Internet of Things (IoT) Framework
In the Arab Republic of Egypt

National Telecom Regulatory Authority

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Contents

IoT Regulatory Framework in the Arab Republic of Egypt

Prelude

Whereas the National Telecommunications Regulatory Authority (NTRA), pursuant to Law No.10 of 2003 on Telecommunication Regulation, is the sole entity authorized to regulate telecom sector through implementing the policies set to develop and disseminate telecommunications, in different types, in line with the recent technology thereof, and to ensure all the requirements of individual, corporate and productive, administrative as well as servicing sectors are met, with respect to telecom services and at the most affordable prices, and to encourage investment on non-monopolistic basis under the umbrella of free and open competition among national and international expertise, guaranteeing the transparency of information, provision of inclusive services and protecting user-rights.

Whereas NTRA is the sole entity authorized to grant licenses and permits to companies or organizations wishing to provide and/ or operate telecom services, or work in telecom sector, and to oversee as well as track the performance thereof as well as set the general rules to ensure legitimate competition.

And due to the recent huge dissemination of IoT services across the world and the steady development of such services in the Arab Republic of Egypt, and in light of Egypt Vision 2030, seeking to establish a number of smart cities similar to the New Administrative Capital, and due to the increasing inquiries about IoT licenses using different technologies, which have been recently raised to NTRA.

In witness whereof, NTRA had studied all methodologies to be adopted to foster IoT services within the borders of Egypt, and had also studied all obstacles hindering the dissemination of IoT services and how to overcome such obstacles.

Hence, NTRA had decided to issue IoT Framework in the Arab Republic of Egypt entailing all rules and Procedures necessary, pursuant to the terms and conditions of Law No.10 of 2003 on telecom regulation.

First: Definitions

For executing and implementing the clauses of framework, the following definitions shall have the meaning ascribed thereto hereunder:

1. **NTRA/Licensor**
   Shall refer to the National Telecommunications Regulatory Authority of Egypt.
2. **Mobile Service Provider:**
   Shall refer to the corporations licensed by NTRA to provide mobile services within the borders of the Arab Republic of Egypt.
3. **Machine to Machine Services (M2M):**
   Shall refer to the services of devices-networking and data transfer between them either by wired or wireless connections.
4. **IoT Services**
   Internet of Things (IoT) shall entail all technical means allowing automatic communication among objects to interexchange, analyze, process and provide information for users, given that thing could be any physical object with digital/electronic identity added thereto, to enable telecommunication; such as, refrigerators, vehicles, power stations, etc.…
5. **IoT Telecom Network**
   Shall refer to any telecom network licensed by NTRA to be used for providing connectivity channels to IoT Devices.
6. **IoT Network Operator**:
   Shall refer to the corporations licensed by NTRA to operate and run IoT networks within the borders of the Arab Republic of Egypt.
7. **IoT Service Providers:**
   Shall refer to the corporations licensed by NTRA to provide IoT services for others.
8. **Wireless IoT Terminal:**
   Shall refer to transceivers used to provide IoT connectivity services, operating via mobile networks, Low Power Wide Area Network (LPWAN) or satellite network.
9. **IoT Platform**
   Software/ Hardware used to manage devices, and the sensors thereof, and process as well as analyze collective data. Such Platform shall be considered the main layer used to establish different IoT Applications.

10. **IoT Connectivity Services:**

Shall refer to services used to connect objects to the licensed public telecom networks, provided by IoT network operators licensees as per demand, within the borders of the Arab Republic of Egypt.

11. **User:**

Any person (individual) or entity with juridical personality using or utilizing the services herein.

12. **Government Entities**

Shall refer to ministries, entities and all affiliated authorities, syndicates as well as public corporations using or utilizing the services herein.

13. **LPWAN: Low Power Wide Area Network (LPWAN)**

Shall refer to wide area wireless networks connecting terminal devices using a narrow band width and with a low power consumption, as well as low data speed rates, and depending on cellular and non-cellular technologies.

14. **Non-Cellular LPWAN**

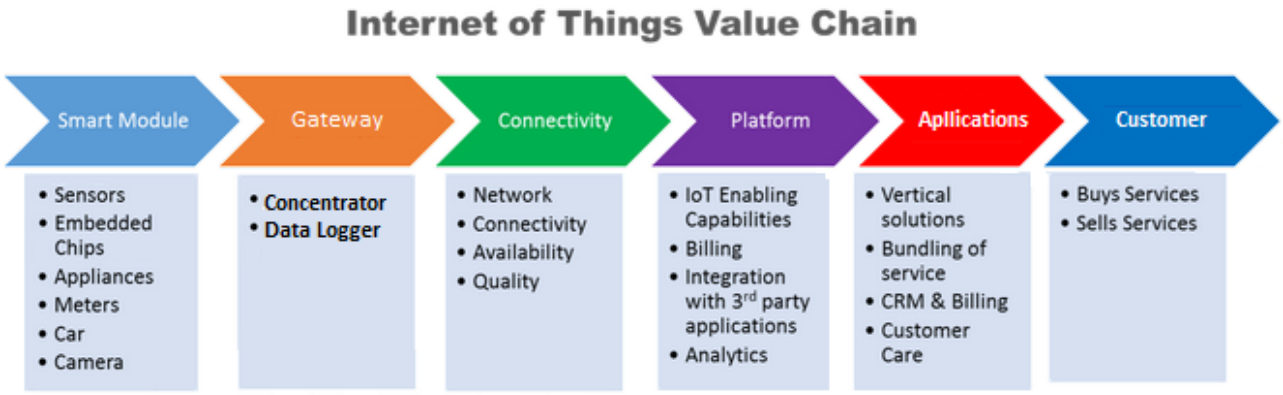
Shall refer to wide area wireless networks connecting terminals using a narrow band and with a low power consumption, as well as low data speed rates, using frequencies within (863-870) Mhz.

