Human Rights and Digitization of Public Spaces in Iran

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The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines public space as "an area or place that is open and accessible to all peoples, regardless of gender, race, ethnicity, age or socio-economic level."[1] With the emergence of the Internet and other new media technologies, digital public spaces have begun to develop alongside physical ones. In the past few years, digital rights researchers who specialize in Iran have paid most attention to digital spaces such as social media platforms and online messaging forums where ideas are expressed, social and political activism takes place, and new means of livelihood have been introduced.

However, as the line between digital and traditional public spaces blur, a hybrid form of space has begun to emerge: "digitized public space." The use of data-driven technologies in public spaces such as streets, parks, shopping areas, borders — and the impacts of these technologies on the human rights of urban and rural dwellers in Iran — is the main focus of this report.

First, we will explore examples of digital development in public spaces and the impacts they have had on vulnerable and minority groups. We will then seek out a broader understanding of potential state and corporate human rights abuse through the use of surveillance and data-

...the line between digital and traditional public spaces blur, a hybrid form of space has begun to emerge: "digitized public space."

driven "smart city" technologies. This includes mapping and examining the role of national and international actors that are involved in smart city and e-government projects. The final section of this report offers recommendations for private companies, civil society actors, and journalists.

What Do We Mean by Digitization of Public Spaces?

Imagine a normal working day. It begins with a commute to your workplace: you either take your car and check the traffic with your GPS navigation apps, or hail a ride-sharing app, or use public transportation or your city's bike-sharing service. During your commute you may pass various cameras mounted on street lights, highways, or police patrol cars. You may park your car and pay for the parking using a municipal parking app, or recharge your metro card using digital kiosks.

This list could be extended considerably further: these are, indeed, just a few examples of how contemporary city-dwellers use digital public services and, in return, share personal information such as their location, names, phone number, and ID number. The service providers in question can range from municipal agencies to private companies.

Cities around the world have rushed into this vast project of using data to provide services for their residents. Often described as "smart city" projects, these efforts require extensive data collection via various sensors and internet-connected objects. They also involve sharing of data among various public and private actors with the goal of further designing, developing, and maintaining services. Specific examples of smart-city projects may

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[1] "Inclusion Through Access to Public Space," United Nations Educational, Scientific, and Cultural Organisation (UNESCO), https://bit.ly/32iZfvV

include smart traffic lights, Automated License Plate Readers (ALPRs), ride-sharing and parking apps, public wifi kiosks, smart billboards, customer service portals and chatbots in municipalities, and using drones and radars to patrol borders.

Innovation, cost and energy efficiency, sustainability, and transparency are key terms that are often heard from city officials' smart city proposals and private vendors. For instance, in response to climate change action, various technology companies partnered with municipalities to expand green technologies in urban design and traffic management. In addition, as part of their public health policies for curbing the effect of Covid-19 pandemic, governments around the world introduced several initiatives, ranging from contact-tracing apps to vaccine e-certificate and facial recognition systems to enforce lock-downs, mask-wearing mandate, and vaccine registration.[2]

On the other hand, however, if you have been following the work of privacy advocates and digital rights researchers, you have heard terms such as state-surveillance, privatization, function creep, and exclusion of public services when it comes to literature relevant to smart city initiatives. For instance, Toronto's Sidewalk project — an urban development ambitious plan carried out in collaboration between the City of Toronto and Alphabet Inc. — received major pushback by privacy and civil rights advocates, eventually resulting in cancelling the project.[3] In the United States as well, city after city have been passing surveillance

ordinances to ban the use of facial recognition technologies by law enforcement agencies.[4]

Digitization of Public Spaces in Iran

Iran is not an exception from the inherent duality of smart cities, whose technological innovations consistently manifest in ways both good and bad, harmful and helpful. In February 2021, the municipality of Tehran published a report, entitled "Smart Tehran: Localized Model." The focus of the report was on smart city technologies in transportation and traffic management, energy efficiency and sustainability, and facilitating digital customer service.[5] This was a follow up to the Sixth Five-Year Economic, Social and Cultural Development Plan of the Islamic Republic of Iran (قانون برنامه پنجساله ششم توسعه اقتصادی، اجتماعی و فرهنگی جمهوری اسلامی ایران) and The Third Five Years Development Plan for the City of Tehran (برنامه پنجساله سوم توسعه شهر تهران) which were introduced to create infrastructure, policies, and new agencies to carry out several smart city projects over the course of four years.[6] In another example, Tehran's city councilmember, Bahareh Arvin proposed the idea of the "glass city." This vision of a new digitization of urban services and contracts invoked the concept of improved transparency and openness.

Other cities followed suit. Mashhad, for instance, introduced some of the most ambitious smart city

2 Gennie Gebhart, "COVID-19 Tracking Technology Will Not Save Us," Electronic Frontier Foundation, September 3, 2020, https://bit.ly/3cR2nAV; Nicol Turner Lee, Samantha Lai, and Emily Skahil, "Vaccine Passports Underscore the necessity of U.S. privacy legislation," The Brookings Institute, June 28, 2021; "Coronavirus France: Cameras to Monitor Masks and Social Distancing," BBC, May 4, 2020, https://bbc.in/3cN9CtY

3 Moira Warburton,"Alphabet's Sidewalk Labs cancels Toronto ‹smart city' project," Reuters, May 7, 2020, https://reut.rs/3o00sTv

4 Ari Chivukula and Tyler Takemoto,"Surveillance Oversight Ordinances," Berkeley School of Law, February 2021, https://bit.ly/3FTShMv

5 "Smart Tehran: Localised Model, Third Edition, [Persian]," Secretariat and Centre for Smart Tehran, https://bit.ly/3oN-7vMh

6 "Tehran's Third Five Year Development Plan (2019-23) [Persian]," Tehran City Council, January 20, 2019, https://bit.ly/3HQ3Bed and "Iran's Sixth Five Year Social, Cultural and Economic Development Plan (2017-21)," [Persian], Islamic Republic of Iran, https://bit.ly/3nM5gcx

plans and was named the third most advanced smart city in the Middle East by the International Telecommunication Union (ITU).[7] Meanwhile, Shiraz, announced plans to roll out public wifi kiosks around the city.[8] To execute their plans, city governments partnered with start-ups, telecommunication companies, foreign consultancy firms, and universities to work on smart city projects. Some of these projects include collaboration with Tehran Municipality and Kavestan; a data mining program at Elmo San'at University;[9] a partnership between the City of Bushehr and AIT Austrian Institute Of Technology consultancy group;[10] and contracts between ISP groups such as Hamrahe Avval and MTN-Irancell with several cities.

The users noticed that the app requires them to select their (binary) gender during the registration process.

However, in Iran, where the excessive state-forced localization plans of the Internet have been the main source of digital rights advocates' concerns,[11] the term "localized smart city" may well provoke similar questions around surveillance, restriction of liberty and freedom, and violation of privacy and other human rights. But who are the public and private actors involved in these concerns, and what are their responsibilities?

Example #1: Gender-based Discrimination and Digitization of Public Space

In 2019, social media users raised concerns about Bidood, a bike riding app. The users noticed that the app requires them to select their (binary) gender during the registration process. However, when users selected "female," they found that the app would give them an error.[12] The company later resolved the issue, restoring access to female users.[13]

A striking fact of this incident, however, is that Bidood did not clearly explain the reason for the error. Was this a technical design glitch? Or, by contrast, was it a conscious choice to enforce a gender segregation policy? In another incident in 2021, the civil society organization Harrasswatch tweeted that in the city of Mashhad, female bikers had received a message on their biking app alerting them that they can only bike in female-only parks and not in other public spaces.[14] This incident was also resolved by app makers. As in the Bidood case, however, the reason for this warning was never made clear.

