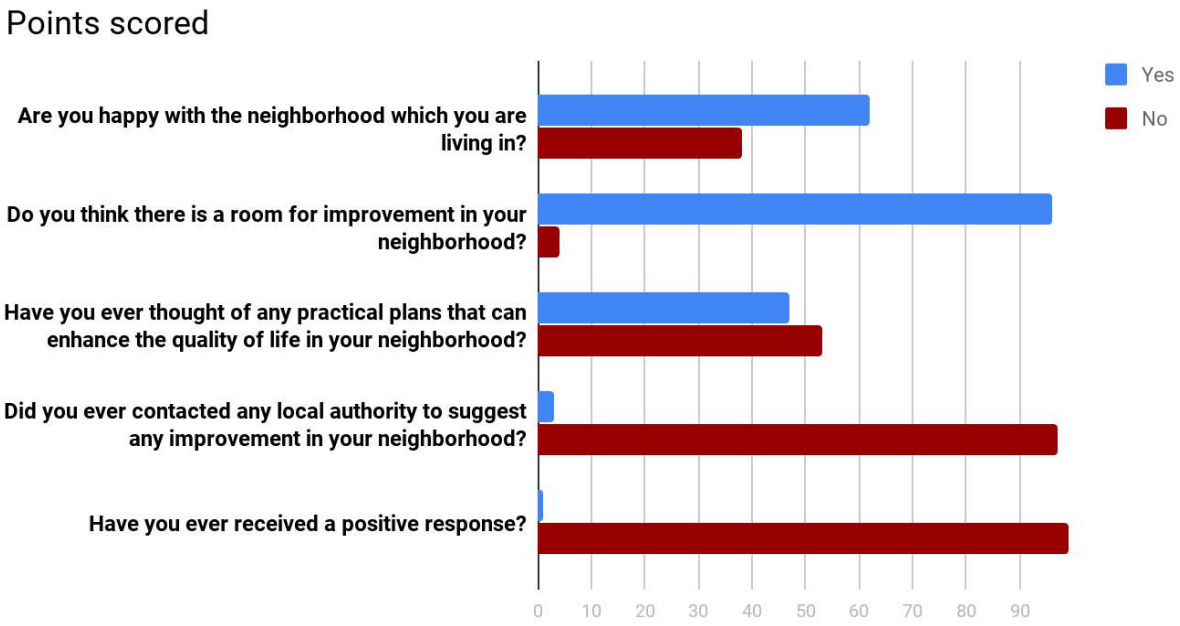


Figure 24: Graph showing responses to the questionnaire conducted to support the proposal

Despite its relatively small sample and other possible limitations, this questionnaire suggests that there is a communication gap between residents and authorities, and that people's needs and ideas should be transmitted in a user friendly platform to supplement the available "contact us" methods such as calling designated phone number or writing an email or even dropping a message in the outdated suggestions boxes.

Alongside these findings, the rise of the Internet of Things (IoT), smart technology and social networks are creating an invisible mesh that connects people with their built environment which is substituting paper works and making the direct interaction between people obsolete especially in modern cities.

There have been several attempts to benefit from the availability of big data and the widespread use of digital social connectivity tools in order to make cities better places to live in. These attempts were focusing on enhancing or reshaping the way how cities are designed with the use of modern science and technologies. But from the precedent studies in this paper (Chapter 4) it has been observed that the inhabitants preferences and their life pattern were not a priority.

5.II. Purpose of the Proposal

The main objective of this proposal is to provide an interactive platform that allows and encourages community participation in enhancing the quality and experience of the city via a user friendly interface with a higher level of support and transparency to overcome current and future challenges of the city.

This proposed platform can be a useful tool to achieve a variety of goals including:

1. Enhance public awareness about the city they are interacting with.
2. Contribute to enhancing the dialogue and the collaborative efforts among all stakeholders in city planning and development.
3. Empower people to participate in shaping their built environment.
4. Demonstrate responsiveness (by planning and public authorities) to people when sharing their ideas or feedback.

The possibilities of connecting urban management and planning authorities with the public have no limits. Therefore, the project is focusing on one type of interaction to make use of the potential scenarios that can be used to develop the tool.

5.III. Description of the Platform (Mamsha)

A practical implementation of the concept of community participation was developed to allow a sort of preset communication method between authorities and the community members. This implementation is focusing on sharing thoughts and feedback of the residents instantly with the concerned authorities and to collect data in a usable format that can help to develop the city and address any issues that would require involvement from any of the stakeholders.

The purpose of this platform is to provide pedestrians to:

1. Report a problem or record an observation that is related to the pedestrian experience.

2. Make a comment or provide feedback to be shared with the concerned authorities.

3. Make a suggestion or proposal that can enhance the pedestrian experience.

For the implementation, the pedestrian experience was selected as the main focus and the selected name is (Mamsha) an Arabic word meaning “Walk Way”

Mamsha is a smart-phone-based interactive platform with an easy interface that provides intuitive and interactive menus to choose from along with the ability to select the location and input observations in the form of photos, videos or even voice notes. It also allows the users to describe their input in writing while giving the users the choice to add their personal details or keep their identity anonymous.

Data collected from willing participants in Mamsha can be handled separately or cumulatively by experts supporting planning and decision making authorities to facilitate providing appropriate plans or solutions that can address the reporting of users towards enhancing the walking experience around the city.

The following are a flowchart of process and some ideas that the platform may provide in terms of interaction and reporting capabilities.