Secondly: IoT Services

IoT is an inclusive terminology entailing all physical as well as digital devices and ecosystems interconnected to utilize data collected by sensors and embedded systems, within other physical objects and machines, and then sharing such data via telecom networks where it can be processed and used for different purposes. M2M apps and services are concerned with device-interconnection and therefore, M2M apps and services are considered an integrated part of IoT apps and as well as services.

2-1 IoT Value Chain:

IoT Value Chain Consists of several layers interconnecting to provide service, as per the diagram below:



IoT Value Chain starts with connected devices such as;

- Consumer devices like; connected cars, smart homes, etc…
- Industrial machines like sensors, smart cities and connected factories.

And followed by the Gateway as a second layer, where signals from connected devices are collected, and Connectivity in the third layer which includes the connection method of Gateway with Platform.

Platform/ Server is the fourth layer where device data are collected and analyzed by IoT Service Providers, whereas applications and services serve as a fifth layer followed by a final layer consisting of Users; whether individuals, organizations and authorities.

It is worth noting that IoT apps do not necessarily depend on all layers; since connection could be directly established between platforms and devices, without any pre-connection to Gateway whatsoever.

2-2 IoT Application Classification:

A variety of IoT apps is available in accordance to the nature of consumption, there are currently five common apps available:

- **Consumer IoT Apps:** Wearable devices and smart home systems through which users are enabled to monitor and manage their home as well as power appliances, and use water taps remotely as well as Intrusion Detection Systems.
- **Commercial IoT Apps:** Intelligent Transportation Systems (ITS), Surveillance Systems and Connected Cars (V2V).
- **Industrial Internet of Things Apps (IIoT):** Digital Industrial Control Systems, Smart Agriculture, Industrial Indicator monitoring; such as, temperature, oxygen and gas flow control, through which Auto-Diagnosis of breakdowns in, control of and taking the necessary measures in case of any emergency with industrial equipment, could be all provided.
- **Infrastructure IoT apps**: Entailing smart city apps where infrastructure sensors to monitor temperature, humidity and pollution rates could be installed, irrigation and illumination methods could be controlled, Smart Parking areas could be monitored and Smart Waste Management could be also controlled.
- **Governmental IoT Services**: Including apps pertaining to e-Health and Public Utility services; such as, water, power, gas, transportation, education, etc…

2-3 Connectivity methods of IoT technology:

Devices operating via IoT technology could be connected via several methods or channels. There are currently five major Connectivity categories:

2-3-1 Mobile Network

Mobile networks could be classified into two sections:

First Section: Connection through traditional mobile networks like 2G, 3G, 4G and/or any generation to follow, via Data SIM Cards.

Second Section: As technology advances, new connection technologies have emerged via Cellular mobile networks (CIoT) including:

- Extended Coverage GSM (EC- GSM)
- LTE Machine type (LTE- M)
- Narrow Band IoT (NB- IoT)

2-3-2 Non-Cellular Low-Power Wide Area Networks (LPWAN):

One of the most-widely adopted IoT connection technologies, with more than 6 billion devices estimated to be connected via Non-Cellular LPWAN by 2026. LPWAN Networks include different technologies exploited within (863-870 MHz), connecting Sensors to Gateway, hence, data could be wirelessly transmitted from Gateways to servers via mobile networks or through Ethernet cable. Consuming low power and having wide connection range which extends to several kilometers, such a method is deemed effective to provide IoT services.

2-3-3 Satellite IoT:

IoT device connectivity via satellite has been gaining momentum recently due to the pivotal role it plays to provide wide-range connection, convenient for app interconnection via several countries. Other channels could be also used to connect objects/ sensors to a centralized connection unit operating via satellite. It is worth noting that new technologies convenient for IoT apps, such as Satellite NB-IoT, have been recently introduced.

2-3-4 WPAN and WLAN connection:

Large number of IoT devices could be connected via WPAN technologies, which usually have a coverage range of about 100 meters. Such technologies include Bluetooth connection (IEEE802.15.1), Zigbee (IEEE802.15.4) and Z Wave used for fire alarms or thermostats at smart homes. On the other hand, the most common technology for WLAN networks, which have a coverage range of about 1 kilometer, is actually Wi-Fi (IEEE 802.11), and it is till witnessing a huge growth being used in appliances like smart TV sets and smart sound amplifiers. Furthermore, this technology is massively adopted in industrial activities.

2-3-5 Wired connection

Wired connection is the most affordable and dependable technology used in industrial environments, especially via Ethernet. It is expected for wired connection to be used consistently for several apps during the upcoming years.

This framework aims therefore to set the rules as well as standards for communication via mobile networks, Non-Cellular LPWAN and satellite networks

2-4 IoT usage:

2-4-1 Massive Machine-Type Communication (mMTC) – Massive IoT

Massive IoT aims to provide communication to lots of low-cost devices operating through narrow band, that transmit or receive very small amounts of data.

2-4-2 Ultra Reliable Law Latency Comm (uRLL) – Mission Critical IoT

Mission Critical IoT aims to provide communication to devices that require transmitting or receiving data at critical timings; such as, auto-driving and Remote surgery.