Whether or not these issues were benign technical mistakes or an intentional effort to enforce gender segregation policy, the damage had been done, and the signal was clear. Women could be arbitrarily excluded from access to certain public services. Of course, this was by no means a new realization. But

7 "Mashhad, Iran's First Smart City by International Metrics [Persian]," Iranian Students News Agency, May 31, 2021, https://bit.ly/3CNHlOe

8 "Realization of Part of the Goals of Smart Shiraz by 2021/ Free WiFi for the People of Shiraz," [Persian], Iranian Student News Agency, November 7, 2020, https://bit.ly/3FFzkwF

9 "The Importance of Data Governance Enroute to a Smart Tehran," [Persian], ICT Organisation for Tehran City Council, December 31, 2019, https://bit.ly/3nJtNPN

10 "Introducing the Bushehr Smart City Project [Persian]," Iran Smart Cities Centre of Excellence, January 31, 2021, https://bit.ly/3xlDRkW

11 "Freedom on the Net Report - Iran" Freedom House, September 2021, https://bit.ly/3nDGXxB

12 BBC Persian (@bbcpersian), "Social media reports of limiting women's use of Bidood's smart bikes in Tehran [Persian]," Twitter, August 19, 2019, 7:27pm., https://bit.ly/30OiMn6

13 Nikoukar, Amin,"Women's Cycling: Hopes and Fears [Persian]," Hamestan, August 21, 2019, https://bit.ly/3DWWoqx

14 Harasswarch (@Harasswatch), "Screenshots from a Bike Sharing app showing women only being able to use bikes in women-only spaces [Persian]," Twitter, July 26, 2021,5.09 pm., https://bit.ly/3cN5mdD

this time, what was new was that digital platforms had become a medium to enforce these segregation policies and to draw gender boundaries.

It would not be cynical to see these repeated problems as a manifestation of a larger pattern of controlling women's movements in Iran, rather than as haphazard errors. After all, controlling women's participation in public space has been among the core goals of the Islamic Republic's social and political ideology since its inception. In her book Women in Place: The Politics of Gender Segregation in Iran, Nazanin Shahrokni walks us through the policies of gender-segregation in public spaces. These spaces include city buses where the women's section is separated from the men's section, women-only parks (the "Mothers' Paradise"), and soccer stadiums where women have been barred from entry. Although not overtly ideological, Shahrokni discusses how gender segregation policies have always existed in Iran. She frames these policies as a product of a complex web of "state-sanctioned Islamism"; ongoing debates about women's rights and family protection; and capitalism. [15]

In addition to gender-based segregation, digitization of public space has also furthered the state's compulsory hijab policy. In 1398, social media users raised concerns about receiving SMS messages from the Islamic Republic of Iran Law Enforcement Force (NAJA) about not wearing proper hijab in their cars. Later, the Islamic Republic of Iran Law Enforcement Force's chief said that vehicles which violate this law were identified through access to cameras and the use

...to control the spread of Covid-19, authorities in Tehran mandated the use of national ID numbers to purchase subway cards from digital kiosks.

of monitoring by officers. However, there were also many false alarms. Anecdotal reports indicated that the cameras were reporting men with long hair as women with no hijab. NAJA's spokesperson, Ahmad Nourian, admitted that the police had been using this program under an initiative called the "Monitoring Plan" (طـرح ناظـر). [16]

Public cameras and License Plate Readers were, of course, originally designed for transportation-oriented goals such as enforcing "even and odd" license plate policies,[17] and speed limits. Given the Islamic Republic's record in stationing "morality police" to control people's appearances (e.g. hijab, make up) in public spaces,[18] it is not surprising that these technologies were repurposed for other reasons such as monitoring and enforcing compulsory hijab. Surveillance studies scholars call this "function creep": developing a technology for one purpose and later repurposing it for another. Although the degree of enforcement was never clear,[19] using traffic management cameras for enforcing Covid-19 lockdowns (such as by monitoring commutes and the wearing of masks) are examples of such function creep. [20]

16 "Explaining Police Plans for Combatting Lack of Hijab in Cars [Persian]," Tabnak World, June 19, 2019, https://bit.ly/3r0Lw7h

17 A traffic management method which restricts driving in most crowded areas to cars with license plate numbers ending with an odd number to odd days of weeks (Sunday, Tuesday, Thursday), and cars with license plate numbers ending with an even number to even days of weeks (Saturday, Monday, Wednesday).

18 "Iran: Abusive Forced Veiling Laws Police Women's Lives," Amnesty International, May 28, 2019, https://bit.ly/3HFJejX

19 Azadeh Akbari, "Authoritarian Surveillance: A Corona Test," Surveillance & Society 19(1): 98-103, https://bit.ly/3HMrpQ9

20 Farzaneh Piri, "Use of Traffic Management Cameras for to Monitor COVID-19 Travel Rules in Tehran [Persian]," Islamic Republic News Agency, November 23, 2020, https://bit.ly/3CThIRE; "Mask Rule Fines and Measures to Identify Rule Breakers Announced [Persian]," BBC Persian, October 11, 2020, https://bbc.in/3oWkpYm; Amir Rashidi (@Ammir), "Use of facial recognition technology to fine those not wearing a mask is highly dangerous and is a privacy breach [Persian]," Twitter, October 10, 2020, 12.56Pm., https://bit.ly/3FLrim8

15 Shahrokni, Nazanin, "Women in Place: The Politics of Gender Segregation in Iran [Persian]," University of California Press, 2019; https://bit.ly/3oQzBq0; https://bit.ly/3nJDIKA
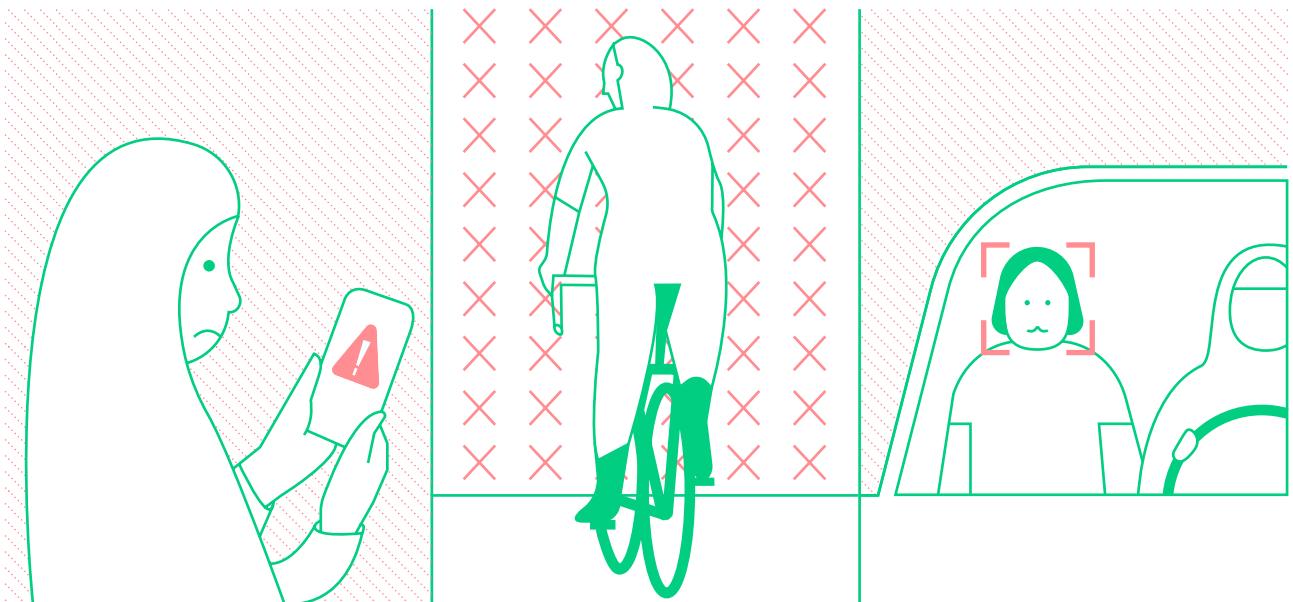
Image 1 A woman downloading a biking app and going through hassle for selecting gender


**Image 2** Biking and getting an error message for restricted areas

Image 3 Police camera and SMS for hijab, a man sitting in passenger seat with long hair

The above mentioned examples show the need for further interdisciplinary research about the role that digitization plays in women's participation in public spaces.

