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TMT Middle East | Covid-19 Response
Unlocking the lockdowns
A data driven approach

An ICT sector point of view

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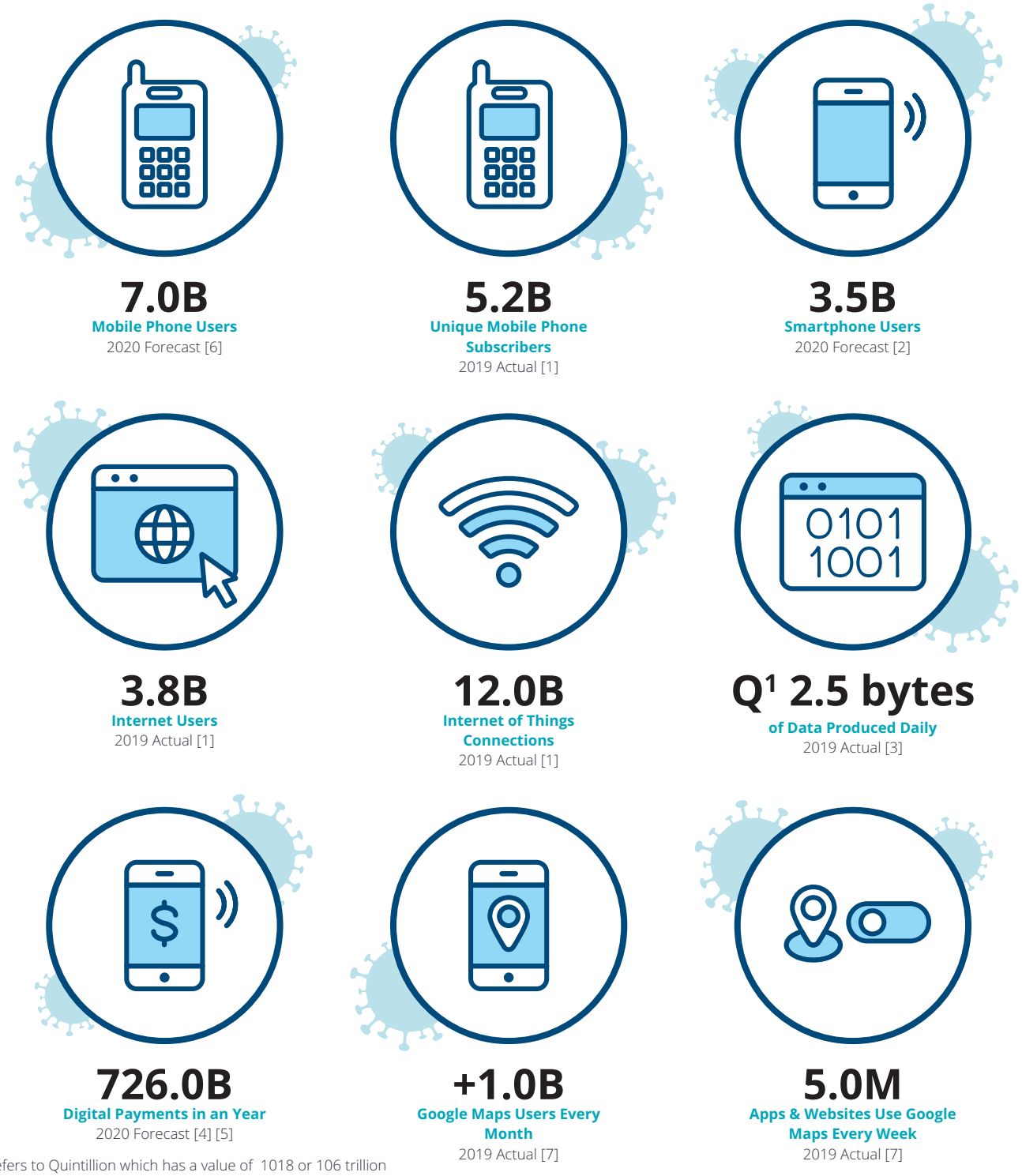
Overview

COVID-19 outbreak with its profound impacts on our way of life has pushed people across the globe to think differently, work differently and innovate to help "unlock the lockdowns". The journey from flattening the curve to finding smart solutions for re-opening economies is a challenging one. First, due to the asymptomatic spread; second, the long incubation period of an infected person and third, the highly contagious nature. Therefore, the reactive solutions cannot just be limited to the scaling up of healthcare facilities, but also to the scaling down of the outbreak coupled with selective opening of economic sectors to contain the impacts. Globally, nations have taken a data driven approach to both containing the spread and then relaxing the lockdowns in order to encourage a gradual return to economic activity. We look at how within this period of outbreak some of the leading national responses have outpaced the spread with innovation driven by digital technologies and telecoms' consumer data sourcing. These data driven use cases have been implemented in a number of countries in the Middle East to enforce quarantine, trace COVID-19 contact and map safe zones. A combination of similar use cases are helping nations to move out from lockdowns into selective opening of economic sectors.