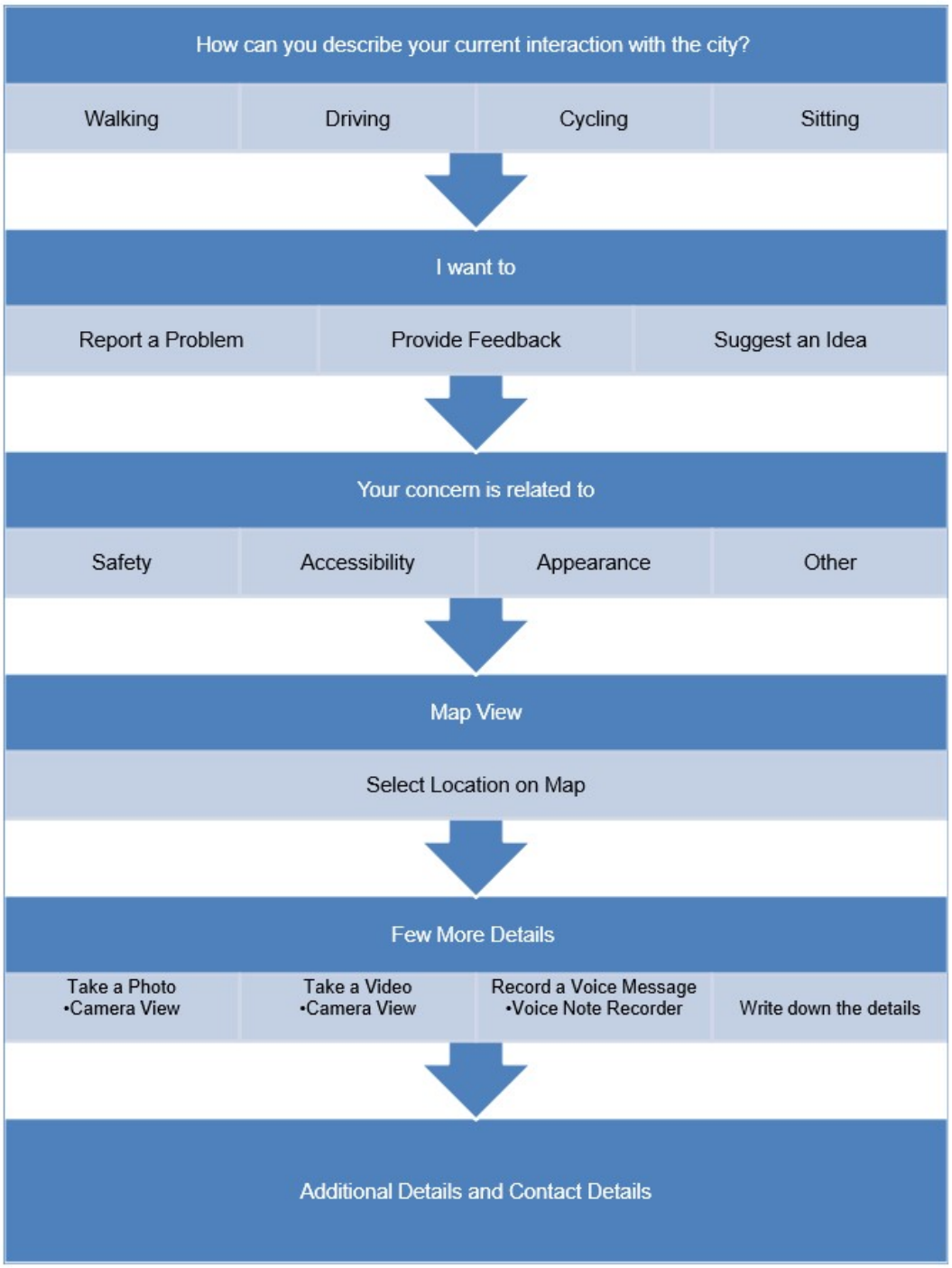
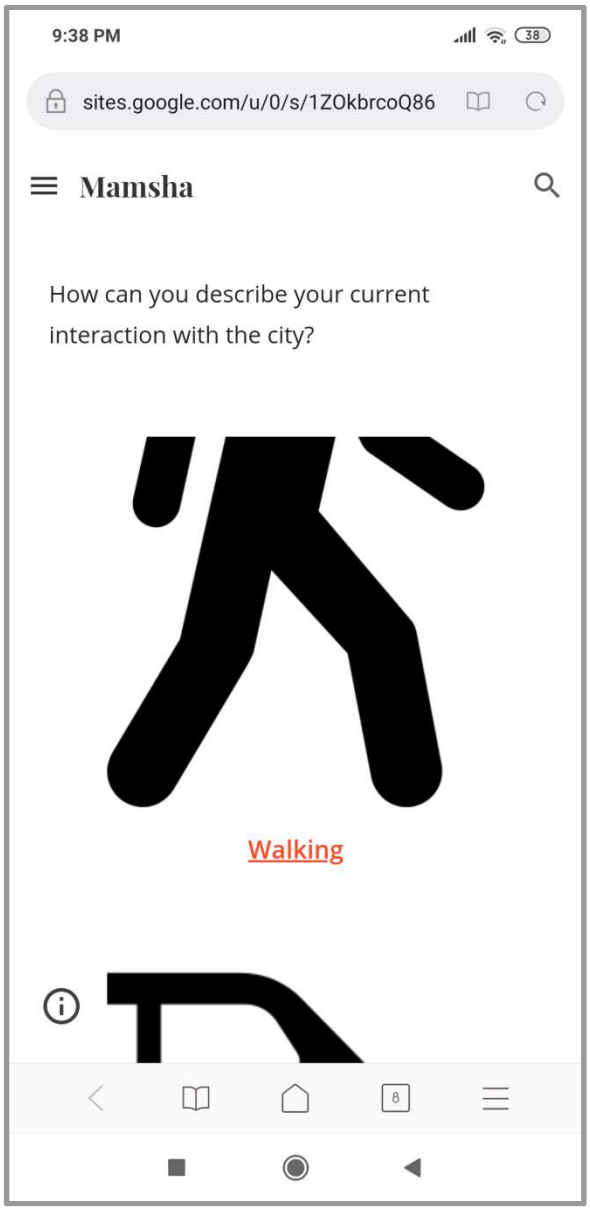


