

About the Council

Mohammed Bin Rashid School of Government took the initiative to launch the Policy Council, a round table dialogue program, to promote meaningful dialogues that will enrich shared knowledge within government entities. The Council also aims to highlight vital public topics and policies of high priority within the framework of the renown achievements realized by government entities in the UAE in various fields, positioning them locally, regionally, and globally as leaders within their specializations. Additionally, the Council strives to encourage the dissemination of expertise, promote knowledge sharing, and ensure that all government entities benefit from the same. In this context, the School aims for participant diversity at every session, so as to include federal and local levels, central authorities, and specialized authorities, in addition to promoting the engagement of influential non-government stakeholders in relevant discussions. This will enable meaningful, comprehensive dialogues and the ability to tackle topics from a variety of perspectives, as the School seeks to restructure the Policy Council with a view to integrating it within comprehensive action agendas that will enable the Council to conduct in depth discussions of topics on the table. This, in turn, will enhance common understanding and knowledge-sharing efforts. The objectives of the Council can be summarized in providing a platform for cognitive dialogue between experts, specialists and stakeholders involved in the government sector with a view to highlighting issues of priority and importance on government and community levels. The Council also aims to document and disseminate dialogue in a balanced, comprehensive and practical manner to enrich cognitive content within government. Additionally, the Council strives to encourage individual and organizational communication and relationships, and to strengthen the cognitive network within government to enhance effective organizational cooperation. Finally, the Council strives to present insights and recommendations that will have an effective impact on joint action and the development of government performance.

DATA SHARING: IMPLICATIONS AND CHALLENGES



Introduction

Human civilization is evolving at an exponential rate as a result of the emergence of information and communication technologies (ICTs). The rate and sheer scale at which information is currently being disseminated globally is forcing individuals to rapidly change the ways they interact with one another and their environment. Nowhere is this more relevant than in the city of Dubai, where this evolution has arguably occurred at an even faster rate. Over the last few decades, the city's rate of development has been almost unparalleled on a global scale, bringing about a host of socioeconomic and technological changes. This is further substantiated by Dubai's plans to rapidly develop its technological infrastructure as it aims to become a 'smart' city. This approach is pertinent as it plays a fundamental role in achieving the Government of Dubai's development aims, as laid out as part of the 'Dubai Plan 2021' strategy.

The main goals of this Policy Council are to:

- a) assess what the risks and implications of data sharing are, which of these implications will impact this geographic region the most, and subsequently, the varying effects that they may have on this society; and
- b) directly address these issues by suggesting ways in which they can be adequately counteracted.



What Exactly Does Being a Smart City Entail?

Cities across the globe all possess certain social, cultural and economic dynamics that distinguish them from one another. These distinctions often reflect the priorities that each city has regarding its goals for future development. However, despite these distinctions, the large majority of each of these cities uniformly strives to increase its economic stability and the sustainability of its resources, all of which serves the ultimate purpose of improving the quality of lives of its inhabitants. In many cases, doing so is inextricably linked to the “physical and communications infrastructures” of a city and the “delivery of resources through these infrastructures.”^[1] As such, discussions regarding how best to improve the lives of a city’s inhabitants logically allude to considerations about how to further develop and fortify a city’s infrastructure; this process however, is not often a straightforward one.

One way of addressing this pressing issue is by developing an infrastructure that enables a city to be ‘smart’ about how it manages these fundamental components.

But what exactly does being a ‘smart’ city entail? Further, what universal components are key to the development of a ‘smart’ city’s infrastructure and the services that such infrastructure would provide?

At its most fundamental level, a ‘smart’ city can be defined as one that uses technology – mostly information and communication technology (ICT) – in various ways to make the “critical infrastructure components and services of a city”^[2] more interactive with one another and more efficient in both the resources that they use and the

[1] THE ROLE OF STANDARDS IN SMART CITIES, the British Standards Institution (BSI), main authors: Mike Perry, BRE and Stephen Pattenden, Telemetry Associates (Pg. 4)

[2] (NOT SO) SMART CITIES?: THE DRIVERS, IMPACT AND RISKS OF SURVEILLANCE-ENABLED SMART SOLUTIONS Gemma Gal-don-Clavell (2013)

outputs and services they produce. This is done through the use of “advanced, integrated materials, sensors, electronics and networks which are interfaced computerized systems comprised of databases, tracking, decision-making and algorithms” (Bowerman et al. 2000)^[3].