This unfolds a "living lab scenario" in the digital and data driven arena of possibilities. With the digital economy being driven by 5.2 billion unique mobile subscribers [1], out of which 3.5 billion are smartphone users [2], over 12 billion connected devices [1], producing 2.5Q Bytes of data per day [3] and over 700 billion digital payment transaction a year [4] [5] – the opportunity to tackle the mobility and identity aspects of citizens is enormous. The challenge is to move rapidly in crisis mode from a data sourcing, service regulating, and productizing perspective in an effort to minimize the health and economic impacts.

Assessing how the leading cases have fared so far, we outline the impact and role of three types of players in the Information and Communication Technology (ICT) sectors within the Middle East for the short and long-term scenarios. While these have an immediate impact on the current stage of the pandemic, they will also play a role in the medium term on the scenarios of re-starting the economic activity in select areas. We discuss the role of telecoms service providers, the ICT regulators and the digital ecosystem to collaborate on this data driven approach in developing the use cases in the Middle East region.

Figure 1: Global digital economy facts and figures



1. Q refers to Quintillion which has a value of 1018 or 106 trillion

Three categories of the use cases

These data driven use cases have been implemented in a number of countries to enforce quarantine, trace COVID-19 contact and eventually map safe zones to gradually open critical sectors

As we explore the data sourcing and digital technologies landscape, five key data segments are leading the way in enabling the use cases. These are:

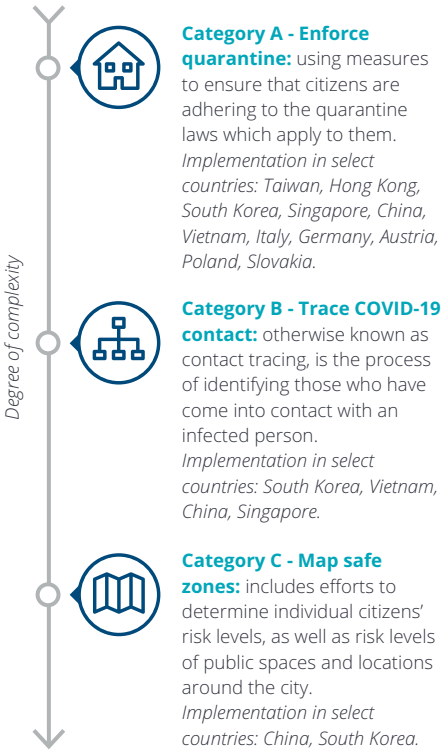
- Telecoms Network Data: The subscriber ID, SIM and location data from the mobile network
- Sector Data: The electronic health data from the health services platforms
- Financial Transactions Data: The digital financial transactions data from the various providers and federal agencies
- Device Data: The applicable device features such as Bluetooth, near field communications and M2M
- Emerging Technology Data: The applicable emerging technologies such as artificial intelligence and internet of things

These categories of data have been applied in several different ways to arrive at the use cases rolled out both in the contain stage and the economic re-opening stage. Initially in the form of COVID-19 "hot spots" for restricting movement related impacts, the maturity has evolved in the way data is used and now the use cases are helping to ease the movements in a safe zone environment. The data driven tracking and tracing concept is taking new directions subject to local conditions and applicability.

Category A: Enforce quarantine

Strict quarantine efforts have leveraged the use of mobile technologies for monitoring and surveillance of quarantined citizens. In Taiwan, "electronic fencing" has been introduced, using mobile phone signals to triangulate the user's location [8]. In Hong Kong, electronic wristbands are issued to all arriving passengers to monitor and enforce their mandatory two-week quarantine [9]. Technology will also drive further maturity in the way in which the social distancing scorecards will be indexed – e.g. using phone GPS locations data with information of distance travelled over time.