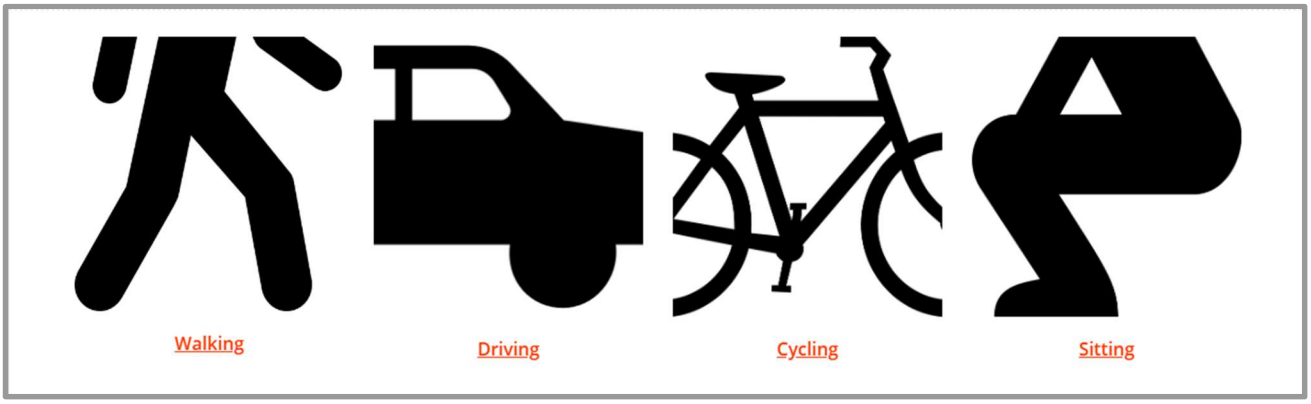
Figure 25: Flowchart showing the options and sequence of the proposed platform pages

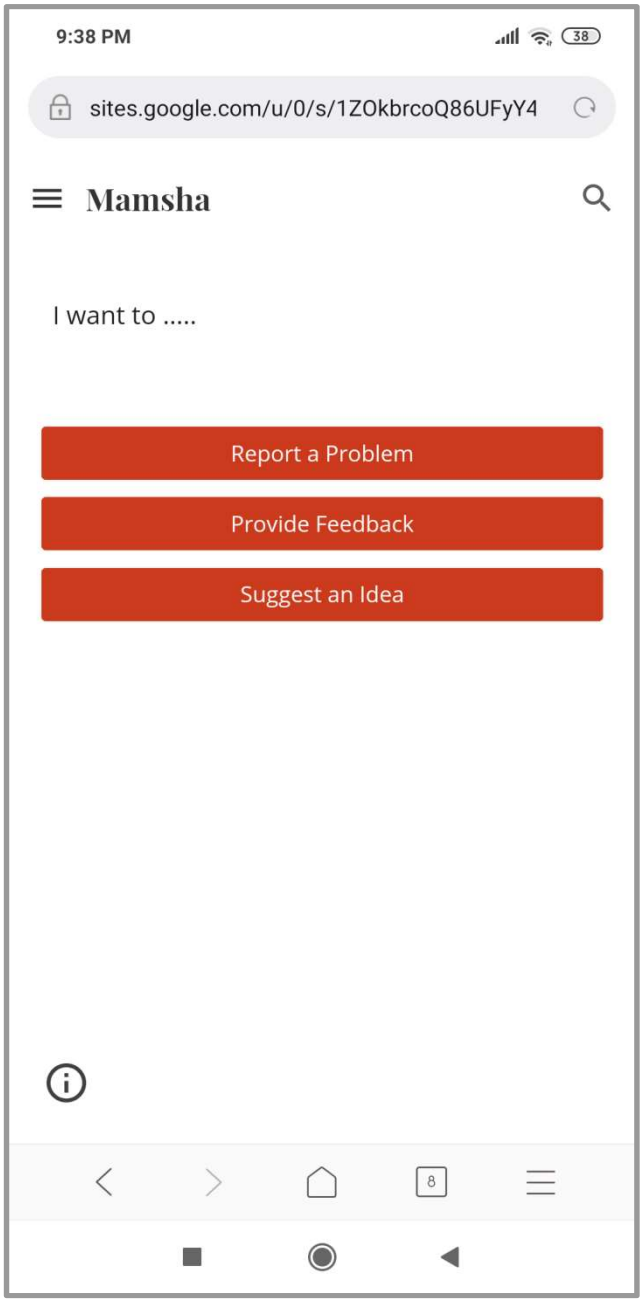


[Screenshot of demo platform]

First Page:

Allows the user to identify his/her type of interaction with the city by selecting one of the four most common behaviors among the residents daily routines (Walking, Driving, Cycling, Sitting)





