WE WANT THEM "OPEN" AND "SMART"

Defining „Open Smart Cities“ in the Mena Region

In cooperation with IMPACT FOR DEVELOPMENT

A Digital Arabia Network Initiative

IMPACT FOR DEVELOPMENT

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1. Introduction

The concept of Open Smart Cities emerged as a model to increase transparency, accountability and participatory governance at the local level, through the use of civic technologies and open data, amongst other technologies. Across the world in general, and across the Middle East-North Africa region in particular, there is a rise of the Open Smart Cities concept. In fact, the region is witnessing the transformation of cities, from geographical spaces characterized by the continuous production and consumption of services; into innovative ecosystems driven by the use of technologies, the principles of citizen participation and the co-creation of new, creative responses to the challenges identified by their communities.

While there is no single definition of Open Smart Cities, this paper attempts to define the concept based on the combined experiences and lessons learned of Impact For Development and various experts of the Digital Arabia Network (DAN) in the MENA region, namely Dr. Driss Kettani, from Al Akhawayn University Morocco, Dr. Hany Abou El Wafa from TU Munich, and Ms. Melda Salhab from Open Map Lebanon.

2. Defining the "Open Smart City" Concept

The Open, Smart City concept unites both the principles of a "Smart city" and those of an "Open city". In fact, the latter and the former are essential components of the broader definition of an Open, Smart City.

The "Smart City" perspective often characterizes a city in terms of how digital and telecommunication technologies are used to make traditional networks and services more efficient for the benefit of the population[1].

For instance, a Smart city is generally defined as "geographical area, in which high technologies such as ICTs, logistics, energy production, and so on, cooperate to create benefits for citizens in terms of well-being, inclusion and participation, environmental quality, and intelligent development; it is governed by a well-defined pool of subjects, able to state the rules and policy for the city government and development" (Dameri, 2013).

On the other hand, an "Open City" concept stems from the idea that making local governments accessible, more responsive, and more accountable to citizens, and that improving the relationship between people and their local government, has long-term, exponential benefits for everyone[2]. It goes without saying that the first step towards improving the relationship between people and the local governments, in the spirit of Openness, is to make data and information about governmental activities available and accessible. This directly makes the decision making process more transparent and increases accountability. Beyond making data and information available and accessible, an Open city is a space where channels to solicit public feedback are implemented, where local governments benefit from the collective intelligence of citizens and where public participation in the decision making process is increased.

An Open, Smart city can thus be generally defined as a space where stakeholders, including residents, civil society actors, academics and private sector, work collaboratively with the local government to utilize data, collective intelligence and technologies, in an ethical, accountable and transparent manner[3], to promote good and participatory governance for the benefit of the population and to achieve development on the local

1 European Commission, What Are Smart Cities?

2 The Open Government Partnership, Approach.

3 Open North, Open Smart Cities Guide 2018

level. While this definition encompasses the major principles of Open, Smart cities, its applications on the ground remain different, depending on the context.

3. The Principles of Open, Smart Cities:

3.1 Transparency

Open, Smart Cities are built around the principle of transparency. Such cities need to be able to balance between achieving the collective comfort and privacy of its residents, while ensuring data and information are easily accessible. Importantly, "Open, Smart Cities" effectively use open sourced and innovative technologies to ethically, transparently and accountability govern[4] on the local level, without trespassing the "surveillance state" threshold. In this case, Open,Smart cities are ready to exchange perfect data for their residents' privacy and are also ready to give their residents information and choices about how their data is collected and used (Finch& Tene, 2018).

According to the Organization for Economic Cooperation and Development, the promotion of a culture founded on the principles of transparency, integrity and stakeholder engagement supports participatory democracy and inclusive growth[5]. In the case of Open, Smart Cities, initiatives to increase civic engagement, build trust and bring local governments closer to residents have to be founded on the principle of transparency as an enabler for the accessibility and availability of information and data. Informed residents are able to effectively participate in the decision making process and in creating innovative ways to address the challenges they face.