Figure 2: Three categories of use cases [Non-exhaustive]



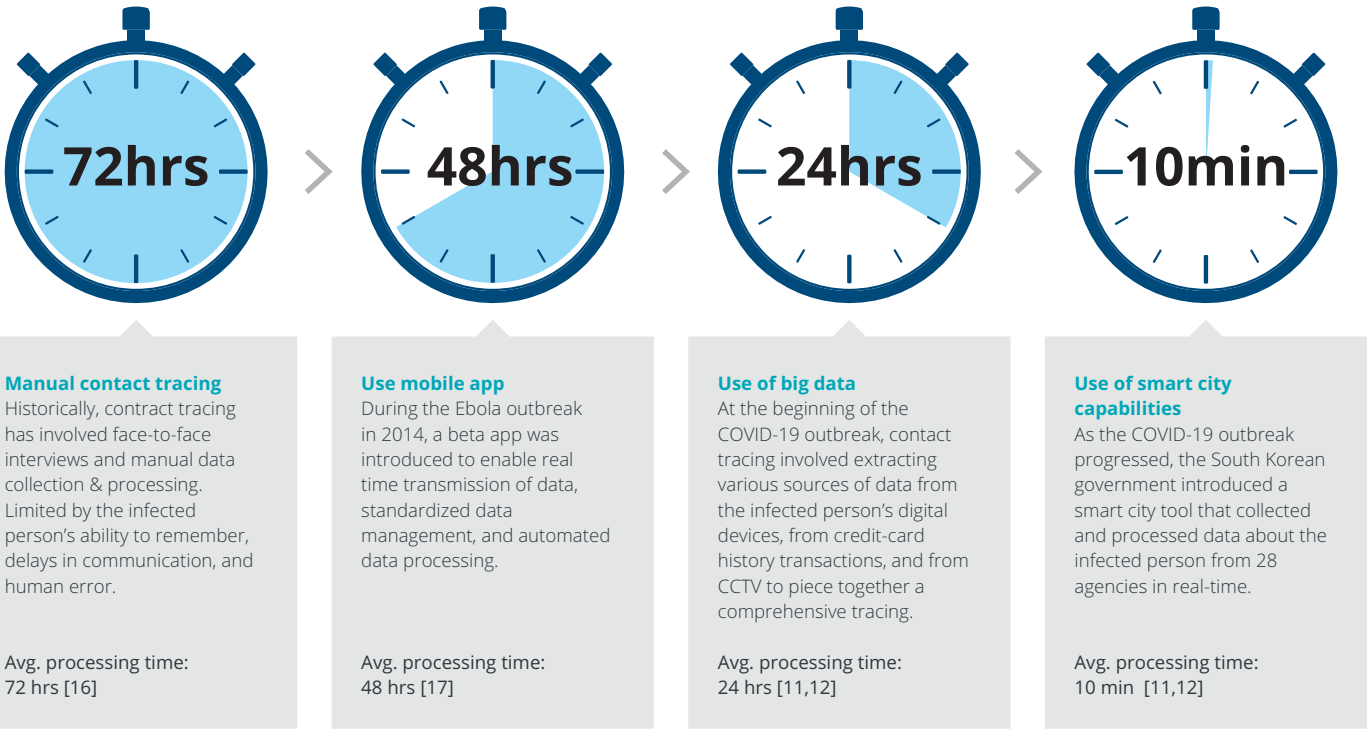
Category B: Trace COVID-19 contact

Contact tracing – the process of identifying individuals who were exposed to an infected person – also plays an important part in managing the exponential growth of infections. Here as well, there are evolving use cases of data and technology. South Korea has coordinated the use of location data from mobile phones, credit-card transaction records and CCTV footage for contact tracing. Smart city tools have been integrated into the use case that leverages data from 28 agencies, reduces the processing time of contact tracing from an average of 24 hours to less than 10 minutes [11,12]. Singapore's TraceTogether app, with over 1 million downloads, uses Bluetooth to determine whether users have been in close proximity to an infected person [13]. Apple and Google's collaboration to design a Bluetooth based framework to establish contacts with COVID-19 positive cases is a step forward for cross platforms solutions. However, its data sharing and gathering compliance challenges at a national level are yet to be assessed.

Category C: Map safe zones

The upcoming use cases in the near term will be aimed at helping nations gradually opening economic activity by identifying locations and communities of people that are profiled at a lower risk compared to medium or high risk ones. China is requiring its citizens to use the Alipay Health Code app that determines their health status (green, yellow, red), then assesses if they should be quarantined or allowed into public spaces [14]. Looking ahead, Blockchain-enabled secure health data sharing platforms are being evaluated in order to collect anonymous health data and identify safe zones with no confirmed infections. The data would be stored and updated in real-time on Blockchain, with information received from surveillance providers who use a combination of technologies including artificial intelligence and geographical information systems [15].