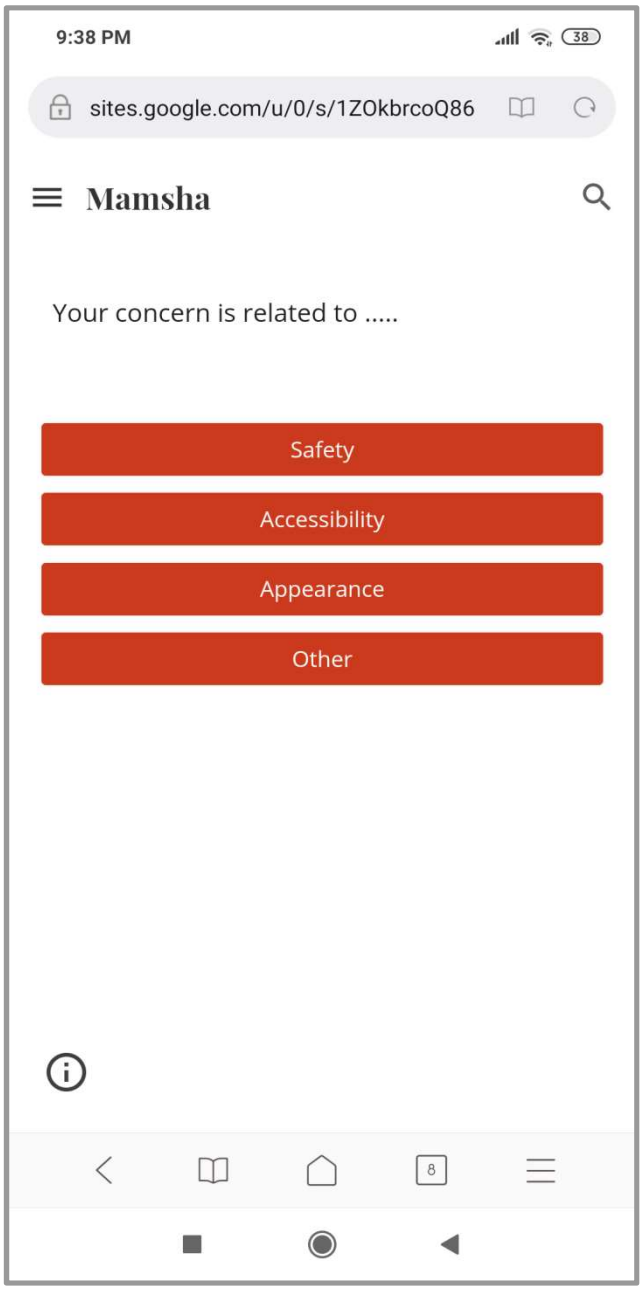
[Screenshot of demo platform]

Second Page:

Allows the user to choose what he/she is willing to do on (Mamsha) which in other words means the main reason of why he/she decided to open (Mamsha)

The three options are:

1. Report a Problem
2. Provide Feedback
3. Suggest an Idea

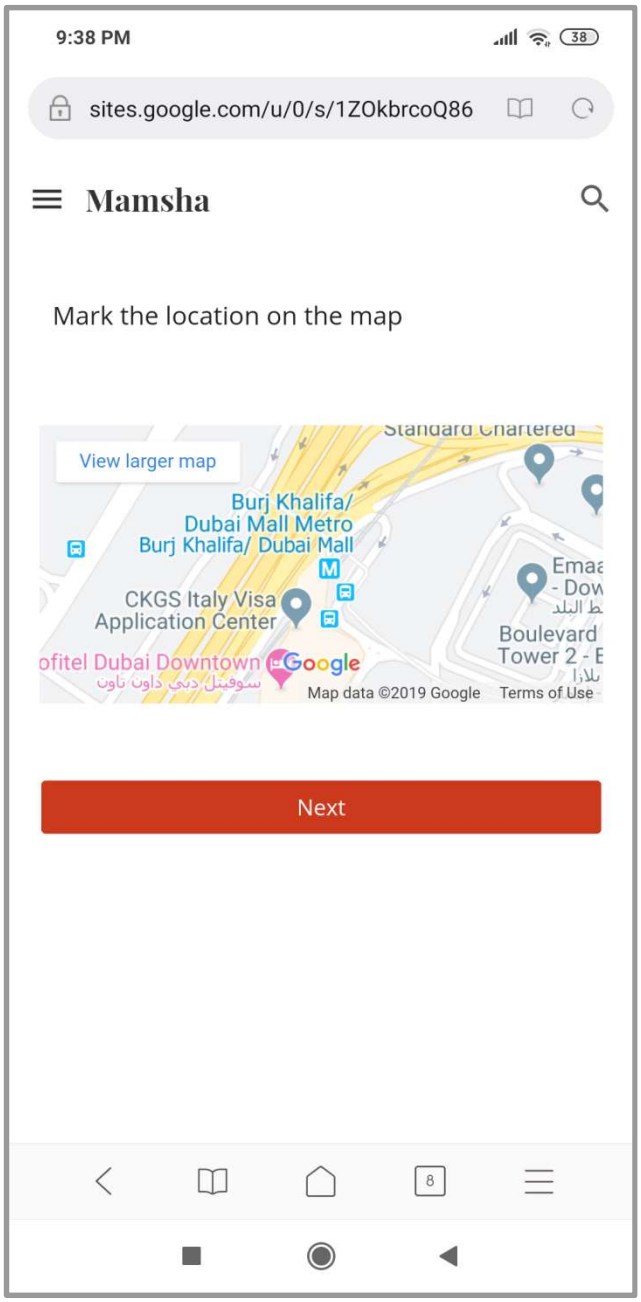


[Screenshot of demo platform]

Third Page:

It gives the user the option to select one of the preset categories that can categorize the issue which he/she is about to highlight or report.