Example #2: Refugees and Migrants: Surveillance, Control, and Exclusion

In 2021, in order to control the spread of Covid-19, authorities in Tehran mandated the use of national ID numbers to purchase subway cards from digital kiosks. As a result, Afghan refugees were unable to purchase cards because they either did not have formal documentation or their ID did not have a number that was compatible with the digital kiosks.[21] In another incident on Instagram, an actress in Iran (who is of Afghan background) informed Azari Jahromi, Iran's ICT minister at the time, that her mother had not been able to buy a SIM card because of a lack of valid identification documents. Her Instagram post became the catalyst for many Afghans in Iran to share similar stories on Twitter under the hashtag #من-مهاجـرم ("I'm an immigrant").[22]

In recent years, the Iranian government has started to roll out smart ID cards and identity verification systems. The initiatives often rely on collecting biometric information, such as fingerprints and applicants' photos, in order to cross-reference that information with the applicant's national ID or official documentation number. Smart ID cards and the accompanying identity verification system were launched for various purposes: providing a form of documentation for Afghan refugees in Iran (the "Amayesh" card),[23] providing proof of military

21 "Plan for Using National ID for Charging Metro Cards/New Challenges for Immigrants in Tehran [Persian]," Afghan Voice News, February 11, 2021, https://bit.ly/3nJM2Ve

22 Abddulwahed Heidari, "Petition to Solve Afghan Migrant's Issues in Iran Gains 5,000 Signatures [Persian]," Etilaat Roz, November 22, 2020, https://bit.ly/3DNcfYj

23 "Afghan Nationals to Refer to Sponsorship Office for Appointments [Persian]," Iran's Office for Immigrants and Foreing Nationals, https://bit.ly/3ORqAV2

service,[24] and distributing the interests from government stock (Edalat) via a machine learning-enabled facial verification system called Sajam.[25]

Digital rights researchers have repeatedly raised concerns about the use of digital ID systems for access to public services and public spaces. In particular, researchers in technology and surveillance studies have pinpointed human rights abuse resulting from the use of the Digital ID system. These abuses include creating openings for excessive state surveillance, privacy violations, and the exclusion of vulnerable societal groups (e.g. refugees and migrants, religious, gender, and sexual minorities) from access to adequate standard of living and public services.[26] Furthermore, in June of 2021, Human Rights Watch published a report revealing that The United Nations High Commissioner for Refugees (UNHCR) shared the names and biometric information of Rohingya refugees — without their informed consent — with the Bangladeshi government, who later shared this information with the Myanmar government for repatriation purposes, a practice that appears to violate UNHCR's policy on protecting personal data.[27]

The Iranian government has also rolled out their biometric-based documentation system for Afghan refugees and their families (Amayesh Card). There is not enough information available about the extent of data sharing practices between UNHCR and the Iranian government, nor does there exist any information about integrating the Amayesh card database with the UNHCR Biometric Identity Management System (BIMS).[28] With the Taliban taking over in Afghanistan, the possibility of a centralized biometric digital ID system, and the sharing of data between the Iranian government and Taliban has become a new source of concern among human rights and womens' rights advocates. In addition to this concern, many Afghans in Iran still lack official documentation, but are still able to use public spaces and services that are not digitized. As a result of the massive digitization of services that constantly monitor people's mobility, this pre-existing, limited access to public services is also in danger.

From a historical perspective, Afghan refugees have been repeatedly faced with unjust treatment and exclusion from public services. A lack of documentation for children who were born to Iranian mothers and Afghan fathers, health insurance and public education services, and most recently the inability of Afghan students to register on the e-learning platform Shaad are some relevant examples.[29] Given this historical and systemic discrimination, it is apparent that using technolgies only exacerbates a pre-existing situation by constant monitoring and via integration with digital ID systems. At least before digitization efforts, undocumented individuals had access to public spaces without a fear of monitoring and exclusion. Now the opposite is true.

Finally, the digitization of borders (such as rolling out a centralized ID system for controlling import

24 "Opportunity to Smarten Old Military Service Exemption and Completion Cards [Persian]," Mehr News, January 21, 2020, https://bit.ly/3rmceY6; "Exchange and Issue of Military Service Exemption and Completion Cards Application Form [Persian]," Interests Section of the Islamic Republic of Iran, https://bit.ly/2ZAYvkP

25 Sajam Bio-ID's Website [Persian]: https://bit.ly/3r6JsdP

26 "Understanding the Lived Effects of Digital ID - A Multi Country Study," The Engine Room, January 2020, https://bit.ly/3FFQDO7

27 "UN Shared Rohingya Data Without Informed Consent," Human Rights Watch, June 15, 2021, https://bit.ly/3l4JHIR

28 "Notice on Registration for Part 16 of the Amayesh Programme [Persian]," UNHCR, July 18, 2021, https://bit.ly/3xhckkF

29 Melody Kazemi, "Policy Monitor - April 2020," Filterwatch, May 14, 2020, https://bit.ly/3DN3Eoy; "Unwelcome Guests: Iran's Violation of Afghan Refugee and Migrant Rights," Human Rights Watch, November 20, 2013, https://bit.ly/30SceDQ
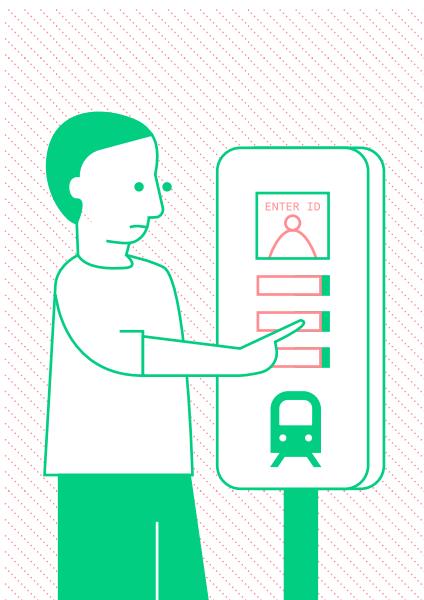
Image 1 An Afghan refugee trying to buy a subway ticket
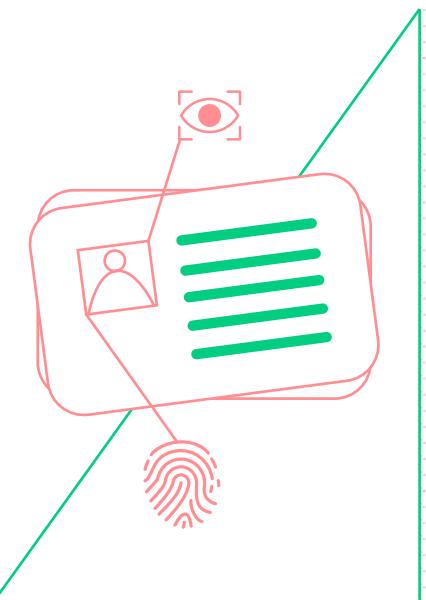
Image 2 Digital ID system and its potential repatriation impacts/concern
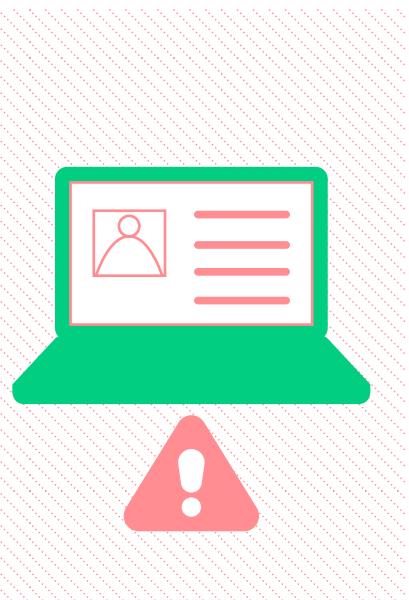
Image 3 online learning platforms and exclusion

and export in border cities) are among other technologies with implications for human rights and livelihoods of refugees, migrants, and people living in border provinces.