Why Data Sharing is a Key Smart City Component?

A fundamental part of the technology used to develop ‘smart’ city infrastructure involves accumulating, organizing and processing significant amounts of data. There are many instances where data sharing has the potential to provide huge benefits to society:

‘Now-casting’, for instance, refers to using data generated in ‘real time’ (i.e. occurring live on a rolling basis) to monitor and describe activities occurring contemporaneously, well before official data on these activities is available. Google’s flu trends service is a notable example of where this can be used to positive effect, it uses now-casting to track “the incidence of flu-related search terms... (so as to) identify possible flue outbreaks one to two weeks earlier than official health reports”. Having this information up to two weeks earlier than previously thought possible would provide the appropriate response services with much needed time to react accordingly.

A variation of now-casting can also use data to provide ‘real time economic indicators’, where, as Hal Varian, Chief Economist at Google puts it, “the hope is that as you take the economic pulse in real time, you’ll be able to respond to anomalies more quickly.”^[4]

The benefits of sharing data extend beyond reducing response times to socioeconomic behavior. Within the context of health care for example,

[3] (NOT SO) SMART CITIES?: THE DRIVERS, IMPACT AND RISKS OF SURVEILLANCE-ENABLED SMART SOLUTIONS Gemma Gal-don-Clavell (2013)

[4] THE PROMISE AND PERIL OF BIG DATA, David Bollier, The Aspen Institute, *Communications and Society Program*



identifying new correlations in data can enhance the development of medication, the management of medical treatments, and significantly, aid in designing government programs. Big data has already been used to this effect through the implementation of The American Recovery and Reinvestment Act (ARRA) by the Obama Administration in the United States of America. This act aimed to encourage medical entities across the country to make use of data by adopting medical record keeping systems. This could be hugely beneficial as, according to some observers, the American healthcare system is currently “plagued by a fragmented, inefficient system of paper-based record keeping.”^[5]

Adopting this electronic method of recording data could, by extension, enable some level of liquidity of information in the healthcare sector that would allow for “physicians and providers (to) share health information across jurisdictions”.^[6]

The above examples combined cover a mere fraction of the potential positive impact that data sharing can have on society as a whole. As such, it is apparent that the full potential of data sharing with regard to tackling socioeconomic issues is substantial. Subsequently, incorporating policies that utilize big data is hugely significant in the development of the infrastructure of a ‘smart’ city.

The Risks and Ethical Implications of Data Sharing

Whilst sharing data undoubtedly has the potential to be hugely beneficial, it comes with a host of implications that need to be adequately accounted for. As suggested by research conducted by the European Union’s ‘BYTE’ Program (Big data roadmap and cross-disciplinary community for addressing societal Externalities, “big data practices such as transparency, profiling

[5] THE PROMISE AND PERIL OF BIG DATA, David Bollier, The Aspen Institute, *Communications and Society Program*

[6] THE PROMISE AND PERIL OF BIG DATA, David Bollier, The Aspen Institute, *Communications and Society Program*

and tracking, personalization techniques, re-use, unintended secondary use, sharing, open data and open access implicate a number of social and ethical issues including discrimination, trust, privacy, inequality of access, exploitation and manipulation. This is because big data practices deal with data from people, and this human element reflects individual social and moral codes.”^[7]

The implications that arise as a result of data sharing often fall under the following three categories: inequality of access to technology and data amongst demographics, violations of privacy of individuals and lastly, breaches of security through data sharing. All three of these categories present different ways in which dealing with large amounts of data can have detrimental socioeconomic consequences if not properly handled.

Access and Inequality

Ultimately, individuals are only going to benefit from sharing large amounts of data if they are all able to access the tools to do so. Yet, as stated by a report by a report on ‘the role of standards in smart cities’ by the British Standards Association (BSI), as cities move towards the delivery public services through technology, “there is also a risk of unwittingly excluding people who may have difficulty accessing services because of infirmity or impaired learning ability. This issue may be particularly pertinent for Cities facing resource constraints as they provide for an aging population.”^[8] It is imperative that this is taken into account, as sharing large amounts of data can’t be seen as an overall success if it is not made accessible to a city’s population.