Thirdly: IoT Status Quo and regulatory measures in the Arab Republic of Egypt

Many corporations; whether mobile operators or other different trade or industrial entities are currently using Machine to Machine services (M2M) via any of the following channels:

3-1 M2M services via mobile networks

- Mobile Network operators provide, by virtue of license, M2M services for individuals or corporations/ organizations using traditional mobile networks. Specific tariff on Data SIM cards used for such a type of services, are actually imposed.
- Mobile operators provide End to End Solutions at some cases, using their own platforms as well as apps. Furthermore, customers, at certain situations, can create their own platforms and use the connectivity services provided by mobile operators.

3-2 Private networks for personal purposes only

- Private wireless networks could be created inside private buildings and establishments for non-trade purposes via LPWAN/WLAN/WPAN/Wired technologies. However, Users of such networks as well as importers of used devices should adhere to the regulatory measures and standards currently adopted for importing or manufacturing M2M devices.

3-3 Current regulatory procedures to import, manufacture and assemble M2M devices.

In addition to the normal custom clearance procedures, including import permits and device-type approvals, Requests for importing, manufacturing or assembling M2M devices are currently studied and assessed case by case by NTRA, whether such devices have been used by mobile operators or for personal purposes, through the measures to follow:

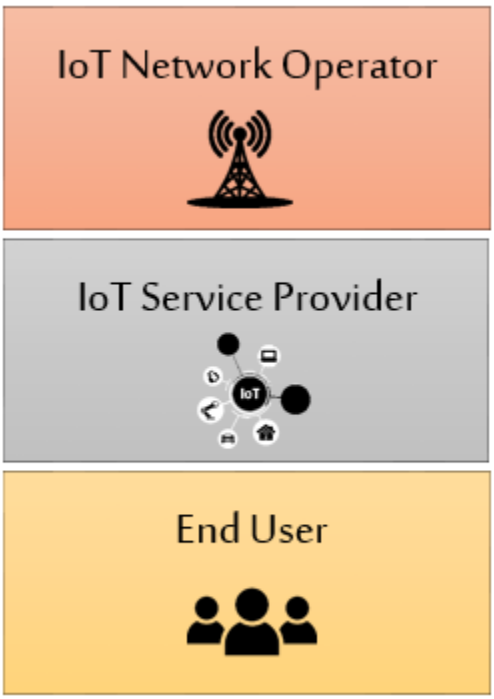
- Importer/ manufacturer shall submit requests to NTRA to obtain approval for shipment clearance or get a permit for manufacturing the M2M devices, with all required technical and operational data clarified, especially:
  - A- A list of customers who will buy the devices alongside the nature of usage, connection method via telecom networks as well as location of servers.
  - B- A copy of the contract signed between buyer/ user and the licensed operator, or price quotation provided by operators for users (in case of wireless devices).
  - C- List of frequencies to be used for such devices (in case of wireless devices), if any, to obtain an approval on this frequency and the conditions of use.
  - D- In case of using these devices to transmit location automatically or AVL: the users (buyer) shall submit a copy of the contract with the licensed operator to provide tracking services in Egypt.
- Should NTRA approve the importer/ manufacturer's request, importer/ manufacturer shall adhere the following pledges:

- Devices shall not be used by buyer/ user to provide M2M services for others, and shall be only used for Personal /Enterprise use, unless the buyer/ users is licensed from NTRA to provide M2M services to others.
- Devices shall not be used to transmit location automatically or AVL, unless submitting a copy of the contract with the licensed operator to provide tracking services in Egypt
- Devices shall not use any frequencies, before Receiving the prior approval from NTRA side (in case of wireless devices).
- Buyer/ user shall enter into contract with any mobile operator working In Egypt to provide SIM Cards that will be used in the Devices, before devices are used (in case of wireless devices operating via mobile networks).
- Buyer/ user shall notify mobile operators with SIM card Data Like (MSISDN, IEMI, etc..) used in M2M services, nature as well as location of usage.
- Buyer/ user shall not sell such devices to any third party without pre-notifying NTRA with the identity of new buyer and nature of usage.
- Buyer/ user shall obtain all necessary legal and administrative approvals from concerned authorities, in accordance with the terms of law; including State National Security approvals.
- User shall neither transfer any data outside Egypt nor have any M2M network component to provide M2M services outside Egypt.

Fourthly: Regulatory Framework

4-1 Operational model:

Service model shall include three main parties; IoT Network Operator, IoT Service Provider and End-User. It could also include other parties operating under the umbrella of the aforementioned three parties; such as, system provider, app provider, terminal manufacturer, etc…



4-1-1 IoT Network Operator:

The operator establishing and operating telecom networks which support IoT services. This Framework shall include the regulatory model for mobile phone operators, Non-Cellular LPWAN and Satellite networks.

4-1-2 IoT Service Provider:

Providing IoT for others in return for fees collected from users; whether corporations, authorities or individuals.

- IoT Service Provider shall utilize the networks established by IoT Network Operator to provide the services thereof.
- IoT Service Provider may enter into contract with other companies to provide any of IoT service-layers, such as Platform layer **and/ or** Application Layer, nevertheless, IoT Service Provider shall be solely held responsible to provide service for End-User.

4-1-3 End-User:

- Shall be any person (individual) or entity with juridical personality (corporation/ authority) entering into contract with IoT Service Provider to avail of IoT services.