Example #3: Public-Private Partnerships: Data Collection and Data Sharing Practices

In October 2021, Deutsche Welle (DW) published an article stating that during the past two to three years, 2.5 million reports were submitted on Tehran municipality's 137 platform. Each of these reports related to issues surrounding the use of child labor in garbage collection in Tehran.[30] 137 is a three-digit phone number provided by the Tehran municipality office for facilitating public relations and customer services. During the past few years, as part of the Smart Tehran initiative, 137 has become a built-in feature within the "My Tehran" mobile app. Using the app, Tehranis are able to submit a ticket in a form of written or audio complaint, and report anything from missed garbage collections and neglected asphalt paving in their neighborhood, to illegal street hawking, and child labor issues. Within the app, the users have the option to pin and send the exact location of an incident in addition to attaching images and videos of the scene.[31]

Mohammad Farjood, the CEO of Tehran's Municipality ICT Organization and the head of the Smart Tehran initiative, as well as Bahareh Arvin, a former Tehran City Council member, have repeatedly promoted the service and praised it as an innovative step toward more efficient and transparent management of the city. To further utilize the service, the municipality has provided an Application Programming Interface (API) that gives access to other government agencies and private sector technology companies who want to develop

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30 "Garbage Collection Work by Thousands of Children and Teenagers in Tehran [Persian]," Deutsche Welle, 31 October, 2021, https://bit.ly/3r21WMB

31 Maasoumeh Aghaamini, "Registering Messages with Photo and Location via 137 platforms's 'My Tehran' app" [Persian]," Islamic Republic News Agency, September 3, 2020, https://bit.ly/3COA2WJ

web/mobile apps using 137 complaints as data points. In her tweet, Bahareh Arvin also mentioned that anyone can access Excel-based "raw data" from 137 by downloading it from a municipality website: shafaf.tehran.ir.[32]

The above-mentioned DW article about child labor and garbage collection features a quote from Tehran's Deputy Minister of Social Affairs and Crime Prevention. This statement reveals officials' interest in establishing an "Identification team" within the State Welfare agency to identify and manage children workers – an alarming interest that can be facilitated by access to 137 data including images and videos. Besides concerns about surveillance, invasion of privacy, false reporting, and retaliation there are other concerns with this approach: back in 2017, a group of 300 children rights advocates, social workers, academics, and journalists, wrote a letter to Tehran's then Mayor, City Council, and the State Welfare agency raising concerns about their short-sighted "identification" solutions in response to addressing child labour issues. In their letter they emphasized that such crackdowns only remove the already marginalized and vulnerable population from the public eye. It is not only that such practices typically fail to improve the social situation and lives of poor people — especially children. These approaches also lead to further harm and loss of trust in agencies who can invest their resources more effectively and in a more sustainable manner instead of wasting those resources on furthering unjust discrimination. [33]

137 platform and its API is not the only service offered as part of the ambitious Smart Tehran initiative. Currently there have been more than 50 APIs and numerous datasets available on the official municipality websites. According to the city officials, these services intend to make it easier for residents to undertake day-to-day activities, such as quickly paying bills, checking public transportation schedules and rates, receiving updates on live traffic status, and many more functionalities using geo-spatially based, real-time information. APIs are also meant to facilitate public-private partnerships and streamline data sharing practices between municipalities and various government agencies.

However, from a digital rights standpoint, concerns have been raised about the growing interest by city officials around the world in providing such APIs, as well as requiring private service providers (such as ride-sharing companies, navigation services, e-payment, identity verification) to grant city authorities with access to users' data via access to provider-side APIs. In a recent example, a US-based digital rights group, Electronic Frontier Foundation (EFF), expressed objections to the Los Angeles Department of Transportation's demand from bicycle and scooter riding companies to facilitate access to granular trip data by giving access to provider-side API.[34] In Iran, likewise, users called out the Tehran municipality's ambiguous data sharing practices with third parties. In one example, the lack of informed consent and haphazard public-private partnerships resulted in users complaining about their phone number and vehicle numbers being shared with "spammers" when they received

32 Bahare Arvin (@ArvinBahare), "raw data from the 137 platform can be downloaded online [Persian]," Twitter, September 5, 2020, 5.30PM., https://bit.ly/3oW2HEg. When we tried to open the excel file, we realized that the website is not accessible from non-Iran IP addresses. We eventually got access to the website, however to look up the document, we had to make a username/password. We decided not to provide our information to create an account on Tehran's http://api.tehran.ir/ and http://shafaf.tehran.ir/

33 "Understanding the Lived Effects of Digital ID - A Multi Country Study," The Engine Room, January 2020, https://bit.ly/3FFQDO7

34 Nathan Sheard,"The Los Angeles Department of Transportation's Ride Tracking Pilot is Out of Control," Electronic Frontier Foundation, April 9, 2019, https://bit.ly/3nLXNu0
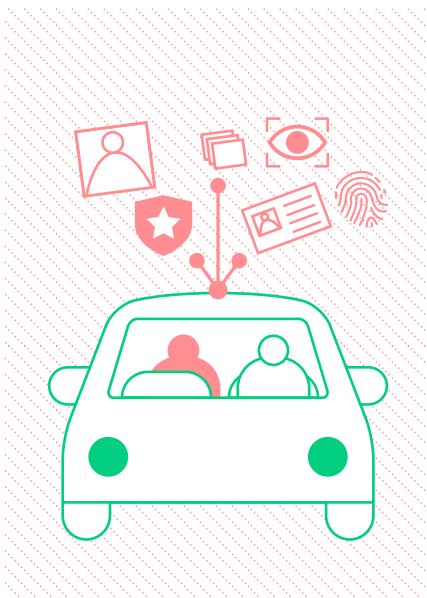
**Image 1** Ride sharing company working with law enforcement and municipalities
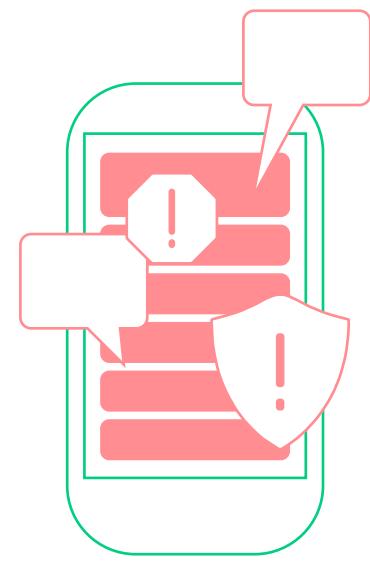
Image 2 Selling/sharing data with spammers without permission (ibid 35)
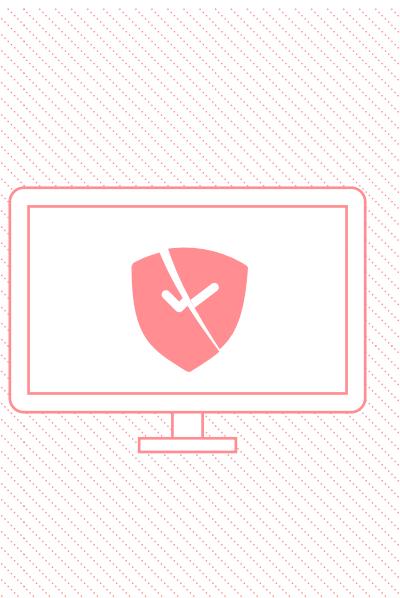
Image 3 APIs security issue and data leak

an advertising SMS from a carwash service.[35] In Iran, where there are no practical laws or accountability mechanisms to prevent authorities from excessive control on the private sector, concerns around these types of public-private data collection and data sharing practices are extremely alarming from a human rights, and civil liberties perspective.[36]

As researchers based outside of Iran, it is important to note that despite boasting about openness, Tehran municipality's websites that host public data and APIs are only accessible with Iran's IP addresses — meaning Iranian researchers or developers living outside the country are not able to openly access those portals.

35 Hessam Maghsoudloo (@maghsoudloo), "user complains to Tehran' ICT Organisation's smart city planner about their personal information being shared with 'spammers' [Persian]" Twitter, February 28, 2021, 6.57PM., https://bit.ly/3xhX1lo

36 "Improved Navigation Following Collaboration Between Balad Maps and Tehran City Council [Persian]," Kahkeshan Blog, https://bit.ly/3E1242N

Example #4: Non-Iranian Companies and Smart City Development

The above-mentioned examples showed a few projects of digitization of public spaces in Iran. In those examples, Iranian private and public agencies, including municipalities and homegrown technology start-ups, are the main bodies that are involved in designing, developing, and deploying those technologies. In this section, we seek to understand the extent of "foreign" companies and governments' involvement in developing smart city infrastructure in Iran.