3.2 Inclusivity

Accessibility is an important component of "Open, Smart Cities", in fact such places should put all inhabitants at the heart of their purpose and cater to the many, as opposed to the few. The majority of tech-driven, major development projects aim to create smart gated communities that are only accessible to the few, but truly open and smart cities are built to be inclusive and carefully consider the needs of all. Truly Open, Smart cities do not widen existing inequalities and digital divides, they rather utilize the principles of openness and smartness to enable inclusivity. In order for this to take place, a strong

4 Open North, Open Smart Cities Guide 2018

5 OECD Recommendation of the Council on Open Government, Adopted on: 14/12/2017. https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0438

leadership with an approach that celebrate diversity and strives for equity is needed[6]. The participation of citizens in the planning of open, smart cities is particularly important in this case, since only citizens, especially the elderly and disabled, can truly identify the issues and challenges facing them, before these can be addressed through the use of technologies. Furthermore, specific strategies should be put in place to include the populations who will otherwise be digitally excluded, especially when it comes to moving government services from in person to online e-services.

3.3 Sustainability

As an effective solution to achieving inclusive development on the local level, Open, Smart cities need to be sustainable and self-sufficient. In other words, Open, Smart cities have to "meet the needs of its present inhabitants without compromising the ability for other people or future generations to meet their needs, and thus, does not exceed local or planetary environmental limitations, and where this is supported by ICT" (Hojer& Wangel, 2014). Open, Smart cities effectively respond to the combination of sustainable development and urbanization challenges through the use of digitization and ICTs in various sectors. For instance, Open, Smart Cities are able to find sustainable solutions to issues ranging from sewage, waste management and water to sustainable buildings and neighborhoods.

In the context of Open, Smart Cities in the MENA region, Gulf countries offer great examples of how smart technologies can be incorporated into city planning and used to address sustainable development challenges.

3.3.1 Lusail City, Qatar

In Qatar, Lusail city, the country's first sustainable city, is currently being developed across 38 square kilometres of land and will have an estimated capacity of 450,000 people. Lusail city was developed with the aim of encompassing innovative ideas that take sustainability principles into the core of city planning[7]. According to the project's official website, Lusail's landscape strategy encourages the use of native vegetation with reversed desertification and prevents rain water runoff; its shoreline will be protected by a stone revetment wall and concrete retention wall which will act as an artificial reef and trap windblown sand and dust. When it comes to transportation, Lusial will have a light rail system which will reduce emissions and save energy, car parking stations will purposely be underground to encourage people to use the light rail; the city will also have a water transportation system that will transport people within the city[8]. In terms of infrastructure, the city will rely on a district cooling system, which will save 65 million tons of CO2 per year, its cas network connect is connected to the entire city, which decreases electricity consumption. Lusail's waste management system will include traditional waste collection methods in addition to pneumatic waste collection; and its sewage treatment plant aims to ensure the recycling of treated greywater for irrigation purposes. Lusail city's project website also indicates that the project will apply the smart city concept to its fully automated homes, as well as security systems, metering, smart grid and traffic management systems.

6 Bee Smart City, How To Ensure That Your Smart City Strategy Is Inclusive, Lily Maxwell. May 15, 2018 https://hub.beesmart.city/en/strategy/how-to-ensure-that-your-smart-city-strategy-is-inclusive

7 Lusail City project website, https://www.lusail.com/the-project/sustainability/

8 Lusail City project website,https://www.lusail.com/the-project/sustainability/

4. Impact For Development's 6 Step Process To Achieving The "Open, Smart City" Concept On The Local Level

Impact for Development (IFD) believes that development is a shared responsibility and that communities can utilize an open, smart approach to overcome adversity and achieve the level of development they strive for. In that spirit, IFD has adopted a specific approach to achieving the principles of "Open, Smart Cities" on the local level.