4-2 Regulatory model:

4-2-1 Annex to mobile service provider's license:

- NTRA shall grant an annex, to mobile service providers wishing to provide IoT services, empowering mobile service providers to:
  - **Establish IoT networks:**
  - Mobile service provider has the right to use Narrow Band IoT (NB-IoT) and LTE-m technologies via the licensed networks thereof.
  - Mobile service provider has the right to establish and operate Non-Cellular LPWAN.
  - Mobile service provider has the right to provide IoT connectivity services for users when required.
  - **Provide IoT services:**
  - provide IoT services using mobile phone networks and Non-Cellular LPWAN.

4-2-2 License to establish and operate Non-Cellular LPWAN:

- NTRA shall grant a license to telecom corporations, specifically non-mobile operators, wishing to provide IoT services using Non-Cellular LPWAN, empowering the aforementioned corporations to:
  - Establish and operate Non-Cellular LPWAN as well as provide IoT connectivity services for users when required.
  - Provide IoT services for others within the Arab Republic of Egypt, using the Non-Cellular LPWAN previously established.

4-2-3 License to establish and operate IoT networks via satellite:

- NTRA shall grant a license to Satellite Operator to use their satellite network to provide IoT services, given that Satellite Operator may not provide services to the end user-directly in the Arab Republic of Egypt.
- Satellite Operator shall provide IoT connectivity services only, for IoT Service Provider licensed to provide IoT services for others within the Arab Republic of Egypt.
- IoT services shall be provided for others in the Arab Republic of Egypt, using satellite networks licensed by NTRA, and only by IoT Service Provider licensed to provide IoT services for others.

4-2-4 IoT Service Provider License:

- It is prohibited for any IoT Service Provider to operate within the Arab Republic of Egypt without a license obtained from NTRA.
- NTRA shall grant a license to corporations or entities wishing to provide IoT services for others, via the network of operators licensed to establish and operate IoT networks.
- If IoT Service Provider wish to provide services for any **government entity**, with a purpose to provide services for End-User, then the IoT Service Provider shall obtain Pre-approval of NTRA on each and every app created for any government entity.
- IoT Service Provider shall comply with International standards for each app, based on its type.

4-2-5 Private network:

- **Non-cellular LPWAN:**
  - Companies/ authorities/ organizations shall be allowed to establish and use Non-Cellular LPWAN operating within 863-870 MHz inside the facilities and establishments thereof, for non-commercial purposes, after obtaining the permit of NTRA and in compliance with the items to follow:
    - ❖ Devices used shall meet the technical specifications issued by NTRA and the specifications provided for herein.
    - ❖ Requirements of data security, protection and confidentiality stipulated herein, shall be met.
    - ❖ Process to import and establish this type of IoT networks shall be carried out by the owners of such facilities and establishments.
    - ❖ User may establish IoT Platforms, for private purposes and connect it to the private network, and shall not connect such to Public Switched Telephone Network (PSTN), Public Land Mobile Network (PLMN), internet and/or data networks, except for the cases approved in writing by NTRA.
    - ❖ IoT service provider shall not transmit IoT traffic or use any part of IoT network components outside Egypt, except for the cases approved in writing by NTRA.

- **WPAN, WLAN and wired networks:**
  - WPAN, WLAN and wired networks may, for non-commercial purposes and in full compliance with all standards and rules clarified in the aforementioned item, may be established and used. User of such networks may enter into contract with any IoT Service Provider licensed by NTRA, should the user wish to receive IoT services from other parties.
  - The user may establish IoT Platform for personal purposes, and connect it to his private network. If the user wish to connect the platform wirelessly to any public telecom network this could be done through a contract signed with any providers of IoT connectivity services.

4-2-6 Government entities:

- Should a **government entity** wish to establish an IoT Platform for personal purposes, the government entity shall obtain a permit from NTRA, in accordance with the rules set by NTRA as such.
- For purposes of providing IoT services for End-User, **government entities** may utilize IoT services provided by any IoT Service-Provider licensed to provide IoT services for others, on condition that pre-approval of NTRA on each app created for each and every government entity, shall be obtained by IoT Service-Provider.

4-2-7 General terms:

- Corporation applying for any of the licenses referred to hereinabove shall :
  - Be an Egyptian corporation established pursuant to the Egyptian Law, and with telecommunications being the core business thereof, expect for the cases indicated by NTRA for Satellite Operators.
  - A reasonable telecom experience, especially in IoT services, shall by the applying corporation, any shareholder or affiliated companies thereof, be possessed.
  - Fiscal ability of the applying corporation to undertake such an activity and meet all financial obligations relevant to license, shall be proven.
- Applicant wishing to obtain any of the licenses mentioned hereinabove shall submit requests to NTRA, with all requirements, determined by NTRA as well as clarified herein, fulfilled.
- IoT Platform may by user, for personal purposes, without providing services for others and on condition that IoT devices shall not be wirelessly connected to public telecom networks, except after entering into contract with IoT companies licensed by NTRA to provide IoT connectivity services, as well as complying with all regulations issued by NTRA in that regard, be created.
- The Regulatory Framework shall abide by the terms of Law No.10 of 2003 on Telecommunication Regulation, as well as by any future legislations, laws, regulations and directives issued in Egypt; namely; Law No.151 of 2020 on the Protection of Personal Data and Law No.175 of 2018 regarding Anti-Cyber and Information Technology Crimes, and any executive regulations thereof, and in cases Telecommunication Law No.10 of 2003 makes no special provision, acts thereof shall apply.
- Entities obtaining any of the licenses mentioned hereinabove, shall have all required legal and administrative approvals pertaining to service issued from official concerned authorities, including approvals of National State Security, in accordance with the terms of law, to be able to operate pursuant to law and regulations applicable.
- Licensed systems and services shall not, in any form whatsoever, by IoT Network Operator and/ or IoT Service Provider, be used in activities compromising national security, pursuant to Telecommunications Law No. 10 of 2003.