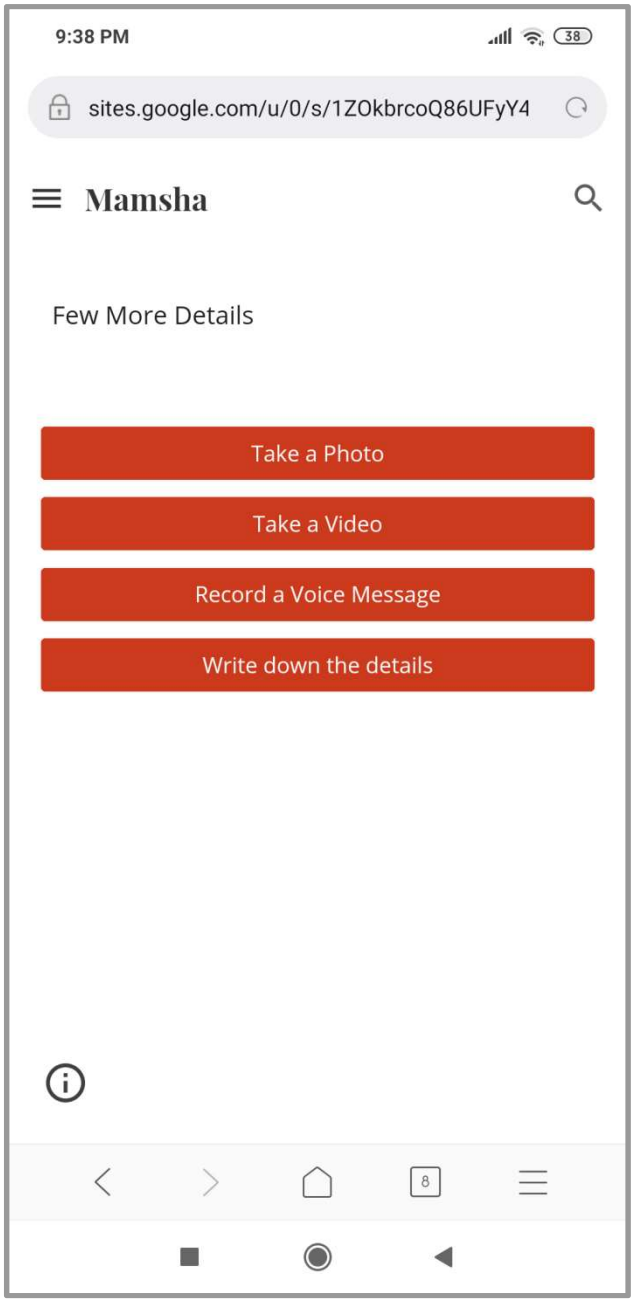
1. Safety
2. Accessibility
3. Appearance
4. Other



[Screenshot of demo platform]

Fourth Page:

A Map view of the city that allows users to accurately identify the exact location that responds to the matter they are reporting.

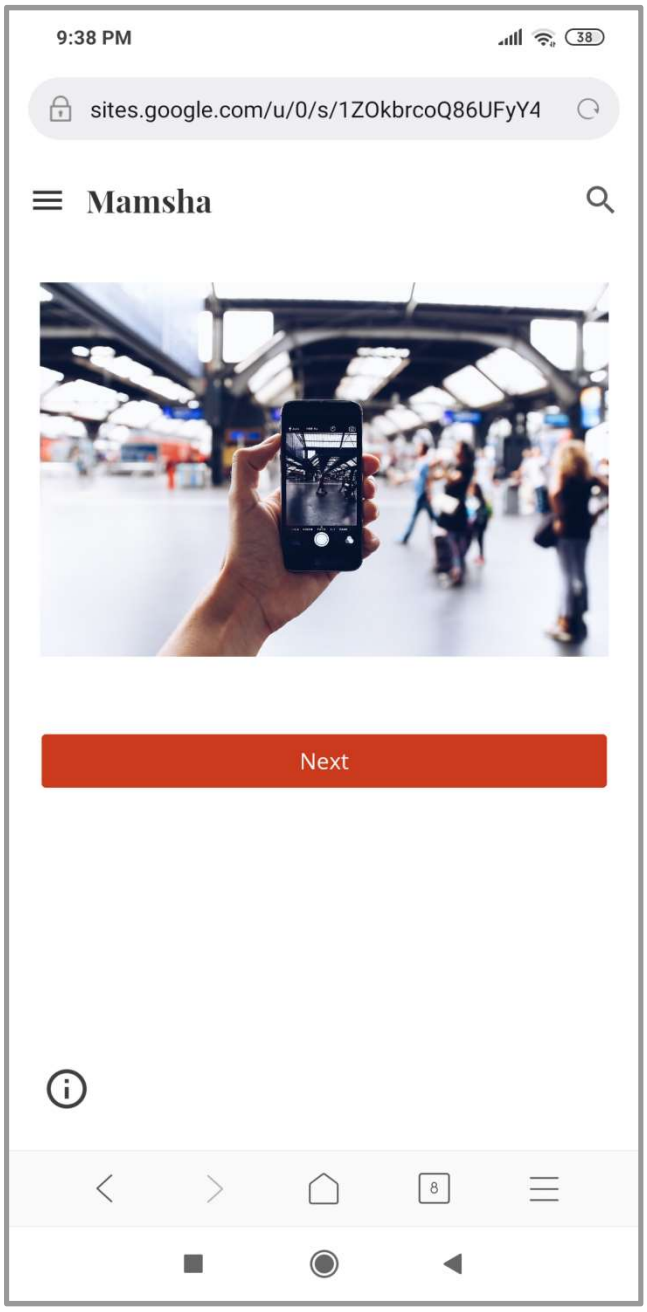


[Screenshot of demo platform]

Fifth Page:

Multiple forms of multimedia attachments can be added to provide a better understanding of the case. The user can choose to take a photo, video or to record a voice message.