Violations of Privacy

As stated by a research report on the positive and negative effects of data sharing by The As-

[7] BYTE: BIG DATA ROADMAP AND CROSS-DISCIPLINARY COMMUNITY FOR ADDRESSING SOCIETAL EXTERNALITIES, D2.1: Report on legal, economic, social, ethical and political issues.

[8] THE ROLE OF STANDARDS IN SMART CITIES, the British Standards Institution (BSI): *Mike Perry, BRE and Stephen Pattenden, Telemetry Associates*



pen Institute, “the benefits of personalization tend to accrue to businesses, but the harms are inflicted on dispersed and unorganized individuals.”^[9] It is important that as governments and businesses make use of large amounts of data, that the privacy of individuals is not sacrificed as a consequence.

Whilst a greater amount of liquidity of information in areas such as public health might seem to be of benefit, it also means that an individual’s personal medical records are potentially much more easily accessible to a much wider audience. This in turn, makes the potential implications of sharing data in this context “both heartening and frightening.”^[10]

Breaches of Security

If mishandled, the consequences of data sharing could potentially be catastrophic. Instances of ‘data hacking’ – in this case, data being criminally ‘stolen’ from legitimate government entities – for example, often evoke thoughts of credit card theft and identity fraud to the minds of most people; however, in the grand scheme of things, these are relatively mild concerns. The detrimental potential of a breach of personal data is significantly greater. If stolen data was being used by criminal enterprises to affect critical systems such as medical emergency response services, the results could potentially be fatal. ‘Data hacking’ is just one example of the potential implications that data sharing could have on a city’s inhabitants. This project will attempt to look at it in greater detail, as well as a host of other ethical implications that could potentially arise.

However beyond the pragmatic issues that arise as a result of data sharing, there are also deeper concerns about whether engaging in such activities is morally acceptable on a fundamental level. This project will attempt to analyze these fundamental moral questions in much greater

[9] THE PROMISE AND PERIL OF BIG DATA, David Bollier, The Aspen Institute, *Communications and Society Program*

[10] THE PROMISE AND PERIL OF BIG DATA, David Bollier, The Aspen Institute, *Communications and Society Program*

depth.

It is imperative that this transition to utilizing much greater amounts of data is handled intelligently and responsibly, as ultimately, as stated by the BSI, “without clear safeguards in place, public confidence in the services being developed is likely to be low, and this will pose a significant risk to the acceptability of Smart Cities projects to the citizens on whose behalf they are being commissioned.”^[11]

The Dubai Data Law

Steps have already been taken to encourage data sharing in the city, particularly through the recently announced ‘Dubai Data Law’^[12], which aims to make it easier for public and private sector entities to access the data that they collectively produce.

The announcement of the Dubai Data Law has been met with a strong sense of positivity from organizations in both the public and private sectors in the city, yet the Government of Dubai is still aware of concerns regarding the risks and moral implications of sharing greater amounts of data. As the government entity responsible for overseeing the majority of Dubai’s smart city related development projects, Smart Dubai has acknowledged the need to protect sensitive data from “malicious programmers or cyber thieves to access the data for criminal or terrorist purposes”,^[13] stating that, included in the legislation for the new Data Law is a plan to “categorize all data so that government departments can establish what data should and should not be shared”^[14].

[11] THE ROLE OF STANDARDS IN SMART CITIES, the British Standards Institution (BSI): Mike Perry, BRE and Stephen Patten-den, *Telemetry Associates*

[12] ‘Dubai Law to Ease Data Sharing Between Government Agencies and Private Sector’, The National, <http://www.thenational.ae/uae/government/dubai-law-to-ease-data-sharing-between-government-agencies-and-private-sector>, accessed on 18/10/15.

[13] ‘A Collaborative Approach to Smart City Transformation’, p. 10.

[14] Ibid.