Fifthly: License to establish and operate Non-Cellular LPWAN

5-1 License Duration:

Ten years effective the date of License-signature renewable for more durations, 5 years each.

5-2 Major financial commitments:

A- License upfront fees:

- A sum of money paid once upon license-signature.
- An annual sum paid for each and every IoT wireless terminal operating via the network of Licensee

B- **Annual fees:** A fixed percentage of total revenues shall, by Licensee to NTRA, be paid.

C- **License-burden fees:** Licensee shall pay to NTRA a sum of money, on annual basis, against the burdens of License, as well as the activities and services provided by NTRA for Licensee by virtue of License.

D- Contribution to burdens of Universal Service, to scientific research and trainings.

E- Performance bond fees.

Given that the financial Value of each item mentioned hereinabove, shall by NTRA be determined.

5-3 Major terms, commitments and rights:

First: Establishing, operating and leasing Non-Cellular LPWAN:

- Licensee has the right to establish and operate Non-Cellular LPWAN to provide the services under licensing.
- Licensee shall commit to all standards and specifications adopted to establish IoT telecom networks, and shall also commit to all standards and specifications pertaining to such a process, as determined by NTRA and in accordance with the recommendations of the International Telecommunication Union (ITU) in that regard, as well as the technical specifications determined by NTRA.
- Licensee shall commit to high performance levels with respect to Non-Cellular LPWAN-operation, to ensure the operation thereof in accordance with the technical standards adopted worldwide.
- Licensee shall commit not to use the network thereof for unlicensed purposes, except after obtaining a pre-approval in writing of NTRA.
- Licensee shall provide IoT Connectivity services for users within the Arab Republic of Egypt, when required.

- Licensee shall make the network thereof available to all entities licensed to provide IoT services, by virtue of agreements entered into by and between both parties; including all necessary terms as well as conditions clarifying the relationship between both parties; namely:
    - Contractual relationship shall be identified, in terms of duration, renewal interval and contractual value.
    - Validity of contractual relationship shall be identified, should the ownership-transfer to any third party.
    - Service Level Agreements, quality standards, and remedies to be paid from one party to another should service level witness a decline beyond the boundaries set forth in Service Level Agreements, shall be all identified.
    - Rules to resolve disputes arising from such an agreement, termination conditions as well as procedures shall be all clarified.
- Licensee shall, before disconnecting the service provided via the network thereof, notify NTRA and Service-Providers with disconnection by an appropriate time determined by NTRA, knowing that disconnection shall not be take place without the approval of NTRA.
- All organizational as well as technical measures for protection and confidentiality of information/ data pertaining to service users and network traffic, shall by Licensee be taken.
- Technical and logistic tools allowing NTRA to monitor the level of commitment shown by Licensee to all terms and conditions of license, alongside verification of user complaints shall by Licensee by provided.
- Licensee shall not transfer IoT traffic or use any component of the network, used to provide IoT services, outside the borders of the Arab Republic of Egypt, except for the cases pre-approved by NTRA.
- Technical and regulatory directives issued by NTRA, with respect to establishing, operating, and making available of IoT networks for service providers, shall by Licensee be committed to.
- Licensee shall make available the networks thereof for other users on non-discriminatory basis whatsoever, and shall not refrain from such a process without a pre-approval in writing is obtained from NTRA.
- Licensee shall provide the services under licensing for users, on non-discriminatory whatsoever, and shall not abstain from providing services without clear justifications subject to the discretion of NTRA.
- The National Numbering Plan set by NTRA and referred to herein, any amendments thereto, as well as fees and payment schedules thereof, shall by Licensee be complied with and paid.

Secondly: IoT service-provision

- IoT Licensee is entitled to provide IoT services for others using the network thereof under licensing.
- All commitments pertaining to IoT service-provision, stipulated in the Eighth clause of this Framework, shall by Licensee be complied with.

Thirdly: Network ownership:

- Network established for providing IoT services, including all IoT devices and systems, shall by Licensee be owned. Licensee also has the right to lease parts of the network thereof from another Licensee, given that such a network and all the devices and systems thereof shall be situated in the Arabic Republic of Egypt, except for the cases pre-approved by NTRA.
- It is prohibited for Licensee to sell or dispose of the network/ system thereof, by any form, or any components thereof, except via a pre-approval in writing obtained from NTRA, and on condition that such selling or disposition shall not occur in prejudice to the commitments set forth in license.

Fourthly: Radio Spectrum Rules:

- Licensee is entitled to use (863-870) MHz-band to establish Non-Cellular LPWAN in accordance with the technical terms and rules adopted by NTRA and clarified in the grid below; on condition that operating systems shall not be affected and no complaints pertaining to interference shall be raised.

Bandwidth (MHZ)	Total Effective Radiated power e.r.p	Duty Cycle
863-868	25 mW	≤ 0.1%
868-868.6	25 mW	≤ 1%
868.7-869.2	25 mW	≤ 1%
869.3-869.4	10 mW	≤ 1%
869.4-869.650	25 mW	≤ 10%
869.7-870	25 mW	≤ 1%

- An approval in writing from Licensor shall by Licensee, prior to the deployment of base stations using 863-870 MHz band, be obtained.