Figure 3: Evolution of contact tracing over time



Digital identity, personal data and mobility triage

In order to deliver on the identified use cases and advance their response, countries across the Middle East region are leveraging telecoms service providers, technology platforms, and other digital services companies to collect and analyze large amounts of data. In global examples, this data is either collected as personalized data points to track and trace known infected patients, or alternatively, aggregated and anonymized to generate general mobility patterns and map the spread of the infection. This defines how intrusive the use cases are and, consequently, the regulatory and data privacy challenges they will face.

Data sourcing and its applicability

Mapping out the data intrusiveness and regulatory/data privacy constraints to the assessed use cases reveals the applicability of data sources in the prevailing scenarios. In that context, GDPR impact has been considered under its three most relevant areas of data sensitivity that include: anonymity of data used, receipt of user consent, and the data retention period.

Figure 4: Optimal data sources per target user group

Data source	Data type	Use case	Intrusiveness[1]	Regulatory constraint
SIM card Geolocation through telecommunications companies	• Location		Low – High	Low – High
Smart phone geolocation Geolocation through mobile applications (Google Maps, Waze)	• Location		Low – High	Low – High
Smart phone applications Crowdsourced data from coronavirus mobile applications	• Location • Health status		Low – High	Low – High
Electronic wristband Electronic geo-fence using multiple communication signals	• Location		Low – High	Low – High
Credit card location Geolocation tracking of bank transactions (POS machine, ATM)	• Location		Low – High	Low – High
Bluetooth Proximity sensing through Bluetooth	• Proximity		Low – High	Low – High
CCTV surveillance Video surveillance for location tracking and temperature scanning	• Location • Proximity • Temperature		Low – High	Low – High
Electronic health records Electronically-stored patients' health information	• Health status		Low – High	Low – High

Legend Enforce quarantine | Trace Covid-19 contact | Map safe zones

1. Intrusiveness of the respective data sources based on the potential privacy disruption that could occur by using the different data gathering methods within defined use cases

Although the level of intrusiveness for each given data source can vary, it can be reduced by anonymizing the collected data or by getting people's consent to collect it (crowdsourcing). Singapore's voluntary TraceTogether App uses Bluetooth for proximity tracking and anonymously notifies users whenever they are in close proximity to an infected patient who has voluntarily chosen to upload their health data on the app [13].

Aggregation of data sourced through multiples sources (mobile phones, credit-card transactions and CCTV footage) is a more advanced scenario where the data triage enables the decision-making ability [11]. These applications are helping selective and smart re-opening of critical economic sectors by establishing relatively safer zones in respective countries.

Target user personas

The second critical dimension to the data triage and use case application is the diversity of user personas. We look at four broad segments where digital savviness varies on the scale of maturity. The technologically savvy population may be easily tracked and traced via the use of mobile and network generated data, social media platforms and crowdsource applications, whereas the same would not hold for the segments that either lie lower on the digital inclusiveness scale or are part of the less tech savvy population.

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Figure 5: Target personas

Tech-savvy

University students, young professionals, and young parents who are highly aware of the COVID-19 response, and want to be involved in mitigating the virus' spread through the use of technology.

Upgrading mobile phone

Per year — Per 4 years

Use of apps and social media platforms

Low — High

Use of credit cards

Low — High

Tech-familiar

Older parent and young retirees who are heavy users of e-payments and some e-government tools. They sometimes engage on social media platforms, but have a limited use of applications.

Upgrading mobile phone

Per year — Per 4 years

Use of apps and social media platforms

Low — High

Use of credit cards

Low — High

Blue collar

Workers in manufacturing, construction, hospitality and other service industries, who may till be using older generation devices, and are engaged with by means of web-apps and SMS.

Upgrading mobile phone

Per year — Per 4 years

Use of apps and social media platforms

Low — High

Use of credit cards

Low — High

Senior citizen

Seniors and eldery generation, who most likely have a mobile phone to remain in touch with family, but do not use any social platforms and applications.