A simple search on the Internet on the topic of "smart city in the Global South," or more particularly in Middle Eastern, North African, and Eurasian countries, yields numerous articles about the involvement of multinational companies and/or "foreign" governments in those regions' smart city or safe city projects. For instance, to fulfill China's Belt and Road Initiatives (BRI) — perceived as a "Digital Silk Road" involving an ambitious plan

to connect Asia with Africa and Europe with the aim of increasing infrastructure connectivity, trade, and economic growth[37] — Chinese state-linked companies such as Huwawei, ZTE, and Hikvision have been providing telecommunication, surveillance and profiling technologies to Iran's neighbors such as Armenia, Azerbaijan, and Turkey.[38] In addition to Chinese companies, government agencies and state-linked technology companies in the Gulf region have entered into relationships with Western technology companies such as IBM, Cisco, and Mastercard. [39]

Over the course of developing this report, however — with a few exceptions — we haven't encountered much concrete evidence which reveals a significant involvement of non-Iranian companies or countries in smart city developments in Iran. MTN-Irancell, one of the largest mobile telecommunication companies in Iran, is an exception. MTN's sustainability reports mention the company's ongoing smart city projects such as smart parking solutions, smart street lighting, and NFC-enabled payments for services in cities such as Tehran, Mashhad, and Bandar Anzali.[40] MTN-Irancell is a joint partnership between a South African multinational company, MTN Group, which

...security forces in provinces such as Alborz, Bushehr, Kerman, and Khoozestan, started sending SMS messages to protesters warning that their participation in "illegal protests" would have legal consequences.

holds 49% of shares, and Kowsar Sign Paniz (KSP), a state-linked Iranian group holding a 51% stake. In August 2020, MTN Group announced its non-immediate plan to exit Iran.[41] Another exception is the collaboration between the City of Bushehr and the Austrian Institute Of Technology (AIT), which provides consultancy services to support the city's planning of smart city projects.[42]

Despite the desired collaboration between Iran and China, such as the leaked 2020 draft agreement entitled "Iran-China 25-Year Cooperation Program" which outlines China's interest in investment in 5G and smart and artificial intelligence based technologies, there are still those who speculate about the feasibility of implementing these plans.[43] This might be perhaps due to the ongoing isolation and technological sanctions against Iran where even geo-political allies of Iran such as China and Russia are reluctant to engage in technological partnerships.[44] For instance, in December 2021, IPVM a surveillance research group—reported on a contract between Tiandy, a Chinese video surveillance company, and the Iranian Revolutionary Guard Corps (IRGC), police, and the military.

37 "China's Belt and Road Initiative in the Global Trade, Investment and Finance Landscape," OECD, 2018, https://bit.ly/3CS

38 "Success Stories - Huawei," Presidency of the Republic of Turkey Investment Office, https://bit.ly/3CSC8Vj; Erica Mart, "Chinese Artificial Intelligence Projects Expand in Eurasian Cities," PONARS Eurasia, September 14, 2018, https://bit.ly/3FJ2vPr

39 "Smart Dubai and IBM to Offer the First Government-Endorsed Blockchain Platform in the Middle East," IBM, October 19, 2018, https://ibm.co/3DQDvVU; "STC Solutions and Cisco Meraki to Work Together to Drive Saudi Vision 2030 for Digital Transformation," Cisco, November 12, 2018, https://bit.ly/3I5qh0f; "Seamless, Secure, Human: Building Cities for the Future," Mastercard, March 2021, https://mstr.cd/3nLKf1D

40 "Sustainability Report for the Year Ended 31 December 2019," MTN Group, https://bit.ly/3DOsB2V

41 "MTN Group and MTN Irancell Confirm That There are No Plans for an Imminent Exit by the Group," MTN Group, August 10, 2020, https://bit.ly/2Zkqd5d

42 "Introducing the Bushehr Smart City Project [Persian]," Iran Smart Cities Centre of Excellence, January 31, 2021, https://bit.ly/3xlDRkW

43 Kaveh Azarhoosh,"The Iran-China Partnership: A Bad Deal for Citizens and Tech Companies," Filterwatch, November 13, 2020, https://bit.ly/3nzrVGp

44 David E. Sanger, Katie Benner, and Matthew Goldstein. "Huawei and Top Executives Face Criminal Charges in the U.S.," *The New York Times*, January 29, 2019, sec. U.S., https://nyti.ms/3FKIO9W

However, by scrutinizing Tiandy's technologies' supply chains, the article raised questions about the implications of the US sanctions and whether they can be applied to block such relationships or not.[45]

The Main Concerns around Digitization of Public Spaces in Iran

We used the previous case studies to provide context about how some of these technologies are used. Below we examine some of the main concerns with regard to these technologies.

Privacy, Surveillance and Interoperability

Perhaps the most significant concern arising from the excessive use of data-driven technologies relates to the violation of privacy. Of particular concern for privacy advocates is a lack of transparency regarding the limits of data collection and data sharing practices. Because the Islamic Republic currently lacks any comprehensive data protection law, the issue of digital privacy is especially concerning in the context of Iran.

One clear first step for rectifying this situation would be the introduction of a comprehensive data protection framework. It is, however, important to note that even the current models of data protection frameworks, such as General Data Protection Regulation (EU GDPR) and California Consumer Privacy Act (CCPA), fall short when it comes to issues surrounding the digitization of

Most smart city technologies — especially in relation to transportation and traffic management systems — rely on enabling GPS navigation apps. Some of these apps collect and store location data and every movement of users even when the app is not even actively used.

public spaces.[46] The reason is that most data protection frameworks are individual user-based and consent-based. In other words, the assumption is that a user of a certain service should provide consent for collecting their data; filing a complaint; activating or deactivating cookies; or requesting the past data associated with their account. Crucially, this scenario is impossible in situations where individuals in public spaces have no knowledge of, and therefore can make no informed choices about, the extent of monitoring and data collection (e.g. in the case of public cameras). Nor do they have alternatives (e.g. in the case of purchasing metro cards with their ID, which is tied to their national ID number). Thus, any consent-based data protection laws do not necessarily guarantee full protection — although it is still a much-needed first step that is currently lacking in Iran's legal system.

The other concern involves the massive potential control that government agencies have over private sector companies when it comes to access to information. Despite ongoing debates about data governance and data privacy, the municipalities and the Iran Parliament has not yet come up with a law or enforcement mechanism to put limits on data collection, or to curb excessive requests to access users' information from private companies. Nevertheless, many such projects are now either in their pilot phases, or are being actively rolled out.

Most smart city technologies — especially in relation to transportation and traffic management systems — rely on enabling GPS navigation apps.

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45 Tate Ryan-Mosley, "This huge Chinese company is selling video surveillance systems to Iran," MIT Technology Review, December 15, 2021, https://bit.ly/33ECIuh

46 Tate Ryan-Mosley, "This huge Chinese company is selling video surveillance systems to Iran," MIT Technology Review, December 15, 2021, https://bit.ly/33ECIuh

Some of these apps collect and store location data and every movement of users even when the app is not even actively used. Similar to many other countries, "techno-solutionism" (a term that refers to proposing technical and often slap-dash solutions to a complex social issues without fully considering the context behind the issue, privacy implications, longer-term human rights impacts, and alternative non-technical and formerly-tested solutions) also exists in the language of Iranian authorities whenever they boast about their ideas, or the achievements of smart city projects.

There is one overarching concern that manifests across all of the other concerns that we have mentioned above: interoperability. The term "interoperability" often holds a positive meaning. After all, interoperability and standardization are the main enablers of seamless information-sharing in the digital age. However, surveillance scholars have raised concerns about the interoperability of data management platforms, within and between various government agencies and private companies.[47] As described above, Mohammad Farjood (the CEO at Tehran ICT Organization and the Head of Smart Tehran) has repeatedly emphasized the importance of developing policies and technical methods for seamless data sharing across various government agencies and with private companies. While project after project is proposed and partially implemented, as of today, "Privacy by design" principles such as the decentralization of data sources, or the de-identification and minimization of data have not yet made their way into smart city planning.