First, the concerned local authorities are responsible for the identification of priority areas in need of development, these areas can cover an inexhaustible array of sectors from electricity and mobility to tourism or administrative management. The second step consists of assessing and evaluating either the development or impact of previously launched projects subscribing to the list of priority areas identified by local authorities. Then comes the organization of a forum with the aim to assemble all stakeholders including public and private sectors, academia and civil society. This forum creates a space where these stakeholders will discuss and provide short and medium term recommendations regarding the priority areas. This step allows for the utilization of the community's collective intelligence for the purpose of creating a yearly joint action plan. Fourthly, the joint "Open, Smart, City" action plan is developed by local authorities based on the recommendations proposed in the forum. A follow up mechanism is to be established, as the fifth step, in order to track the progress and level of implementation of the "Smart, City" action plan. The sixth and last step consists of organizing a second forum with the purpose of assessing the results of the first action plan and identifying areas for improvement, to be addressed in the second action plan for the following year.

5. Open, Smart City Case Studies

5.1 Morocco

5.1.1 Tanger – Tetouan – Al Houceima

The first edition of the Open, Smart City Forum in Tanger, was organized by Impact for Development, in partnership with DAN, and took place on November 28th, 2019, under the title "Towards The Interoperability And Integration Of Data". The overall aim of the forum was to accelerate the development process in the region of Tanger, Tetouan and Al Houceima in Morocco. The first edition of the forum created an opportunity to capitalize on the gains from the region's digital transformation, as well as to collectively think of new, short and medium term, ways of improving the quality of public and semi public services.

The local authorities of the Tanger, Tetouan, Al Hoceima region first identified five priority areas to be addressed in the action plan for the year 2020, some of which were in the implementation process and included urban mobility, power and electricity, governance and administration, environmental action and sensibilization.

The first edition of the "Open, Smart City" Forum was then organized in Tanger with the participation of various stakeholders, including decision-makers, public and private sector actors, academia and civil society. During the forum, all participants shared their proposals and utilized their collective intelligence to propose recommendations. The agreed recommendations during this forum were categorized either as procedural or operational. In addition to the adoption of an action plan by the local government, the general procedural recommendations included establishing a committee in charge of overseeing the follow-up and monitoring of the recommendations and ensuring the sustainability of the dynamic behind the positive transformation of the city. The procedural recommendations also included the plan to participate in the Smart City Forum in Berlin in 2020, where the experiences of and lessons learned in Tanger would be shared. As for the operational recommendations, they included the development of a "smart" system to improve the management of public transportation; the launch of a digital platform for the submission and management of claims related to power and electricity; and the launch of a digital platform to allow access to environment-related data.

The monitoring of the implementation of the recommendations resulting from the first edition of the "Open, Smart City Forum" in Tanger are taking place through a digital platform where the implementation of the action plan is periodically tracked. The website is meant to be accessible to all and to offer a list of projects and initiatives being undertaken in the context of each one of the five key priority areas, as well as the remarks, plans and goals, which are shared on the website by the official in charge of the implementation of the projects. In addition to the online platform, the implementation of the 2020 action plan is also monitored through bi-monthly meetings with the local government, where progress is shared.

5.1.2 Sefrou

Similar to Impact for Development's approach to achieving the "Open, Smart City" principles in Tangier, IFD followed its same methodology for Sefrou. In the latter, consultations with local authorities took place before the first edition of the forum, with the aim of creating an environment where the participation of both civil society and citizens is enabled.

The three key priorities identified during the consultations revolved around the introduction of a law on public consultation, the increase of the efficiency of local petitions and the creation of smart and open spaces. The law on public consultation is a 9 year old project, its first version was in the drafting process during consultations, the drafting process was open to the submission of recommendations by civil society. In the context of increasing the efficiency of local petitions, various matters were raised, namely the aim to increase the inclusion of civil actors, improving the management of petitions and the implementing a follow-up process. As for the creation of "smart, open spaces", local authorities shared various points with the overall aim of building trust amongst actors and promoting the common values of citizenship. These matters included, but were not limited to, increasing funding, improving infrastructure and increasing access to information while upholding the principles of transparency and accountability. Furthermore, local authorities brought to the attention of stakeholders a number of hurdles in the way of the development of the area, namely regarding the quality, coverage, availability and access to power and electricity; the availability and quality of public transportation services; and the lack of infrastructure and projects to enable and increase the growth of the local tourism sector in the region of Ighezrane.