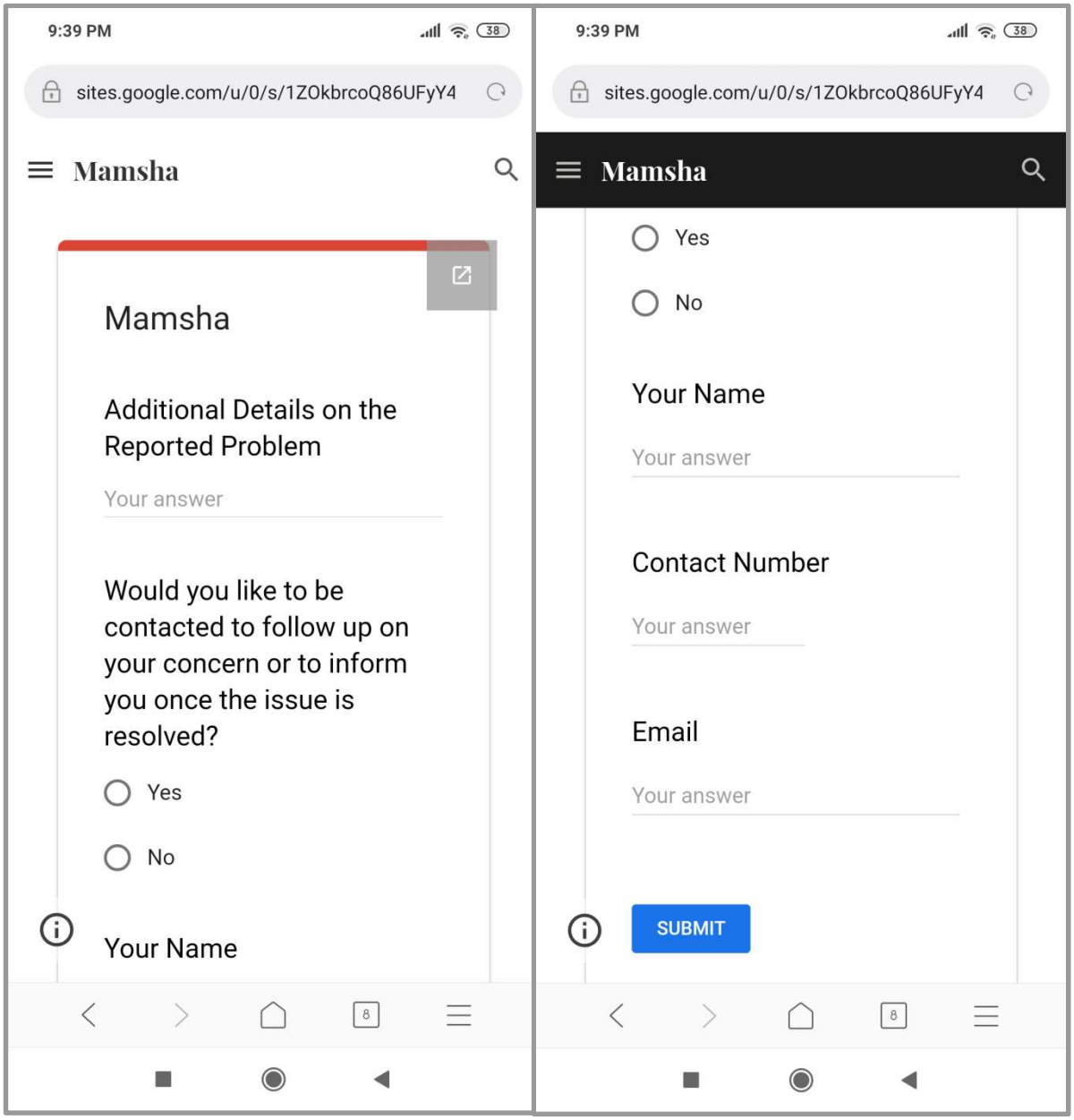
The fourth option will skip the sixth (attachment) page and will proceed directly to the seventh page.



[Screenshot of demo platform]

Sixth Page:

Multimedia Attachment page will allow the user to either take a photo, a video or to record a voice message.



[Screenshot of demo platform] Seventh Page:

Is the last page where the user can describe the issue and select if he/she wants to be contacted once there is an update about the reported issue.

Following that, the user can voluntarily add his/her personal and contact details before finally submitting the issue.

5.IV. Hypothetical Scenarios

To have a better understanding of the features and capabilities that the platform can offer, the following section will describe three hypothetical scenarios in detail.

Scenario 1
(Ahmad) Walks to his work every morning, it is a 10-minute walk
A construction site started in one of the plots that (A) used to pass by every morning.
The construction obstructs the walkway and forced him to change his route
He heard about Mamsha website/application that allows pedestrians to provide their feedback and report any matter related to improving the walking experience and walkways around the city
The next morning, he decided to report the walkway blockage
He went to the blocked pavement and he accessed Mamsha website/application.
On the main page, he has chosen to report a problem
On the second page, he has chosen that the issue is related to accessibility
Selected the location on map
Selected to take a photo and took a photo that show the walkway blockage
On the last step, he added brief description and stated that this happened recently when the construction started and that it completely blocked the pedestrians way
Added his contact details and selected to be contacted once the issue is resolved

Scenario 2
(Bob) Walks every evening around his neighborhood for at least one hour
While walking, he passes through a narrow alley which is not properly lit.

When it is too late, he feels unsafe to pass through this alley.
He heard about Mamsha website/application.
He decided to report the situation of the alley.
He went to the alley and he accessed Mamsha website
On the main page, he has chosen to report a problem
On the second page, he has chosen that the issue is related to Safety
Selected the location on map
Selected to take a photo and took a photo that shows how dark is the alley
On the last step, he added a brief description about the alley and the importance of feeling safe in the neighborhood
Added his contact details and selected to be contacted once the issue is resolved

Scenario 3
(Chaima) Prefers to use public transportation to avoid traffic and parking charges.
In order to reach the nearest bus station from her home, she walks 10 minutes and sometimes she has to wait up to another 10 minutes for the bus to arrive.
Despite that the bus stop is shaded, during hot weather, she feels dehydrated. She looked around and couldn't find any place around that can sell cold water to pedestrians
She heard about Mamsha website/application.
She accessed Mamsha website/application and on the main page, she chosen to suggest an idea.
On the second page, she chosen other as the type of the suggestion.
Selected the location on map
Selected to write down the problem directly.
On the last step, She added brief description and stated that the nearest place to get water is a vending machine 15 minutes away and usually out of service.
She did not add her contact details since she does not prefer to be contacted.