Inclusion vs Exclusion: Economic, Social, Cultural Rights

The UN Sustainable Development Goal (SDG) Target 16.9 calls on all governments to provide legal identity for all by 2030.[48] As a result, many governments around the world have begun developing centralized digital ID systems which often rely on collecting biometrics information. From the perspective of protecting social and economic rights, this creates a dilemma of inclusion versus exclusion. This is especially true for the most marginalized groups including refugees, religious and ethnic minorities, gender and sexual minorities, and people with lower digital literacy (often the elderly and people with less privileged socio-economic status).

On the one hand, exclusion from data-driven services, which require the provision of digital ID, prevent marginalized groups from enjoying their socio-economic rights, such as accessing public spaces, financial services, public education, and more. On the other hand, digital inclusion may also invite greater government surveillance. This can open the door to other types of human rights violations, including arbitrary detention, deportation, and violations of the right to liberty and freedom of movement.

For instance, in a registration form for digital national IDs, Iranians were asked to select their religion from a provided category of religions. Baha'ism — or an option such as "other"— was not listed in a category. As a result, Iranians belonging to the Baha'i faith had to either lie or decide not to receive a new electronic national ID card.

47 "Who is behind ICE? The Tech and Data Companies Fueling Deportations," Mijnete, the National Immigration Project, the Immigrant Defense Project, 2018, https://bit.ly/3r6aLVD

48 "UN Sustainable Development Goal (SDG) Target 16.9," United Nations, https://sdgs.un.org/goals/goal16

The latter option would deprive them from access to many day-to-day activities such as banking services.[49]

The Rights to Protest, Freedom of Peaceful Assembly and of Association

Digital rights advocates have repeatedly raised concerns about the chilling effect of collecting location data on enjoying the right to freedom of movement, and consequently on the rights to protest, freedom of peaceful assembly and of association.[50] Law enforcement's use of social media monitoring methods such as scraping and/or using social media platforms' APIs (which may lead to finding the exact location of a protest or identification of protesters) has become a common concern for activists and organizers.[51] Similar concerns apply to the massive collection of location data and digitization of public spaces in Iran. The problem has been furthered by the Iranian government's stifling of the right to protest by exerting control over information flows and communication technologies in specific provinces and cities.

The sending of direct SMS messages to protesters is one important example. In November 2019, to crush protests sparked by a sudden increase in gas prices, the government enacted a nationwide Internet shutdown. In addition, security forces in provinces such as Alborz, Bushehr, Kerman, and Khoozestan, started sending SMS messages to protesters warning that their participation in "illegal protests" would have legal consequences. [52]

Furthermore, localized Internet shutdowns and slowdowns, as well as cutting off mobile data in provinces, number among the other related methods used by authorities to violate the right to protest and freedom of peaceful assembly and of association.[53]

Privatization and Lack of Accountability

In practice, Iran's Information and Communication Technologies (ICT) industry is either state-owned, state-linked, or heavily controlled. Therefore, In Iran, concerns around privatization, commercialization, commodification of data by private technology companies (what are framed as "surveillance capitalism" and "the surveillance industrial complex"[54]) often receive less attention and scrutiny compared to issues such as excessive government surveillance and control on the free and open Internet.

However, recent years have witnessed mounting evidence of the use of smart technologies in public spaces and shopping malls for advertising purposes. For instance, a company called Billimob provides smart billboards mounted in public spaces in Iran. According to its website, these smart billboards collect numerous sources of information such as the numbers of pedestrians and vehicles, pedestrians' estimated age and perceived

49 "Islamic Republic of Iran Prevents Unofficial Religious Minorities from Receiving National ID Cards [Persian]," Center for Human Rights in Iran, January 27, 2020, https://bit.ly/2NuvCAo

50 Tina Kempin Reuter, "Smart City Visions and Human Rights: Do They Go Together," Harvard Kennedy School Carr Center Human Rights and Technology, 2020, https://bit.ly/3HPijlw

51 "How Social Media Monitoring Can be Used at a Protest," Privacy International, May 6, 2021, https://bit.ly/3nN9C3n

52 "Threatening Text Messages Sent to Fuel Price Protesters [Persian]," Radio Farda, November 16, 2019, https://bit.ly/3CPrZZM

53 Amir Rashidi, "Network Monitor - June 2021," Filterwatch, July 15, 2021, https://bit.ly/3rfQI5p

54 Surveillance capitalism can be defined as a business model that relies on commodification of personal data. Read more: https://bit.ly/3xlk3yn; The Surveillance Industrial Complex can be defined as surveilling society through an intertwined relationship between government and private companies where private companies benefit from increasing surveillance. Read more: Ball, Kirstie, and Laureen Snider, eds. The surveillance-industrial complex: A political economy of surveillance. Routledge, 2013.,

gender in order to provide better information for businesses who are interested in advertising their products and services on those billboards.[55] The lack of data privacy and security practices, in short, yields significant concerns regarding data leaks, and the hacking and selling of public data. The sharing of information with law enforcement, the judiciary, and other government agencies by these companies (with minimal pushback against government requests) is not inconceivable.

Legal Landscape

Iran operates under a multi-level system of government as set out by its constitution.The highest level of authority rests with the office of unelected Supreme Leader, while at the national level, the central government deals with the country's governance. The central government is made up of the President, the Majles (parliament), and the Judiciary.

At the regional level, there are two types of government which deal with subnational administration. The first is the "public governmental sector" (Persian: نهـاد عمومـی دولتـی) which is made up of the provincial local government, with its officials selected by the central government. This is supervised by the Management and Planning Organisation (MPO), the Interior Ministry, and the Ministry of Housing and Urban Development (MHUD).[56] Line ministry services are also organised through provincial governments. Cities are managed under the second type of regional government referred to as the "public non-governmental sector" (Persian: نهـاد عمومـی غیردولتـی) which includes

rural and urban municipal local governments. Cities have their own elected city councils as well as their own municipal laws and regulations.[57]

Since 1988 Iran has been strategizing economic, political, and cultural reform and development through the introduction of Five-Year Development Plans. These plans have a particular focus on urban and infrastructural development, financial management and economic reform. The promotion of digital and IoT infrastructure and e-government services has been mentioned throughout these plans. The current Sixth Five-Year Development Plan (2016/17 - 2020/21) prioritises the digitization of services, collaboration with the private sector, and the expansion of ICT infrastructure, details of which are explored below. Alongside the national plans, we will also examine the detailed development plans proposed by city councils at the forefront of Iran's 'Smart City' drive.

Much of the execution of these programmes rests with the ICT Ministry at the national level, and with municipal ICT organisations at local levels. We will therefore also set out how ICT policy creation is led in Iran via the Supreme Council for Cyberspace (SCC), which receives its mandate directly from the country's Supreme Leader. We will explore its work around planning and implementation of the country's multi-layered localised internet project, the National Information Network (NIN), which encompasses almost all areas of Iranian internet policy, and which also poses a grave threat to Iranians' online freedoms.