Prior to local consultations, various projects were launched, these were related to the points raised by local authorities and relevant to the context of the identified priority areas. Regarding the first priority area around the law on public consultation, the latter has in fact been in the drafting process for over 9 years, which made the "Open, Smart City" Forum a valuable opportunity to discuss the importance of the law and exchange opinions regarding the issues the law should address. In the context of tourism in the Ighezrane region, there are in fact three projects in the process of implementation, these include the "Corridor Dar Al Hamra" project, the "Mazarat Sefrou" Project and the "Sakia Ecological Village" project.

The first edition of the "Open, Smart City Forum" in the city of Sefrou, was organized by Impact for Development and took place on February 17th 2020, under the title "Open, Smart communities". The forum was organized with two overarching goals, the first was to examine the local challenges, propose realistic suggestions for solving them, all with the aim of making recommendations to be included in the action plan. The second goal was to adopt a participatory approach that brings together stakeholders, including the Office of the High Commissioner for Human Rights, the local government of Sefrou and also the ministries of State in charge of Human Rights and Relations with Parliament, Ministry of Economy, Finance, and Administration Reformand the Ministry of Culture, Youth and Sports, from around the world and allows for the presentation of realistic recommendations.

The adopted action plan included a number of recommendations specific to each priority area. In the context of the Law on Public Consultation, recommendations included utilizing modern technology to achieve effective communication in all central public institutions; publish a detailed periodic report to inform participants of the status of their submissions during the consultation process; creating a public consultation body on the local, regional and national level. Recommendations aiming to increase efficiency of and improve the petition management process included creating a special committee, on the local level, in charge of the handling of petitions; and expanding the availability of files concerning associations beyond the Ministry of Interior. Concerning the priority area aiming to move towards "Open, Smart Spaces", recommendations were categorized into four categories. The first category targeted increasing participatory measures, which the participants recommended its achievement through the creation of a public consultation entity; and forging partnerships with civil society actors and the continuous sharing of successful experiences and lessons learned. The second, dealt with power and electricity related recommendations, the latter included switching to the use of alternative energy sources; increasing the use of power and energy saving light bulbs; and ensuring access to energy and electricity to all. The third category of recommendations aimed to improve the quality public transportation services in the Ighezrane region and included establishing a multi-services transportation station, determining bus routes and announcing bus arrival and departure times. Also concerning the Ighezrane region, stakeholders also included in the action plan a number of recommendations in the context of improving tourism in the region. The overall purpose was to increase regional development indicators by creating jobs in the tourism sector and in turn, ensure an equitable distribution of wealth generated from the sector amongst the population. The recommendations proposed in this sense included creating a website to introduce the region, establishing projects relating to the tourism sector, in partnership with the local populations and civil society; ensuring the constant inclusion of public administrations and institutions in projects; and the establishment of a programme related to tourism projects spanning over a three year period (2020-2022).

5.1.3 Fez

The work of Professor Driss Kettani in the field of closing the digital divide, mainstreaming open data initiatives and automation, in order to promote good governance and the provision of quality services at the municipal level, really shows how the effective and efficient use of technologies can facilitate the creation of a "smart commune" built on "smart decisions". In this context, the eFez project is a great example of how an e-governance approach built on the effective use of information technologies can contribute to and promote good governance in developing countries.

The development of the eFez project started in 2004 and lasted until 2009, with the purpose of creating and using an e-governance system in a large city like Fez to facilitate, automate and accelerate the daily operations and public services offered by the communal council, especially in the case of vital records. Due to the many achievements of the eFez project, a public petition, signed by over 5000 citizens and civil society actors, requesting the generalization of the system was signed. This resulted in the scaling up of the eFez project, into eFez2; the latter built on the experience and achievements of the initial eFez project to improve the electronic delivery of local government services, facilitate the streamlining and generalization of e-government services, enhance e-readiness and e-awarness, and enhance the na-

tional outcome assessment methods based on a more representative population sample (Kettani & Moulin, 2014). eFez2 was successfully implemented and scaled up to other areas of Fez, as well as other Moroccan provinces, including Larache, Ifrane and El Hajeb.

