

## **IoT/ M2M Regulatory Framework, 2079**

### **1. Background**

The Telecommunications Act, 2053 vested responsibility to Nepal Telecommunications Authority to grant license, regulate and systematize telecommunications services. In addition, the Telecommunications Regulation mandates the Authority to specify terms and conditions for the use of radio frequency in telecommunications services.

Considering the worldwide trend of IoT/ M2M development, gradual growth of these services in Nepal, and the roles these services play for realizing Digital Nepal, the Authority has issued this “**IoT/ M2M Regulatory Framework, 2079**” to foster the IoT/ M2M services in Nepal in the organized manner.

### **2. General Definition**

Unless the subject or the context otherwise requires, following keywords used in this framework shall have the meaning ascribed thereto hereunder:

- (a) Act:** Telecommunications Act, 1997(2053).
- (b) Authority:** Nepal Telecommunications Authority (NTA).
- (c) Internet of Things (IoT):** Ecosystem of infrastructures for automatic communication among interconnected objects (physical and virtual) based on existing and evolving interoperable information and communication technologies.
- (d) Machine to Machine Communication (M2M):** IoT service of networking and data transfer between machines/ IT infrastructures, either by wired or wireless connections.
- (e) Regulation:** Telecommunications Regulation, 1997(2054).
- (f) QoS Bylaw:** Telecommunications Service Quality Bylaw, 2079.
- (g) Short Range Devices (SRD):** Radio devices operating indoor or over a short distance at low power, having little potential to cause interference to other radio services.
- (h) Type Approval (TA):** Authorization by the Authority to import, supply or use an equipment type in Nepal.
- (i) Ultra-Wide Band (UWB):** Wireless network technology that has the benefit of offering the ability to carry a wide spectrum of frequency bands on low power and short distance.

### 3. Classification of IoT/ M2M applications/ services

IoT/ M2M services shall be classified broadly as follows:

#### 3.1 Based on Scope

**(a) Indoor/ Private IoT/ M2M services:** IoT/ M2M applications/ services that use network created only inside a building, and strictly not connected with the Internet or corporate intranet.

**(b) Outdoor IoT/M2M services:** IoT/ M2M applications/ services that are connected with the Internet or corporate intranet.

#### 3.2 Based on Spectrum/ Technology

**(a) Cellular IoT/ M2M services:** IoT/M2M services provided by using data SIM cards of mobile networks like 2G, 3G, 4G and/or following generations.

#### **(b) Non-cellular IoT/ M2M services:**

(i) **Wireless Local Area Network (WLAN):** Wireless radiocommunication system used for transmission of data via Wi-Fi.

(ii) **Wireless Personal Area Network (WPAN):** Personal network of low-powered, short-distance wireless devices such as Infrared, Bluetooth or Zigbee.

(iii) **Satellite IoT:** Network of IoT devices in which connectivity is achieved via satellite links.

(iv) **Low Power Wide Area Networks (LPWAN):** Wireless network technologies that interconnect low bandwidth, low powered devices having over a long range.

### 4. Operational Model

The operational model of the Outdoor IoT/M2M services shall include following entities:

**4.1 IoT/ M2M Network Provider:** Telecom Service Providers (TSPs), Network Service Providers (NSPs) and Internet Service Providers (ISPs) licensed by the Authority as per the Act.

**4.2 IoT/ M2M Service Provider:** Legal bodies providing IoT services to the end users by utilizing the telecommunication network established by IoT Network Operator to provide the services thereof.

**4.3 IoT/ M2M User:** Any person (natural or legal) entering into contract with IoT Service Provider to avail of IoT services.

## **5. Licensing/ Authorization of IoT/ M2M networks/ services**

The Licensing and Authorization conditions for different IoT/ M2M networks and services shall be as follows:

**5.1 For IoT/ M2M Network:** (a) No separate license/ authorization is required for the Licensees of the Authority to build and operate IoT/ M2M network.

(b) The IoT/ M2M Network Provider shall get approval from the Authority, if it wishes to work as IoT/ M2M Network Provider to provide IoT/ M2M services to the end users.

**5.2 For Indoor/ Private IoT/ M2M services:** (a) No license/ authorization is required to build and operate Indoor/Private IoT/ M2M services as per the Act.

(b) The devices used in such services shall be in compliance with the standards sanctioned by the Authority.

(c) The users of such networks shall adhere to the regulatory measures adopted by the Authority.

**5.3 For Outdoor IoT/ M2M services:** (a) The outdoor IoT/ M2M services shall be classified as a Value-Added Service (VAS) and the Authority shall issue the authorization for the same.

(d) The general License/ Authorization conditions for the IoT/ M2M services shall be as specified in the VAS Directive issued by the Authority. Specific terms and conditions shall be prescribed in case-to-case basis.

(e) The Authority may prepare and suitably amend the Authorization conditions as and when needed.

**5.4 Special Authorization:** (a) Special authorization or no objection shall be granted for research and development (R&D) in IoT/ M2M.

(b) Such authorization shall be provided for non-commercial purpose, for a limited period, and free-of-charge which may be applicable to other type of authorizations.