Despite extensive planning around infrastastructure developments and policy setting for Iran's internet, there are only a limited number of laws relating to online activities in

55 Billiemob's Website [Persian], https://billimob.com/

56 Mehmet Serkan Tosun and Serdar Yilmaz. "Centralization, Decentralization and Conflict in the Middle East and North Africa," World Bank, October 2018, https://bit.ly/3r3ETkr

57 *Ibid.*
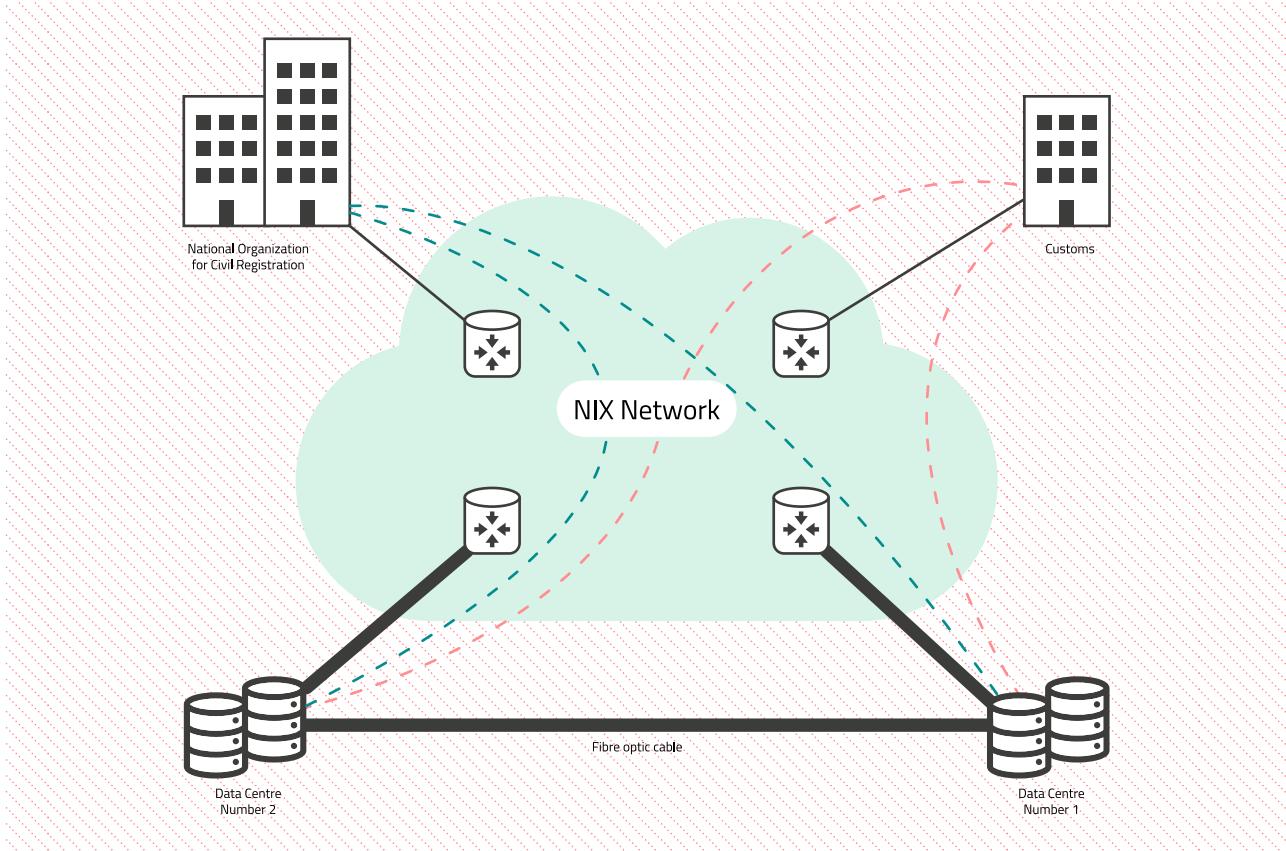
Diagram taken from Iran's Information Technology Organization (ITO) showing how government ministries and organizations are connected via the National Information Exchange Centre (NIX).

place, leaving major gaps when it comes to user and data protection, privacy, online security, and intermediary responsibility. Ironically, even the few existing and proposed laws have become means to further erode Internet freedom in Iran. For instance, in recent months the "User Protection and Core Online Services" bill has been making progress through the Majles, which, despite its claims of introducing "user protection", threatens to further downgrade digital rights in Iran.[58] Though the bill has not yet passed into law, should it do so, it will become the first piece of dedicated internet-related legislation since the "Computer Crimes Law" passed in 2009/10.

Iran's Five Year National Economic, Political, and Cultural Development Plans

Iran's Sixth Five-Year Economic, Cultural, and Social Development Plan (2016/17- 2020/21) – which is currently in place – has focused on building a "resilient economy", improvements in science and technology, as well as promoting "cultural excellence."[59]

Under Section 13 of the Plan (which is dedicated to the ICT Ministry's agenda), reference is made to data sharing between government bodies, with a focus on the expansion of e-government

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58 ""Iran's Sixth Five Year Social, Cultural and Economic Development Plan (2017-21) [Persian]", Islamic Republic of Iran Parliament, https://bit.ly/3nM5gc

59 "Country Overview - Iran," World Bank, Last Updated March 30, 2021, https://bit.ly/3xl2zSx

services. Executive government bodies are obliged to provide as many electronic services as possible, and develop relevant online databases. They are also encouraged to seek private sector participation as part of the process. However, data protection measures — particularly any regulations relating to the sharing of sensitive and personal information — are not set out within the plan.

In terms of information exchange, the Plan also calls for all executive bodies to provide an option for the electronic exchange of information with other executive bodies free of charge, in accordance with their responsibilities, and "within the framework of applicable laws and regulations." A standardised system of information exchange is to be created between agencies, with its infrastructure to be provided by the ICT Ministry, via the National Information Network (NIN) – and solely through the National Information Exchange Center (NIX), which was set out in the Fifth Development Plan. The bylaws for standardised information exchange between executive bodies were approved by an SCC resolution in 2018.

Despite the fact that the sixth Development Plan is due to come to an end in a few months, the true scope of its progress remains unclear.

Zooming in: City Councils and Local Planning

City councils are able to approve local legislation relating to planning and services within urban and public spaces, public safety, public health, and management, though largely in line with national and provincial programmes and priorities. Below we examine local development laws relating to digitization in some of Iran's largest cities which have engaged in 'Smart City' policy programmes.[60] Notably, these plans include references to data gathering in public spaces, the expansion of digital and online services for "smart citizens". Notably, almost no reference is made to the privacy, security, and surveillance challenges that may arise as a result of these systems' deployment. Additionally, central government bodies retain a great degree of control over city and provincial plans, meaning that local authorities have limited authority to truly determine their own plans.

Tehran's Five Year Plan (2019 - 2023) makes references to Smart City development and investment throughout. There is an emphasis on the expansion of IoT public infrastructure, including the reduction of costs through attracting private sector investment and collaboration. However, the scope of engagement with the private sector, and the process for engaging their services is unclear.[61]

Similarly, Isfahan mentions the development and use of smart city programmes for urban management in its Sixth Five Year Plan (207-2021), including the usage of smart measures for waste, water, and pollution management.[62] Isfahan's Strategic Plan for 2026 also makes reference to utilising smart traffic management, as well as other electronic services for its population.[63]

Mashhad Muncipality's Medium-Term Operation Plan (2021 - 2025) sets out as one of its main

60 Negar Noori, Martin de Jong, and Thomas Hoppe. "Towards an Integrated Framework to Measure Smart City Readiness: The Case of Iranian Cities," Smart Cities 2020, 3, 676–704; doi:10.3390/smartcities3030035

61 "Tehran's Third Five Year Development Plan, (2019-23) [Persian]," Tehran City Council, January 20, 2019, https://bit.ly/3HQ3Bed

62 "Isfahan's Sixth Five Year Development Plan, (207-2021), [Persian]," Isfahan City Council, https://bit.ly/3DQvsZo

63 http://1405.isfahan.ir/wp-content/uploads/2021/03/1405-Mag-14-11-99-all-site1.pdf

Cultural Requirements · **Requirements for Passive Defence** · **Security and Health**

Refinement and Health	News, Advertising, and New Media	Design and Graphics	Museums and Libraries	Localisation System
Privacy Protection	Architecture and Urbanisation	Movies, Videos, and Images	Music and Live performance	Identity System
Security	Cultural Crafts and Handicrafts	Books, Encyclopedias, and Journals	Games and Entertainment	Legal, Economic, and Innovative Systems

Content Application Layer (Iranian - Islamic Lifestyle)

Refinement and Health	Augmented Reality and Interactive Services		Localisation System
Privacy Protection	Audio	Assessment Data	Images and Videos	Identity System
Security	Text	Unstructured Data	Data and Government Content	Legal, Economic, and Innovative Systems

Content Format Layer

Refinement and Health	Location and Navigation Services		Localisation System
Privacy Protection	E-Government	Digital Services	Data Analysis Services	Identity System
Security	Audio and Visual Services	IoT Services	Artifical Intelligence (AI) Services	Legal, Economic, and Innovative Systems