5.V. Stakeholders and Involvement Type

Stakeholders are two types: either those who are affecting decision making in urban planning matters (directly or indirectly) or the community members who are directly affected by the spatial planning related decisions. The below table lists down the stakeholders and summarize the involvement type of each of them.

Stakeholder	**Involvement Type**
Residents / Community Members	● Reporting concerns or problems (Reporting) ● Providing feedback for evaluating to existing city elements (Evaluating) ● Suggesting ideas or solutions to existing problems or to improve current conditions (Suggesting/Recommending)
Concerned Planning Authorities & Decision Makers	● Evaluating reported concerns, feedback and suggested ideas ● Proposing corrective actions based on the received information ● Implementing proper solutions to input

The platform would be monitored and managed by the personnel of local authority or by a third party such as a trusted consulting firm authorized to collect information, propose solutions, evaluate plans and approve spatial developments to enhance the built environment. The community members or the end users (willing participants in proving input via Mamsha) can be any of the city's residents or visitors.

Characteristics of community members involvement can be described as personal, voluntary and probably anonymous (subject to the user preference).

The procedure to handle a new concern or a certain suggestion might require the involvement of multiple parties (administrative divisions within the public organization) that represent the concerned authorities prior to taking an action that responds to raised concerns or suggestions.

5.VI. Summary and Assessment

The Mamsha platform proposed in this paper focuses on one aspect of community members' interaction with the urban environment, namely the pedestrian experience. However, the potential of this platform can be expanded far beyond the pedestrian experience to include all aspects of human interaction in the city.

The platform allows voluntary input from urban residents to maintain and enhance their own built environment based on their life pattern and considering the urban requirements that are associated with their needs. It is also meant to initiate the public participation to develop and evolve the city as the needs, expectations, and aspirations of the community members are changing.

The platform aims to benefit from the previous experiences and to extend the involvement of the city's inhabitants to much more than reporting problems into giving them the opportunity to reshape and develop their cities through a user friendly platform.

The platform is meant to encourage community members to have an active participation instead of remaining as passive users within the cities and urban environments in which they live in. Knowing that the best person to know what the city needs is its inhabitants, they would also be the first to identify a problem as well as the source of many innovative ideas or solutions.

In addition to that, the proposed tool can measure people’s overall satisfaction in the quality of the living urban environment and express an interest in a certain proposed project or idea as well as providing a detailed and useful input to the concerned authority prior to starting any new development initiatives.

Reporting is one aspect of this platform but along with the evaluation and suggestion capabilities it have the potential to be a unified communication platform between community members and the Concerned Planning Authorities & Decision Makers.

6. Conclusion and Reflections

The proposed platform aims to complement the more conventional channels of communication, interaction, and input between community members, urban planners and city decision makers. It also seeks to enhance the relevance and authority of decisions and create a higher level of transparency between community and decision makers.

The Mamsha platform may be considered a cornerstone to enhance public participation in urban planning decision making.
It is the policy maker's responsibility to work with the community to encourage technical innovations and to streamline and utilize community participation in order to enhance the shape, character, design, experience and planning of cities by using new methodologies and technologies. Such a proposal is likely to contribute to a more responsible, inclusive, participatory and happy urban existence.

The platform has the potential to expand into aspects beyond the pedestrian experience and to include many other aspects of human interaction within the city with additional options and menus that can adapt to the community members needs.

The aspects may include the possibility to evaluate or afford comments on the visual and aesthetic quality of new or proposed developments and/or to provide feedback on the experience in public spaces and the activities planned in such places.

The concept of a unified communication channel to report problems, evaluate elements and suggest ideas to enrich the built environment would require the involvement of multiple local authorities. This would allow for a smooth user experience and on the other hand, a valuable and useful input for the authorities that can be utilized to enhance and enrich the built environment and the community members experience.

IV Figure Credit

Figure 1: Homestead showing family in yard outside of house, Washington, ca 1906 https://commons.wikimedia.org/wiki/File:Homestead_showing_family_in_yard_outside_of_house,_Washington,_ca_1906_(BAR_247).jpeg

Figure 2: Dhows at Dubai creek in 1960, Dubai, as part of a developing urban remarkable existence, United Arab Emirates https://www.dxbblog.ae/old-dubai-vs-new-dubai/

Figure 3: Naif Souq in the 1960s, Dubai, United Arab Emirates. Like in other world cities, the Souq (marketplace) is the primary engine of innovation, urban growth and development https://www.dxbblog.ae/old-dubai-vs-new-dubai/

Figure 4: world cities with over 1 million in population (estimated 2014) https://external-preview.redd.it/7-Ai3bGo1Dq2dmUQKIsGDqOvJUJeIzVB6KWGgzep7h4.png?auto=webp&s=0b22d37a6aab11e732041886f3a0c2af9a559a23

Figure 5: Historical global trends in urban/rural populations. https://ourworldindata.org/urbanization

Figure 6: Mobile Cellular and Internet Users
Data source: World Bank Development Indicators; see: http://wdi.worldbank.org/tables.

Figure 7: Information and Communications Technology and a representation of the Internet of Things
Figure 8: Navigating through smart devices and virtual maps

Figure 9: Dubai Gold Souq, Dubai, United Arab Emirates. https://www.dxbblog.ae/old-dubai-vs-new-dubai/

Figure 10: Urban Planning and Development Scene can be altered according to the community expectations and aspirations http://psemagazine.com/abu-dhabis-urban-planning-and-development-scene/

V References

[1] Science X staff, “Why did hunter-gatherers first begin farming?,” *Phys.org*, 16-May-2017. [Online]. Available: https://phys.org/news/2017-05-hunter-gatherers-farming.html. [Accessed: 14-Apr-2019]

[2] R. Lal, D. C. Reicosky, and J. D. Hanson, “Evolution of the plow over 10,000 years and the rationale for no-till farming,” *Soil Tillage Res.*, vol. 93, no. 1, pp. 1–12, Mar. 2007.