This can be further improved by analyzing the ways that similar laws have been implemented in other cities across the globe, as precedents have already been set in this regard. As of July 2015, the city of Boston, Massachusetts announced an initiative called the ‘Open and Protected Data Policy’ which stipulates clear criteria as to what data should be openly shared and what is classified as protected.^[15]

Why this is Relevant?

The Government of Dubai is investing considerable time and financial resources into developing its technological infrastructure as part of a concerted effort to allow Dubai to successfully transition into becoming a ‘smart’ city. This approach is pertinent, as it plays a fundamental role in achieving the city’s development aims, as laid out as part of the ‘Dubai Plan 2021’ strategy.

Data sharing forms a major component of this approach. The overall effects of becoming ‘smart’ do generally appear to be of benefit to a city’s inhabitants. This, indeed, is what is driving Dubai to make this transition. Dubai, and the UAE as a whole have already taken significant strides in this respect. The UAE Brainstorm Session – initiated by the Prime Minister of the UAE – is a good example of where big data has already been used as part of a citizen engagement initiative. One that produced very positive results. This example however, is just the ‘tip of the iceberg’ in terms of what can be achieved if technology policy is properly implemented.

All of the factors regarding Smart Cities and Data Sharing previously highlighted in this section culminate in producing an environment in a city that will undoubtedly experience unprecedented changes on a cultural, economic and technological scale.

It is imperative that these changes are assessed in greater detail; especially as research on this subject in this geographic region is still relatively young.

As previously stated, Dubai is still in its infantile stages regarding the development of its digital infrastructure. If we can adequately address the ethical implications of data sharing now, we can ensure that the city’s transition to becoming one that is truly ‘smart’ is as beneficial to its inhabitants as possible.

Surveying the Population

In preparation for the Policy Council, a survey was conducted as an initial means of gathering public opinion on Dubai’s Smart City development ambitions and what they thought of data sharing. The target sample consisted of approximately 500 respondents that were carefully selected to align as closely with the Dubai’s inhabitants as possible. The breakdown of this sample is illustrated in the tables below:

[15] ‘An Order Relative to Open Data and Protected Data Sharing’, Executive Order of Mayor Martin J. Walsh, <http://www.cityofboston.gov/news/Default.aspx?id=6589>, accessed on 12/12/15.

GENDER DISTRIBUTION

| | | Distribution (%) |
|--------|--------|------------------|
| GENDER | Male | 65 |
| | Female | 35 |

AGE DISTRIBUTION

| | | Distribution (%) |
|-----|-----------------|------------------|
| AGE | 1: Below 21 | 3 |
| | 2: 21 to 29 | 29 |
| | 3: 30 to 39 | 44.8 |
| | 4: 40 to 49 | 15.9 |
| | 5: 50 and Above | 7.3 |

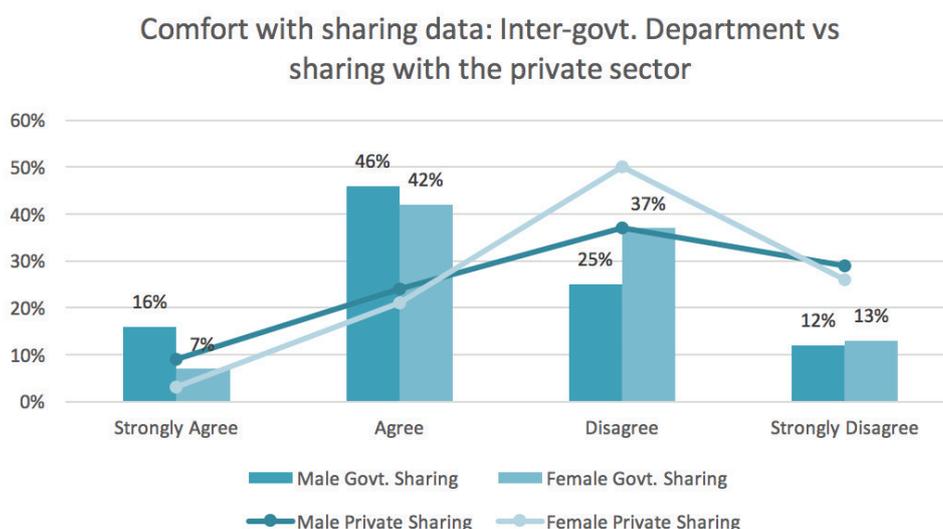
NATIONALITY DISTRIBUTION

| | | Distribution (%) |
|-------------|-----------------|------------------|
| NATIONALITY | 1: Emirati | 5.9 |
| | 3: Arab (Other) | 15.4 |
| | 4: Asian | 67.4 |
| | 5: UK & EU | 9.2 |
| | 6: Other | 2.2 |