The efez was successful on various levels and has important results for which it has won various national, regional and international awards and recognitions. In more details, the eFez project introduced ICT and automated service delivery to the daily operations of local public administrations, which created an e-governance system; it improved and simplified local governance tool, enabling citizen-friendly service delivery; influenced local policy making, as it encouraged public officials to include automation in several other areas and aspect of public administration; it facilitates and enables the generation of statistics, due to the digitization of citizens' records (Kettani & Moulin, 2014).

5.2 Lebanon

5.2.1 Open Map Lebanon

Open Map Lebanon was founded following the Beirut blast in August 2020, to help people in need by geographically locating them and services they need on a "disaster relief map" of Beirut. The initiative later evolved into a "humanitarian open street map", which offers mapping of disasters using satellite imagery and photographs of buildings in Beirut. As stated by Ms Melda Salhab, the combination of the humanitarian open street and disaster relief maps are important contributions to the creation of a smart city in Lebanon, the latter now also has a "recovery map", which is a map of public and live status recovery updates of Beirut. The projects Open Map Lebanon is involved in include the following:

Beirut Recovery Map: The Beirut Recovery Map is a map of the damage caused by the blast in August 2020 and the recovery of the city.

3W | Beirut Explosion Map: The Beirut Explosion Map geographically positions the needs of the population after the blast of August 2020, through this map, the management and distribution of humanitarian aid is more efficient, as it allows to position the areas in need and also avoids the duplication of efforts. As stated on the website, "this map of needs assessments and response incorporates survey data from our partner organisations and displays the entries here. The map allows you to filter collected damage data by status, NGO, neighborhood, and zone so you can see exactly Who is doing What Where"[9].

Mapillary: This street-level imagery innovation uses pictures taken by volunteers and citizens after the blast of August 2020 to map the affected and damaged buildings and streets. The aim of this innovation is to enable relief efforts and facilitate damage assessment, ahead of the reconstruction process.

Ushahidi map: This map was launched to crowdsource needs assessments following the blast in Beirut in August 2020, which later became a data aggregated platform to support coordination efforts[10]. The Ushahidi map was created with the aim of connecting the people in need of humanitarian aid, with those who are able to provide it.

5.3 Egypt

In Egypt, there have been a number of advancements in the context of striving towards the creation of a "Smart City". As highlighted by Pr. Hany Abou Al Wafa, a smart city is a place where traditional networks and services are made more efficient with the use of digital and telecommunication technologies for the benefit of its inhabitants and business; this can be found in the following projects:

5.3.1 NewGiza

NEWGIZA is the first upscale development project in Egypt founded on the principles of smart living, sustainability and smart utilities, it is located 22 Km outside of Cairo and spans over 1500 acres[11]. The project was inspired by Old Giza and utilized the advanced technologies in the areas of community living, energy conservation, environmental monitoring to create newly built neighborhoods, economic and financial districts, as well as, commercial and residential areas. NEWGIZA includes ten residential neighborhoods, including Ambervill, Westridge and District One, it is also home to the NewGiza University, restaurants, five star hotels and cinemas. The NEWGIZA project has be awarded two prizes in the first edition of the IDC Smart City Middle East Awards,

9 Open Map Lebanon, EW Beirut Explosion Map

10 Open Map Lebanon, Ushahidi

11 The New Giza for Real Estate and Development, https://www.linkedin.com/company/newgiza-hr

which rewards the most innovative ICT enabled projects in the Middle East region[12].

5.3.2 The Capital, Egypt

The Capital, Egypt is a new luxury development project aiming at creating a smart city that has a 6.5 million persons capacity, 35 Km east of Cairo. This new administrative capital aims to integrate smart infrastructure to provide services to inhabitants; the project will include an administrative and a cultural district, as well as 21 residential neighbourhoods. The city's smart features include, "smart traffic" which consists of smart monitoring of congestions and accidents; "smart utilities", in terms of the management and operation of gas, water and electricity; and "Smart Buildings", which consists of buildings that identify the most effective ways to save resources[13].