- All laws regulating base station deployment as well as limits of exposure to electromagnetic radiations, shall by Licensee be adhered to.
- Monthly network database, including the data stipulated in Attachment (1) and any amendments thereto made by NTRA, shall by Licensee to NTRA be sent.
- Licensee shall, as required by NTRA, remove frequencies on a secondary basis during the time interval determined by NTRA, as deemed suitable.
- Technical rules and specifications issued by NTRA, and any updates thereof to keep in pace with the latest developments in telecom sector, shall by Licensee be adhered to, in consideration of the findings of World Radio Spectrum Conferences (WRC).

5-4 Prerequisites and content of proposals:

5-4-1 Prerequisites:

- Applying corporation, any affiliated company or shareholder thereof, shall not have been previously granted a license from NTRA to provide mobile or landline phone services in the Arab Republic of Egypt.
- Applicant shall be an Egyptian joint corporation established pursuant to the Egyptian Law, and with telecommunications as the core business thereof.
- A reasonable experience of no less than 3 years in telecom-network deployment and telecom service-provision, shall by the applying corporation, any shareholder or affiliated companies thereof, be possessed.
- Fiscal ability of the applying corporation to undertake such an activity shall be proven.

5-4-2: Content:

Proposals of applying corporation shall include:

- The organizational structure, as well as data of shareholders.
- The portfolio of corporation.
- The financial standing of corporation.
- A ten-year feasibility study entailing:
  - Market / Industry analysis.
  - Marketing plan.
  - Operational and technical plan.
  - Financial and risk management plan.

Sixthly: Annexes to mobile service licenses

6-1 Duration of annex:

Duration of annex shall expire as the license issued for mobile service-provider to operate in the Arab Republic of Egypt expires.

6-2 Major financial commitments:

A- Annex Upfront fees:

- A sum of money paid once upon annex-signature.
- An annual sum paid for each and every IoT wireless terminal operating via mobile network or non-cellular LPWAN of mobile-service provider.

B- **Annual fees:** A fixed percentage of total revenues shall, by mobile service-provider to NTRA, be paid.

C- **License-burden fees:** Licensee shall pay to NTRA a sum of money, on annual basis, against the burdens of License, as well as the activities and services provided by NTRA for Licensee by virtue of License.

Given that the financial Value of each item mentioned hereinabove, shall by NTRA be determined.

6-3 Major terms, commitments and rights:

First: General commitments and rights:

- Mobile service-provider is entitled to use LTE-m and NB-IoT technologies via mobile networks, to provide the services set forth in annex.
- Mobile service-provider is entitled to establish and operate Non-Cellular LPWAN to provide services, set forth for in license, in full commitment to all terms stipulated in clause (5-3) of the framework.
- Mobile service-provider is entitled to use the bands licensed for mobile networks in the Arab Republic of Egypt, to provide IoT services via the technologies and techniques licensed by Licensor, and in accordance with the terms and conditions as well as standards approved by NTRA, on condition that mobile phone networks shall not be affected and no complaints pertaining to interferences shall be raised.
- All laws organizing the deployment of Baste Transceiver Station (BTS) and limits of audience-exposure to electromagnetic radiation shall, by mobile service-provider, be complied with.

- Mobile service-provider shall send a monthly database for the network thereof to NTRA, in accordance with data pre-determined by NTRA.
- Connectivity Services of IoT shall by Service-Provider, inside the Arab Republic of Egypt, be provided, when required by users.
- Approval of NTRA on roaming agreements signed with operators outside the borders of the Arab Republic of Egypt shall, pertaining to IoT Connectivity Services, be obtained by Mobile service-provider, given that the regulations and standards issued by NTRA shall, by mobile Service-provider be also complied with.
- Connectivity Services shall, via mobile phone network owned to mobile service-provider for each and every entity licensed to establish and operate Non-Cellular LPWAN, by mobile service-provider be provided, to connect the components of the network thereof to the network of such a licensed entity, by virtue of agreements drafted by and between both parties, given that such agreements shall be presented to NTRA for approval prior to the enforcement thereof.
- Should no agreement be reached by and between mobile service-provider and the entity licensed to establish and operate Non-Cellular LPWAN within two months effective the date the negotiations had commenced between both parties, NTRA shall interfere to issue a directive considering the matter, to protect the interests of all parties, pursuant to the terms and conditions of Telecommunication Law as well as current licenses and international norms applicable, binding to all parties.
- Mobile service-provider shall make the network thereof available to all entities licensed to provide IoT services, by virtue of agreements signed by and between both parties and including all necessary terms as well as conditions clarifying the relationship of both parties; namely:
    - Contractual relationship shall be identified, in terms of duration, renewal intervals and contractual value.
    - Validity of contractual relationship shall be identified, in case ownership is transferred and assigned to any third party.
    - Service Level Agreements, quality standards, and remedies to be paid from one party to another should service level witness a decline beyond the boundaries set forth in Service Level Agreements, shall be all identified.
    - Rules to resolve disputes arising from such an agreement, and termination conditions as well as procedures shall be all clarified.
- The National Numbering Plan set by NTRA, any amendments thereto, fees and payment schedules thereof, shall by Mobile Service-Provider be complied with and paid.
- All technical as well as necessary measures to protect the confidentiality and data of service users and traffic, shall by mobile service-provider, be taken.