The purpose of this was twofold: Firstly, the responses accumulated would provide a way of gauging current public opinion and receptiveness to data sharing. Secondly, the questions being circulated will be particularly useful to ascertain an insight into the cultural significance of data sharing.

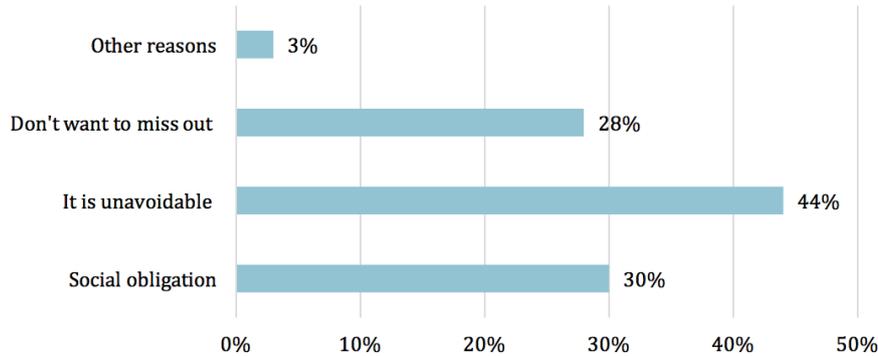
The following charts were selected to stimulate discussion amongst the Council's participants:

1- Level of Comfort with Sharing Data:

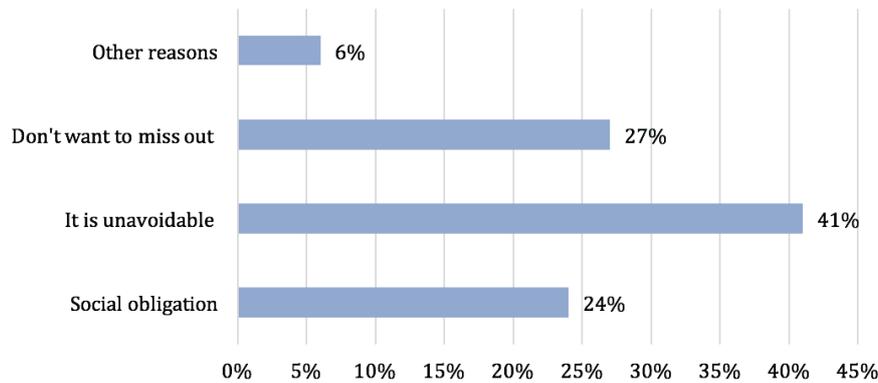


2- Reasons behind Sharing Data:

Then why share your data? Key reasons - males

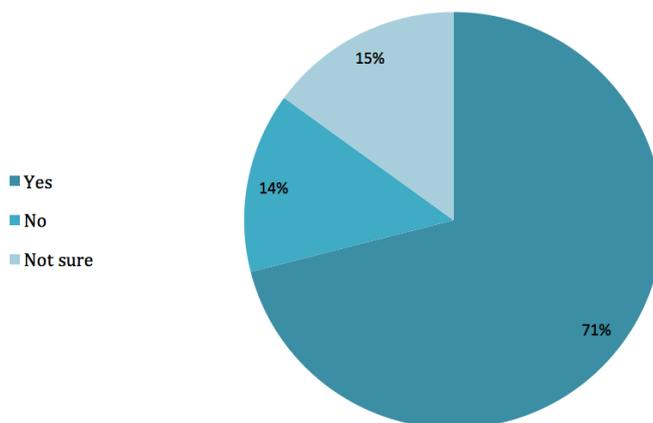


Then why share your data? Key reasons - females



3- Requiring Legal Consent:

Would you be more comfortable or willing to share you private data if Government entities legally required your consent before sharing your data with other government entities?