6. Conclusion: Towards an Open, Smart Partnership

In recognition that building synergies between the various actors in the "Open, Smart City" field in the MENA region is the key to creating a culture of "Openness and Smartness" built on strong partnerships and the exchange of experiences and best practices; Impact For Development aims to build an "Open, Smart Partnership" between the different actors and established "Open, Smart Cities"not only at the national level in Morocco but across the MENA region and other parts of the world.

12 Mohamed Esmat, IDC Middle East Awards, 2018. https://www.linkedin.com/pulse/idc-middle-east-awards-mohamed-esmat/

13 The Capital Egypt Website, http://www.acud.eg/

7. Acknowledgements

This paper was written following an expert exchange meeting with various “Open, Smart City” experts across the MENA region. We would like to thank Dr. Driss Kettani, from Al Akhawayn University Morocco, Dr. Hany Abou El Wafa from TU Munich, and Ms. Melda Salhab from Open Map Lebanon, for sharing their time, experience and valuable insight.

8. Works Cited

Kettani, Driss & Moulin, Bernard. (2014). E-Government for Good Governance in Developing Countries.

Dameri, Renata. (2013). Searching for Smart City definition: a comprehensive proposal. International Journal of Computers & Technology. 11. 2544. 10.24297/ijct.v11i5.1142.

Prof. Tracey P. Lauriault (Carleton University), Rachel Bloom (OpenNorth), and Jean-Noé Landry (OpenNorth). (2018). Open Smart Cities Guide V1.0. Open North. https://docs.google.com/document/d/13Oz7fdN1f-cX29FikKoMn28DUkH738_296bqZmnYKYAs/edit#

Finch, Kelsey and Tene, Omer, Smart Cities: Privacy, Transparency, and Community (April 3, 2018). Cambridge Handbook of Consumer Privacy, Eds. Evan Selinger, Jules Polonetsky and Omer Tene , Available at SSRN: https://ssrn.com/abstract=3156014

Zoya Sodhi, Jo Flatt and Jean-Noé Landry, Open North for Future Cities Canada (2018). Getting To The Open Smart City. Open North, Future Cities Canada. https://futurecitiescanada.ca/downloads/2018/Getting_to_Open_Smart_City.pdf

Höjer, M., Wangel, J.: Smart Sustainable Cities: Definition and Challenges. In: Hilty, L.M., Aebischer, B. (eds.) ICT Innovations for Sustainability. Advances in Intelligent Systems and Computing 310. Springer International Publishing (2014, in press)

European Commission. What are Smart Cities? https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en#what-are-smart-citie

OECD Recommendation of the Council on Open Government, Adopted on: 14/12/2017. https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0438

Bee Smart City, How To Ensure That Your Smart City Strategy Is Inclusive, By Lily Maxwell. May 15, 2018 https://hub.beesmart.city/en/strategy/how-to-ensure-that-your-smart-city-strategy-is-inclusive

The Open Government Partnership, Approach. https://www.opengovpartnership.org/about/approach/

Open Map Lebanon, Ushahida. https://openmaplebanon.org/ushahidi

Open Map Lebanon, Beirut Explosion Map. https://openmaplebanon.org/3w-beirut-explosion-map

Open Map Lebanon, Mapillery. https://www.mapillary.com/app/?pKey=AQS0tu_udtwrPhYY9rGIBQ&focus=photo&lat=33.89516199&lng=35.510210646111111&z=17&x=0.72842427327434 07&y=0.44509303100951947&zoom=0

Open Map Lebanon, Beirut Recovery Map. https://www.beirutrecovery.org/

Mohamed Esmat, IDC Middle East Awards, 2018. https://www.linkedin.com/pulse/idc-middle-east-awards-mohamed-esmat/

The Capital Egypt Website, http://www.acud.eg/

The New Giza for Real Estate and Development, https://www.linkedin.com/company/newgiza-hr

Lusail City project website, https://www.lusail.com/the-project/sustainability/