Upgrading mobile phone

Per year — Per 4 years

Use of apps and social media platforms

Low — High

Use of credit cards

Low — High

By understanding the persona characteristics, the telecoms operators, digital service providers and regulators can tailor the data sourcing methods which are used to roll out the COVID-19 tracking and tracing use cases. We map the relationship between the data sources presented in Figure 4 and the identified personas in Figure 5 to understand how the track and trace use cases could become more effective from a user perspective.

Figure 6: Optimal data sources per target user group

Data Source	Tech-savvy	Tech-familiar	Blue collar	Senior citizen
SIM card	✓	✓	✓	✓
Smart phone geolocation	✓	✓		
Smart phone applications	✓	✓		
Electronic wristband	✓	✓	✓	✓
Credit card location	✓	✓		
Bluetooth	✓	✓	✓	
CCTV surveillance	✓	✓	✓	✓
Electronic health records	✓	✓	✓	

Three areas of consideration in ICT ecosystem

The role of a data driven approach, both in containing the pandemic spread and in enabling the reopening of the economy, is critical. The approach provides the basis for analytical decision making to minimize the impacts, both social and economic. Looking ahead, three major areas of focus could enable the ICT ecosystem to further evolve the approach in more holistic terms.

Telecoms

Enabling efficient data sourcing
Telcos are now faced with the expectation to ramp up their data gathering capability to be able to support national initiatives on track and trace solutions, tackling the crisis and enabling smart re-opening. These steps could be focused around:

- Collaborating with regulators and other ecosystem entities (i.e. health and transport industries, digital programs, startups) to understand their challenges, co-create appropriate data-gathering tools and uniquely target the identified personas
- Aggregating multiple sources of data, across devices, to provide more accurate track and trace capability
- Repurposing available data by designing new Analytics or AI models which can be applied to smart opening of safe zones
- Structuring the mobile network data options along the data intrusiveness scale to enable entities in rolling out the most efficient solutions
- Examples: STC, Etisalat

Digital services ecosystem

Driving data insights
Digital services providers (digital payments, digital transport platforms and apps, digital health providers, etc.) can enhance their roles in the ecosystem in support of the track and trace programs using steps focused around:

- Collaborating with regulators and other ecosystem entities (i.e. digital programs, startups) to understand their data needs, and the gaps which currently exist to build effective track and trace solutions
- Ramping up the digitization of healthcare data to provide accurate information on the spread of the virus, and the healthcare system's capacity
- Digitization of monitoring traffic and mobility, to provide real-time actionable data to first responders to assist them in track and trace efforts
- Launching of initiatives (hackathons and competitions) to engage the wider digital innovation ecosystem in resolving the most pressing challenges stemming from the current crisis
- Examples: Careem, Google

ICT and Digital Regulators

Developing rapid policy response
Telecoms and ICT Regulatory bodies play the critical role to assess the effectiveness of the policies and regulations to support the deployment of track and trace solutions, for the benefit of protecting the country's population and the re-opening of sectors by:

- Understanding the constraints stemming from the policies and regulations in place including GDPR and similar policies
- Assessing the potential of new policies and regulations in line with the requirements of sustainable data gathering, hosting and sharing where this could include work with International ICT policy makers including the ITU
- Planning and orchestrating analytics platforms to host and share cross-sectoral data enabling the use cases
- Hosting rapid cross functional consultations with telecoms providers in asserting the policy fit
- Examples: CITC, TRA

A data driven approach

Short term: Responding to the current crisis

Establish user requirements: Launch fast pace SWAT programs across the different entities involved in the COVID-19 response, to establish user requirements for track and trace solutions

Enable solution & regulation: Telecoms providers, Digital service providers and ICT regulators establish data gathering rules and prototype the use case

Launch & refine: Operationalize the digital services and applicationsand launch to the end users. Build mechanisms for rapid feedback to rollout the use cases from containing positive cases to mapping safe zones for supporting economic revival steps

Long term: Thriving in the future

Revamp digital governance: Orchestrate the ICT ecosystem to define and embrace the "new normal" in digital governance, enabling optimized usage of telecoms and digital data as a strategic asset and enabler

Prioritize platform models: Prioritize and launch cross sector platform infrastructures with plug and play capability to leverage data sourcing and access

Operationalize emerging tech: Derive COVID-19 key learnings, regulate for faster emerging technology deployments, build on national digital infrastructure and launch cross sector use cases

Telecoms Digital services ecosystem ICT and Digital Regulators

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Contact us to better understand how Deloitte supports CHROs, CEOs, and Boards to navigate leadership challenges in this new reality.

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