Discussion Themes

This session was based on key questions that arise from the following 2 themes:

Theme 1: The Ethics of Data Sharing

This theme focused on addressing the following question:

How do ethical concerns regarding data sharing translate into real life risks for the inhabitants of a smart city?

The Dubai Data Law covers a lot of the concerns that have already been highlighted. That said, there is major one difference in the way that the Data Law classifies the predominant concerns with data sharing that have been raised as part of this research project: inequality, privacy and security. The Law groups inequality with privacy, as such, the three major areas that are covered are privacy, security and lastly sensitivity of data – this is very important. If data that is classified as sensitive is irresponsibly shared, it could harm businesses in the private sector as well as entities in the government sector.

When it comes to sharing data, we always have to be cognizant of the types of data that is being shared. The reason that the Law was put into place was to ease the concerns of both citizens and private and public data and to give confidence to people regarding sharing data.

A significant amount of data that is classified as sensitive data by the Data Law is often also referred to as restricted data, i.e. data that cannot be open or shared in ordinary circumstances. However, due to the nature of what we want to achieve in terms of making Dubai a city that provides the best services and the happiest environment to its people and visitors, there has been a change in the way that restricted data is now approached. This data can now be shared under certain circumstances (i.e. between government entities, but not with the private sector or the public). As such, whilst this data is still being shared, citizens can take confidence from the fact that it is shared responsibly. Open Data, on the other hand, is fine in the sense that it is generally not of a sensitive nature, so people shouldn't be overly concerned about sharing this.

One of the main aims of the Data Law is to create rich data that can benefit the city in its planning, to resolve its current issues and to help individuals in their daily life (and in their long term planning – e.g. finding the closest hospital). It will provide citizens with the best options and logistical aids. This reflects the overall aim of the law in that regard. It will hopefully improve services and create new ones.

As previously mentioned during the research phase of this project, a 'smart city' is one that is managed, planned and governed properly. So really, we're talking about using technology predominantly to improve peoples' lives.

So why does that organically introduce risk? It's simply because a smart city has an infrastructure or a nervous system that is much more expansive than what we are currently used to because data is being collected from everywhere. But what this means from a technical perspective is that there are more areas of vulnerability and more points of attack. You have the potential to infiltrate a lot of data centers. You're not just sharing data with government entities, you're also sharing it with the people



within those entities, which inherently also introduces risks.

In addition to the three main issues regarding data sharing that were mentioned in this paper – access and inequality, privacy and breaches of security – there are a number of other concerns that need to be considered:

The obligation of sharing (i.e. does government have an obligation to share more data and what would be the framework to do that? Precedents have already been set here in other countries where the government has an obligation to share).

The obligation to take action on data: is there a legal or moral obligation for government or the individual to act either ethically, morally or legally in a way that better decisions can be made? Is there a higher moral obligation to assess the impact of certain decisions because the access that one has to data allows them to better predict its consequences?

Theme 2: Cultural Context

This theme focused on addressing the following question:

How do you, as policy makers envisage the inhabitants of this particular city reacting in increased amounts of data sharing?

We need to be aware of the skills of the individuals in this society who are responsible for handling data. We need to make sure that these people have the right skillsets. We need trained data scientists and engineers, etc..

This is related to cultural context as Dubai is still a relatively young city. As such, we need to be agile when adapting to its development. It's important that we not only attract young skilled talent, but that we also retain this talent. So it's important that we ensure that individuals in this city handling data acquire the right skills and are retained in the long term to allow this city to develop.

In cities where individuals are required to pay tax, they are more likely to be used to sharing their data with the government. Most of this data by nature is relatively private. So this culture of sharing has, in a sense, already been established where individuals are used to sharing their data.

Here, in this country, you're more likely to share your data with government through services. So the purpose behind individuals sharing data with the government is very different. If we want to establish a culture of sharing data, we need to make sure that we are transparent with how we process this data, therefore encouraging this culture of sharing data.