[3] M. Reba, F. Reitsma, and K. C. Seto, “Spatializing 6,000 years of global urbanization from 3700 BC to AD 2000,” *Sci Data*, vol. 3, p. 160034, Jun. 2016.

[4] “Why build cities anyway? | Emergent Urbanism.” [Online]. Available: http://emergenturbanism.com/2007/10/29/why-build-cities-anyway/. [Accessed: 07-Apr-2017]

[5] “Why do people live where they do? - Centre for Cities,” *Centre for Cities*, 04-Nov-2015. [Online]. Available: http://www.centreforcities.org/blog/why-do-people-live-where-they-do/. [Accessed: 07-Apr-2017]

[6] “Human Population: Urbanization.” [Online]. Available: http://www.prb.org/Publications/Lesson-Plans/HumanPopulation/Urbanization.aspx. [Accessed: 04-Dec-2017]

[7] “World’s population increasingly urban with more than half living in urban areas | UN DESA | United Nations Department of Economic and Social Affairs.” [Online]. Available: http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html. [Accessed: 03-Dec-2017]

[8] “World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100 | UN DESA | United Nations Department of Economic and Social Affairs,” *UN DESA | United Nations Department of Economic and Social Affairs*, 21-Jun-2017. [Online]. Available: https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html. [Accessed: 14-Apr-2019]

[9] J. Wakefield, “How will our future cities look? - BBC News,” *BBC News*, 17-Feb-2013. [Online]. Available: http://www.bbc.com/news/technology-20770518. [Accessed: 25-Mar-2017]

[10] “En Gb.” [Online]. Available: https://lsecities.net/media/objects/articles/global-problems-city-solutions/en-gb/. [Accessed: 25-Mar-2017]

[11] J. Wakefield, “What if...you could design a city? - BBC News,” *BBC News*, 22-Feb-2013. [Online]. Available: http://www.bbc.com/news/technology-21032725. [Accessed: 25-Mar-2017]

[12] N. O’Farrell, “How To Attract People To Your City (and It’s Not Just About Jobs) | EconomicDevelopment.org.” [Online]. Available: http://economicdevelopment.org/2015/04/how-to-attract-people-to-your-city-and-its-not-just-about-jobs/. [Accessed: 07-Apr-2017]

[13] D. W. Jorgenson and K. M. Vu, “The ICT revolution, world economic growth, and policy issues,” *Telecomm. Policy*, vol. 40, no. 5, Feb. 2016 [Online]. Available: https://www.researchgate.net/publication/293196427_The_ICT_revolution_world_economic_growth_and_policy_issues. [Accessed: 15-Apr-2019]

[14] F. Provost and T. Fawcett, “Data Science and its Relationship to Big Data and Data-Driven Decision Making,” *Big Data*, vol. 1, no. 1, pp. 51–59, Mar. 2013.

[15] Contributors to Wikimedia projects, “Internet of things - Wikipedia,” *Wikimedia Foundation, Inc.*, 02-Jul-2007. [Online]. Available: https://en.wikipedia.org/wiki/Internet_of_things. [Accessed: 11-Sep-2019]

[16] F. Coenen, “Public participation and better environmental decisions,” *The Promise and*

Limits of Participatory Processes for the Quality of Environmentally Related Decision-making, p. 209, 2009.
[17] J. Surowiecki, *The Wisdom of Crowds*. Anchor, 2005.
[18] C. Etmanski, B. L. Hall, and T. Dawson, Eds., *Learning and Teaching Community-Based Research*. Toronto: University of Toronto Press, 2014.
[19] D. Turnbull and H. Watson, *Maps are Territories: Science is an Atlas : a Portfolio of Exhibits*. 1989.
[20] A. W. Drescher, "Technical tools for urban land use planning." 2015 [Online]. Available: https://www.ruaf.org/sites/default/files/Discussionpaper%203%20Tools%20for%20integrating%20UPA%20in%20urban%20land%20use%20planning_1.pdf
[21] D. Dowall and C. Giles, "Urban Land Policies for the Uninitiated. Economic and Social commission for Asia and the Pacific." 1997.
[22] L. Gudaitis, "The Modern Majlis: Public Participatory Planning in Shaham and Bahia," *Volume*, no. 1, p. 220, 2010.
[23] H. &. H. Raafat, "Majlis tradition inherent to UAE culture: Al Dhahiri," *Khaleej Times.*, 2011, May 17.
[24] Surajit CHAKRAVARTY, Meera MANSOORI, Meera SHEHADEH (Alhosn University, UAE), "Public Participation in Abu Dhabi." 2013 [Online]. Available: http://www.isocarp.net/Data/case_studies/2358.pdf. [Accessed: 16-Apr-2019]
[25] "FixMyStreet," *FixMyStreet*. [Online]. Available: https://www.fixmystreet.com/. [Accessed: 03-Dec-2017]
[26] T. Cruz, "MIT's Open-Sourced Urban Planning Tool To Help Build Smarter Cities," *TechCo*, 12-Oct-2011. [Online]. Available: https://tech.co/mit-open-sourced-urban-planning-tool-2011-10. [Accessed: 04-Dec-2017]
[27] "Urban Network Analysis Toolbox for ArcGIS — City Form Lab," *City Form Lab*. [Online]. Available: http://cityform.mit.edu/projects. [Accessed: 04-Dec-2017]
[28] "Better data makes better cities | LocalData - Better data makes beter cities." [Online]. Available: http://localdata.com/. [Accessed: 05-Dec-2017]