- Mobile service-provider shall neither use IoT services nor any component of the network used to provide IoT services, outside the borders of the Arab Republic of Egypt, except for the cases pre-approved by NTRA.
- Technical and regulatory directives issued by NTRA, pertaining to establishing, operating and making available of IoT networks for others, shall by mobile service-provider, be committed to.
- Mobile service-provider shall make available the networks thereof for other licensees on non-discriminatory basis whatsoever, and shall not refrain from such a process, unless a pre-consent in writing is obtained from NTRA.
- Mobile service-provider shall provide the services stipulated in annex for users, on non-discriminatory whatsoever, and shall not abstain from providing services without clear justifications subject to the discretion of NTRA.

Secondly: IoT service-provision

- Mobile-service provider is entitled to provide IoT services for others using the network thereof, under licensing.
- All commitments pertaining to IoT service-provision, stipulated in the Eighth clause of this Framework, shall by mobile service-provider be complied with.

Seventhly: Satellite IoT License

7-1 Duration of license:

4 years effective the date of license-signature, and renewable for other intervals of **4 years** per each

7-2 Major financial commitments:

A- License Upfront fees:

- An amount paid once, upon license-signature
- An annual amount to be paid for each IoT wireless terminal operating via satellite network in the Arab Republic of Egypt.

B- Annual fees: To be paid to NTRA on the discretion thereof.

C- License-burden fees: Licensee shall pay to NTRA a sum of money, on annual basis, against the burdens of License, as well as the activities and services provided by NTRA for Licensee by virtue of License.

D- Licensee shall contribute to participating in activities of Universal Service, scientific research and training.

E- Licensee shall pay a performance bond Fees.

Given that the financial Value of each item mentioned hereinabove, shall by NTRA be determined.

7-3 Major terms, commitments and rights:

- By virtue of license, Satellite Operator is entitled to operate licensed satellite networks, to be used for IoT connectivity services by IoT Licensees, across the Arab Republic of Egypt, and in accordance with the terms and conditions of license.
- Licensed services only shall be provided by Satellite Operator, using satellite networks as well as the frequency bands set forth in license
- It is prohibited for Satellite Operator to provide IoT services directly for End-Users. Satellite Operator shall provide the licensed service through corporations licensed by NTRA to provide IoT services within the borders of the Arab Republic of Egypt.
- Satellite Operator shall not use the frequency bands allocated hereto by NTRA, by virtue of license, in any unspecified purposes.

- Satellite Operator shall obtain a pre-consent in writing from NTRA to add any bands or amend the technical specifications of satellite networks, before being used on Egyptian soil, and pursuant to the terms and conditions acknowledged by NTRA.
- Satellite Operator shall commit to make the network thereof available for IoT Licensees, to provide the services thereof for others, by virtue of agreements drafted by and between the Satellite Operator and IoT Licensees, to be approved by NTRA before enforcement.
- Satellite Operator shall establish an Earth Station in the Arab Republic of Egypt and use such in transmitting IoT service data across the entire Republic, save the cases approved by NTRA.
- Terms and conditions of the International Telecommunication Union (ITU) regulations, as well as the laws applicable in the Arab Republic of Egypt pertaining to licensing, in addition to rules and instructions set by NTRA to this end, shall by Satellite Operator be complied with, to avoid interferences among other systems operating via same band.
- Service standards shall, by Satellite Operator, in accordance with the same standards applicable in other countries within the same range of coverage and notwithstanding the user-location in the Arab Republic of Egypt, be complied with.
- All technical information and support shall by Satellite Operator, to IoT licensees in the Arab Republic of Egypt, be provided.
- All organizational as well as technical measures and steps to protect the confidentiality of data of service users, and pertaining to network traffic, shall by IoT Service-Provider be taken.
- All technical and regulatory directives and regulations issued by NTRA, with respect to establishing, operating and making available for service providers, the IoT networks, shall by Satellite operator be complied with.
- National Numbering plan set by NTRA and any amendments thereto, shall by Satellite Operator be complied with. Fees for the aforementioned Numbering plan as well as the payment schedule mentioned herein shall be adhered to.

Eighthly: IoT service provision for others

8-1 Duration of license:

5 years effective the date of license-signature, and renewable for other 5 years.

8-2 Major financial commitments:

A- License Upfront fees: An amount paid once, upon license-signature

B- Annual fees: A fixed percentage of the total revenues of Licensee shall, by licensee to NTRA be paid.

C- License-burden fees: Licensee shall pay to NTRA a sum of money, on annual basis, against the burdens of License, as well as the activities and services provided by NTRA for Licensee by virtue of License.

D- Licensee shall contribute to participating in activities of Universal Service, scientific research and training activities.

E- Licensee shall pay a Performance Bond fees.

Given that the Financial Value of each item mentioned hereinabove, shall by NTRA be determined.

8-3 Major terms, commitments and rights:

First: General commitments and rights:

- IoT Service-Provider has the right to create IoT Platforms and shall create all necessary systems, equipment, software and structure to provide IoT services for others in the Arab Republic of Egypt.
- IoT Service-Provider shall provide IoT services for others in the Arab Republic of Egypt, using the networks of licensed telecom operators in the Arab Republic of Egypt.
- Should IoT service be provided to any Government Authority, pre-consent of NTRA shall, by IoT Service-Provider, be obtained.
- IoT Service-Provider may subcontract with firms to supply and operate systems and software used to provide service, on condition that Service-Provider shall be the sole entity holding full responsibility of all service-provision aspects.
- IoT Service-Provider may not connect IoT devices to public telecom networks via wireless tools, except through operators licensed by NTRA to provide IoT Connectivity Services for others.