General Application Services Layer

Refinement and Health	Security Health Services	Ecosystem Search	E-Mail	Sources, Libraries and APIs	Localisation System
Privacy Protection	Communication Services	Cloud Services	Core Navigation and Map Services	Digital Platforms	Identity System
Security	Internet Access Services	Operating System	Public Key and Digital Certificate	Messaging Apps and Social Media	Legal, Economic, and Innovative Systems

Core Services and Essential Tools Layer

Refinement and Health	Information Exchange Points	Cloud Infrastructure	Data Centres	Localisation System
Privacy Protection				Identity System
Security	Storage Infrastructure	Processing Infrasrtrucutre	Content Delivery Networks	Legal, Economic, and Innovative Systems

Information Infrastructure Layer

Refinement and Health	Core Network	Transit Networks	Localisation System
Privacy Protection	Metro Network	Dedicated Networks	Domain Names	Identity System
Security	Access Networks	Internet Exchange Points (IXP)	Gateways and Domestic Borders	Legal, Economic, and Innovative Systems

Communication Infrastructure Layer

Legislative, Prosperity, and External Requirements · **Data Governance Requirements** · **Requirements for Streamlined Management**

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strategic operation goals "a smart and citizen-oriented city" and the "development of urban smart services." A number of comprehensive goals are set for the expansion of "smart" features in the city, including infrastructural and IoT investments, updates to the city's transportation systems, and the expansion of intelligent transport systems (ITS).[64]

The city of Shiraz's third Five-Year Plan similarly focuses on smarter urban management systems, with a particular emphasis on a "smart economy," and electronic services such as the digitisation of public services, and their required delivery facilities. However none of these cities' plans make anywhere near sufficient reference to regulations around data collection, retention, security, privacy and data use. The lack of transparency and publicly

64 "Mashhad City Council and its Subsidiaries' Medium Term Plan (2018-2021) [Persian]," Mashhad City Council, https://bit.ly/30VQUha

available documentation around these systems means that many citizens will remain unaware of how these measures could expose them to further state surveillance and monitoring.

Zooming Out: Internet Governance and The Supreme Council for Cyberspace

The SCC is Iran's primary internet policy making body. The resolutions passed by the SCC are binding and guide the country's ICT agenda, they also allocate the responsibility for their execution to various ministries and government bodies.

During the past eight years, under the former President Hassan Rouhani, and later with the help of the then ICT Minister Mohammad-Javad Azari Jahromi, the SCC has been focused on long-term planning for the development and implementation of the state's vision of a localised internet project known as the "National Information Network" (NIN).

In September 2020 the SCC passed the "National Information Network Macro Plan and Architecture"[65] resolution, which set a series of mid- to long-term objectives for the NIN's full realisation.

The illustration above, which has been adapted from the diagram included in the resolution, shows how the NIN's scope extends beyond just technical infrastructure; it also includes the development of a wide range of domestic platforms and online content to rival international platforms (albeit within the boundaries of a state-defined "Iranian-Islamic" lifestyle), as well as legislative and regulatory reforms.

The realisation of the NIN relies on ensuring that as much data as possible travels through domestic routes, and that this data is processed and stored domestically. As such, the SCC has passed a number of other resolutions aimed at encouraging the creation and usage of domestic platforms and services. This includes resolutions endorsing domestic messaging apps over their international competitors, the introduction of data tariff discounts on domestic services, as well as heavy subsidies for Iran's private tech sector.

These internet localisation measures not only grant state authorities greater control over the internet backbone and core infrastructure, but also give them greater access and control to users' personal data. Taken together, these localisation policies heighten the risk of internet shutdowns, and further expand the state's surveillance capabilities, particularly in the absence of meaningful data protection laws.

"User Protection and Core Online Services" Bill and Digitization of Public Spaces

In June 2021 the highly controversial "User Protection and Core Online Services" (UPCOS) bill returned to the parliamentary agenda, to be reviewed under a Special Joint Parliamentary Committee.[66] Over the past few years, the bill has had multiple versions and has gone through numerous amendments as part of the parliamentary process. The latest iteration of the bill seeks to introduce a broad range of changes applicable to almost all online services, capable of bringing about major overhauls across all aspects of Iran's internet landscape, should it pass into law.

65 Melody Kazemi, "Policy Monitor - October 2020," Filter-watch, November 16, 2020, https://bit.ly/3pB0fCu

66 "Draft User Rights Support and Core Online Services Bill [Persian]," Peivast, July 17, 2021, https://bit.ly/3G0oNfZ

Despite the bill's claim of offering "user support and protection", most of these efforts are only to further Iran's internet localisation plans resulting in expanding the state's surveillance over Iranians' online activities. As a result, there has been significant public engagement and debate surrounding the bill, including a petition against the bill hosted on the Iranian website Karzar, which has gained over a million signatures at the time this report was written. [67]

Should the bill pass into law, it will have major consequences for how Iranians' data is collected, processed, retained and accessed by tech companies as well as government organisations. Considering that the majority of smart city projects rely on ID verification developed and deployed by domestic entities (Iranian technology companies, local municipalities), this bill will have a significant impact on online anonymity and privacy, leaving Iranians much more vulnerable to surveillance and data misuse.

Concluding Thoughts

This report has shed light on the digitization of public spaces in Iran — spaces which are often discussed in the context of "smart city" initiatives. We have provided examples of the ways that some of these projects may violate the human rights of marginalized and vulnerable communities. We have also elaborated some of the concerns around efforts to further government surveillance. The dominant narrative of smart city projects is often centered on boasts by city officials regarding efficiency, innovation, sustainability, and "transparency."

In surfacing alternative narratives about these projects, we have been guided by the following objectives:

+ **Connecting issues around state-forced localization of Internet, e-government services, and smart city projects in Iran:** "smart city" projects, e-government initiatives, and the National Information Network take place within the same political and social context, and are often being developed by the same actors. They should not be studied separately.

+ **Moving beyond privacy discourse:** digital rights researchers and journalists in the ICT sector have paid much attention to the issues around internet freedom and localization of the internet in Iran. These issues are often framed under a discourse of protecting privacy while the discourse is dominated by cybersecurity experts. While human rights are all interconnected and inalienable, by raising specific examples of marginalized communities and examining ways that digitization of public spaces affect their social, economic, and cultural rights, we tried to move beyond a singular emphasis on privacy and cybersecurity.

+ **The need for interdisciplinary research and collective action about these socio-technical issues:** throughout this report, we have used the term "digitized public space" to refer to a hybrid space where we live our entangled online and offline lives. We anticipate that the above-mentioned concerns regarding "smart city" projects (surveillance, violating freedoms, exclusion from public services, privatization, etc.) will become more prevalent in coming years. Therefore,

67 "Petition Against Plans to Restrict the International Internet and the Filtering of Social Media Platforms [Persian]," Karzar, July 6, 2021, https://bit.ly/3r4FdPU

researching, exposing, and advocating against these projects require interdisciplinary approach and collective actions particularly by digital rights and surveillance studies researchers, human rights NGOs, journalists, independent technologists / technology companies.

Below, in this concluding section, we sketch out potential avenues for further research and provide recommendations for Iranian private technology companies, journalists covering ICT sector, and civil society organizations.

As described in the report, private companies in Iran number among the main actors working with municipalities in public-private partnerships. To date, not much scrutiny has been applied to the details of these public-private contracts and the level of data practices. Future work could seek to redress this gap. Also, from a business and human rights perspective, these companies themselves may have a responsibility to take "privacy by design" measures and corporate social responsibility seriously. They should conduct human rights impact assessments prior to and during development, deployment, and maintenance of major public-private projects. Our 2020 report provides a workbook entitled "Digital Rights Workbook: Start the Conversation in Your Company" for assessment of policies and practices.

For journalists and civil society actors, it is useful to remember that the Iranian government does have mechanisms for "freedom of information" requests.[68] Pursuing this option could help journalists investigate a potential lack of data governance and problems with enforcement in the context of smart city projects. With respect to the role of civil society organizations, the digital rights community must work to make the concerns described in this report legible to others in different non-technical domains including "conventional" human rights organizations such as women's rights organizations, migrants and refugees rights organizations, and religious and ethnic minorities organizations.

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[68] "Right to Information in Iran," Article19, https://www.article19.org/right-to-info-iran/