We have over 200 nationalities living in this city. So when you think about it, we have individuals who think about data sharing from over 200 different perspectives. When we look at the majority of people here, the concept of sharing data is very interesting.

We think that people are conservative by nature and they feel obliged to share. Perhaps individuals are not aware of just how much data they share, which is why they find it unsettling (e.g. identity theft). The impact of issues related to identity theft is quite unsettling.



People would be more willing to share if:

- A law very clearly stipulated exactly how this data would be shared.
- The value proposition of this shared data was clearly communicated to them so that they know exactly how they would benefit from doing so.

One particular challenge that the Government of Dubai may face is that we form part of a larger network comprising of all the other emirates in the UAE i.e. there are many instances of individuals living in one emirate and working in another emirate. It's very good that Dubai has taken these steps to encourage data sharing, but in order to assure people, we need to have nation-wide unifying policies regarding data sharing.

It's refreshing to look at this push for data sharing from the perspective of what has motivated government to do so: improving the lives of people in Dubai and increasing their overall levels of happiness. This puts a different spin on how we deal with the issues regarding data sharing. The Government of Dubai takes its responsibility to its people beyond traditional expectations relative to many other governments around the world.

People aren't happy when data is collected or is shared. What makes them happy are the improved services and decision making outcomes that result from the government accumulating all of this data.

We also need to take into account that within this culture, a lot of people are more comfortable with face-to-face interactions.



Council Recommendations

Policy responses during the discussion tackled some of the issues that may arise as a result of data sharing:

- 1. Opt-in vs opt-out:** Other countries have not been very successful when asking individuals to opt-in to sharing their data. Australia is one example of this. Only 10% of individuals opted in to sharing their medical data. In Dubai, we should be targeting 'the other 90%' of our population. To do so, it would be advisable to adopt an opt-out model. If you don't want your data to be shared, don't completely isolate yourself from sharing all data. Pick what data you are willing to share and what you are uncomfortable with sharing.
- 2. Increasing Awareness:** We need to make use of training institutions and the media to increase awareness about what exactly sharing your data entails. This will help temper some individuals' fears.
- 3. Involving Younger Demographics:** When creating policies, we have to understand the perspectives and expectations of a new generation. These expectations will inevitably be higher. So it's important to include this younger generation when we generate new policies as they interact with data in different ways. A good way of finding skills and talent amongst these demographics is through national contests. This increases public awareness of data sharing as well as allowing us to gauge how skilled we are as a society when it comes to processing data.
- 4. Accessibility:** It is fundamental that any new policies that are drafted regarding data sharing are both clear and simple. We also need to make sure that if there are any areas of ambiguity surrounding certain aspects of these policies, citizens should have access to specific points of contact in each respective government entity who can provide proper clarification regarding any of these issues.



Participants

In order to address the complex and multifaceted issues related to Data Sharing, the MBRSG Policy Council brought together specialists from various government entities, academia, and the media to discuss relevant policy and strategy options with the context of Dubai's 'Smart City' development aims and the societal impact that such an approach will have.

| Name | Title | Entity |
|----------------------------|---|---|
| Younus Abdulaziz Al Nasser | CEO | Dubai Data Establishment |
| Abdulla Al Madani | CEO of Corporate Technical Support Services Chairperson of Dubai Open Data Committee | Dubai Roads and Transport Association (RTA) |
| Kaveh Vissali | Senior Partner Senior Advisor | neXgen Advisory Group Smart Dubai Office |
| Jihad Tayara | Vice President Business Development and Partnerships | Du |
| Majid AlMadhloum | Program Director/Center of Digital Innovation | Telecommunications Regulatory Authority |
| Dr. Shadi Abou Zeid | Professor of Decision Sciences | American University in Dubai |
| Dr. Mohammad al Redha | Director of the Health Data and Information Analysis Department | Dubai Health Authority |
| Dr. Aamena Al Shamsi | Assistant Professor of Computing and Information Science | Masdar Institute |
| Dr. Ashraf Abdelwahab | Director, Corporate Affairs | Microsoft |
| Dima Kandalaft | Public Sector & Smarter Cities Leader, Gulf & Levant | IBM General Business |
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