(c) Other terms and conditions for such type of authorization shall be prescribed in case-to-case basis.

## **6. Provisioning of Spectrum**

Authorization for the use of spectrum in IoT/ M2M services shall be as follows:

**6.1 Cellular IoT/ M2M Spectrum:** (a) Cellular IoT/ M2M Network shall be provided only by the Licensees of Mobile Service and Basic Telecommunications Service, by

using the technology neutral spectrum assigned exclusively to such entity.

(b) IoT Service Providers willing to provide Cellular IoT/ M2M services shall sign a Contract or Memorandum of Understanding with the Cellular Network Provider licensed as per the Act.

(c) Spectrum trading and leasing are strictly prohibited between IoT Network Provider and IoT Service Provider.

**6.2 License Exempt IoT/M2M Spectrum:** (a) License exempted bands for IoT/ M2M shall include the following:

(i) ISM bands.

(ii) License exempt bands specified for IoT/ M2M/ SRD/ UWB etc.

(iii) License exempt bands specified for Low Power Wide Area Network (LPWAN) etc.

(b) All the Licensees as specified in Clause 4.1 above are eligible to build and operate IoT/ M2M network using license exempted spectrum.

(c) The terms and condition for the usage of such spectrum including non-protection and non-interference, specified while allocating the spectrum, shall be complied with.

(d) In case of interference to primary services in adjacent or overlapping bands, the IoT Service Provider using license exempt spectrum shall take corrective measures as soon as notified by the Authority. Such corrective measure may include termination of the corresponding transmission, and the IoT Network and Service Providers cannot claim any form of privileges from the Authority.

**6.3 Exclusive IoT/ M2M Spectrum:** (a) Exclusive spectrum for specific applications of IoT/ M2M may be allocated by the Radio Frequency Policy Determination Committee (RFPDC) as stipulated in the Act, and such spectrum may be assigned to the existing/ new Licensees by the Authority.

(b) Usage fees as well as the terms and conditions of the usage of such spectrum shall be as prescribed by the RFPDC.

## **7. Equipment Standardization and Service Quality**

**7.1** All the network as well as end user equipment used in IoT/ M2M services must comply with regulations and standardization requirements as set by the Authority.

**7.2** Type Approval Certificate shall be obtained from the Authority for the IoT/ M2M

devices to be used.

**7.3** The devices used in the network, including end user equipment, shall comply with the Electromagnetic Radiation Guidelines issued by the Authority.

**7.4** Service quality offered to the end users shall be in accordance with the Key Performance Indicators defined in the QoS Bylaw issued by the Authority.

## **8. Numbering and Tariff**

**8.1** A separate numbering range will be allocated to IoT/ M2M service in the National Numbering Plan. Based on the growth of IoT/ M2M services, the numbering requirement and allocation shall be reviewed by the Authority.

**8.2** The IoT/M2M Network and Service Provider shall use the numbering range approved and allocated to them by the Authority.

**8.3** For Cellular IoT/ M2M services, SIM cards (data only, voice disabled) can be used if necessary. Using SIM cards issued for IoT/ M2M services for other purposes shall be strictly prohibited.

**8.4** Such SIM cards shall be issued by the IoT/ M2M Network Provider and distributed by IoT/M2M Service Provider. Proper records of the SIM cards, as mandated by the applicable laws shall be maintained by the IoT/ M2M Network and Service Providers.

**8.5** The tariff related to the IoT/ M2M service offered to the end users shall be applicable only after approval from the Authority.

**8.6** International roaming, as applicable to other mobile services, shall be allowed.

**8.7** For Internet Protocol (IP) based communications, IPv4 addressing is permissible, however the IPv6 is most preferable.

## **9. Security, Privacy and Data Management**

**9.1** Industry best practices and applicable laws of Nepal shall be followed for data security.

**9.2** Personally-Indefinable Information of the IoT/ M2M Users shall be properly encrypted and shall not be accessible to third-parties in any cases.

**9.3** The data storage and maintenance shall be done as per existing data retention rules for telecommunication services.

**9.4** At least a copy of all relevant data shall be stored within the territory of Nepal. Personally-Indefinable Information shall be saved within Nepal only. Complete localization of the data is encouraged.

**9.5** Any incidents related to data breaches shall be reported to the Authority immediately. Prompt technological as well as legal actions, as required by the applicable laws, shall be taken in response to such issues.

## **10. Consumers Protection**

**10.1** IoT/ M2M Service Provider shall enter into contract with IoT/ M2M User to provide the services licensed. The type of service, duration of service, billing methodologies, customer care, and other terms and conditions of the service shall be included in the contract. The format of the contract shall be approved by the Authority.

**10.2** At least a physical location, a phone number, and an email address shall be mandatorily managed by the IoT/ M2M Service Provider for complaint handling and customer care. Additional requirements may be assigned based on the scale of the provided service.

**10.3** The maintenance charges of the IoT/ M2M service shall be in accordance with the Regulation.

## **11. Legal Compliance**

The IoT Network and Service Provider shall comply with all the applicable statutory provisions issued by the Authority and the Government concerning the network establishment and maintenance, service operation as well as data security, privacy, protection and retention.