- IoT Service Provider shall comply with International standards for each app, based on its type.
- IoT Service-Provider shall keep the database of all information and data pertaining to the transactions thereof, as well as of all users entered into contract with, for one calendar year and shall make it available for NTRA or any authorized party thereof, and shall allow NTRA and/ or the authorized party thereof to access such data and take any data deemed important and necessary.
- IoT services shall not, by IoT Service-Provider, be used for visual surveillance activities, eg. surveillance systems and cameras, without obtaining necessary approvals from different authorities. All necessary measures shall also, by IoT Service-Provider, be taken to ensure full compliance with such a term.
- Licensee shall not provide Automatic Location services for users and transmit any data pertaining to GPS locations of certain individuals or objects, without obtaining a pre-consent in writing from Licensor.
- Technical and logistic tools allowing NTRA to monitor the level of commitment shown by Service-Provider to all terms and conditions of license, alongside verification of user complaints shall, by Service-Provider, by provided.
- All organizational as well as technical measures necessary for protection and confidentiality of information/ data, pertaining to service-users and network traffic, shall by Service-Provider be taken.
- IoT service provider shall not transmit any IoT traffic or use any part of IoT network components outside Egypt, unless a pre-consent of NTRA on such activities is obtained.
- Technical and regulatory directives issued by NTRA pertaining to IoT service-provision, shall by IoT Service-Provider, be committed to.
- IoT Service-Provider shall make available the networks thereof for other licensees on non-discriminatory basis whatsoever, and shall not refrain from such a process, unless a pre-consent in writing is obtained from NTRA.
- IoT Service-Provider shall provide the licensed services for users on non-discriminatory basis for any reason whatsoever, and shall not abstain from providing services without clear justifications subject to the discretion of NTRA.

Secondly: User-relationship

- IoT Service-Provider has the right to enter into contract with users to provide the services licensed, given that Service-Provider shall be held full responsibility for providing service to the users contracted with.
- IoT Service-Provider shall draw up contracts with users in accordance with a unified model acknowledged in writing and approved by NTRA, prior to contract-drafting, whereas

nature, terms and conditions, performance level, tariff, customer service and complaint-receiving process of service shall be included in the aforementioned model.

- A phone number for receiving complaints shall, by Service Provider, be assigned in return for a tariff identified by NTRA, whereas Service-Provider shall communicate the short number (155) as well as the free number 08003330333 of NTRA to users, should any of them wish to escalate the complaints thereof.
- Remedies shall, by Service-Provider, for service malfunction and in accordance with the directives of NTRA as well as without prejudice to emergency cases, force majeure and standards set forth in License, be paid.

Thirdly: Tariff

- IoT Service-Provider has the right to provide IoT services in return for certain tariff, and shall obtain a pre-consent in writing from NTRA on IoT tariff and/ or promotions pertaining to the IoT services provided.
- All necessary measures shall be taken by IoT Service-Provider and at the cost thereof, to disseminate the tariff of IoT services provided for the users contracted with, make it available for everyone and provide it for free when required.

Fourthly: Information Security:

- An annual, technical and assessing report on cybersecurity, consisting of penetration and vulnerability tests conducted by reputable as well as long-experienced firms in such a field, shall by IoT Service-Provider be designed and presented to NTRA.
- An instant, technical and assessing report on cybersecurity, consisting of penetration and vulnerability tests conducted by reputable as well as long-experienced firms in such a field, and should massive and major changes in service apps or devices when occur or when urgently requested, shall by IoT Service-Provider be designed and presented to NTRA.
- All instructions and directions issued by National Security Authorities and the technical requirements thereof, with respect to service licensed, shall by IoT Service-Provider be complied with and met at the cost thereof.
- An annual report on cybersecurity risks and CRR-Cyber Resilience Review shall by IoT Service-Provider be presented.

Fifthly: Satellite IoT Services

- IoT Service-Provider has the right to avail of the networks of Satellite Operators licensed to provide IoT networking services in the Arab Republic of Egypt.
- A pre-consent in writing shall, by IoT-Service Provider, be obtained from NTRA prior to entering into contract with licensed Satellite operators, and to deployment of terminal stations.

- Database of terminal devices operating via licensed satellite networks shall, by IoT Service-Provider and in any form requested by NTRA, be sent to NTRA on a monthly basis.

Ninthly: IoT devices

- Type Approval Certificate shall be obtained from NTRA, for IoT devices used.
- Trade agreements shall be drafted and necessary licenses shall be also obtained in case any copy-right protected software, operation systems or tools owned to third parties, are used.
- IoT devices shall support username and password changing per user, and shall have the feature of Reset Factory Settings.
- All SIM cards of IoT devices, operating via mobile operators, shall belong to licensed operators or any foreign operator that have previously obtained the approval of NTRA on IoT roaming agreement thereof.
- All rules and regulations issued by NTRA to this end shall, by IoT importers and users, be adhered to.

You could contact us for more inquiries and/or for submitting a request to acquire one of the IoT licenses by sending an email to iot@tra.gov.eg

Attachment (1)
Technical data required for Non-Cellular LPWAN

First: Data of Station

Station name and code	GPS coordinates	Area	Governorate	Station type/ manufacturer	Serial No./ ID	Frequency	Connectivity

Secondly: Data of Terminal

Entity	GPS coordinates	Area	Governorate	Terminal type/ manufacturer	Serial No./ ID	Frequency	Frequencies