12th January 2017

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Subject: **Consultation Paper on "Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications"**

Dear Sir,

This is in reference to your Consultation Paper dated 18th October 2016 on **"Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications".**

As desired, we hereby enclose our response to the questions raised in your above mentioned Consultation Paper. We hope our response will be given due consideration. We shall be obliged to address any further queries from your good office in this regard.

Thanking you and assuring you of our best attention always.

Yours sincerely,

Satya Yadav
Addl. Vice President – Corporate Regulatory Affairs
Tata Teleservices Limited
And
Authorized Signatory
For Tata Teleservices (Maharashtra) Limited

Encl: As above

TTL response to Consultation Paper on
"Spectrum, Roaming and QoS related requirements
In Machine-to-Machine (M2M) Communications"

Q1. What should be the framework for introduction of M2M Service providers in the sector? Should it be through amendment in the existing licenses of access service/ISP license and/or licensing authorization in the existing Unified License and UL (VNO) license or it should be kept under OSP Category registration? Please provide rationale to your response.

TTL supports the Machine to Machine policy framework, which is based on equal services and technological neutrality. M2M Solutions & Services based on mobile/cellular network already play a significant role in the given domain and such services can operate in spectrum allocations intended for mobile/cellular networks. Since M2M services are likely to impact all socio economic classes and industry domains, it is utmost important to keep the security & QoS of the solution and data is given a priority. This in turn puts the responsibility and accountability of the security in the hands of the M2M service providers

In view of the above TTL has an opinion that M2M service providers in India should be kept under category of UL/UASL or VNO, as it will make such service providers accountable for the security & QoS. This is appropriate because it is M2M Service Provider will be responsible for integrating various parts of the value chain of a M2M solution, which is likely to become more fragmented in the years to come.

Q2. In case a licensing framework for MSP is proposed, what should be the Entry Fee, Performance Bank Guarantee (if any) or Financial Bank Guarantee etc? Please provide detailed justification.

TTL has recommended M2M service providers to come under the category of UL, UASL or VNO license; hence for existing TSPs separate licensing framework and PBG or FBG is not proposed. For a new MSP Entry Fee/PBG and FBG should be the same as for existing license.

Q3. Do you propose any other regulatory framework for M2M other than the options mentioned above? If yes, provide detailed input on your proposal.

We have mentioned in A1 that TTL supports M2M policy framework, based on equal services and technological neutrality and have advocated M2MSP in India to be kept under UL/UASL or VNO. Application Services are directly linked to the various sectors such as Transport, Health, Education, etc. Any regulations under the various sectors affect the various Application services directly and are therefore regulated under the sector specific domain. Therefore it may require certain cross sector discussions and consensus.

Q4. In your opinion what should be the quantum of spectrum required to meet the M2M communications requirement, keeping a horizon of 10-15 years? Please justify your answer.

Spectrum Requirements will depend upon Applications and their corresponding feasible low cost and low power communication technologies like LoRa, Sigfox, BLE, Zigbee, Z-Wave, Wi-Fi, etc. On the top of this, evolution of current 4G and fast evolving technologies on 5G are likely to focus around demand of futuristic M2M solutions.

Many of the above mentioned technologies are likely to be available across the licensed and unlicensed spectrum bands. While unlicensed spectrum is likely to be cheaper but only licensed bands would be able to provide high quality of service. It is very likely that depending on the application use case, a service provider is likely to make an appropriate choice of the technology to be used and the spectrum band for the service.

Most of the UASL license holders , in the near future, may use the spectrum allocated to them both for M2M services as well as the consumer services. TTL supports DOTs existing process of allocating spectrum through the public auction route and believes that all such spectrum requirements will be met in the transparent process.

Q5. Which spectrum bands are more suitable for M2M communication in India including those from the table 2.3 above? Which of these bands can be made delicensed?

At present it is not advisable to earmark separate spectrum band for M2M services in India because the M2M services will utilize various networks of the existing technologies. Therefore, reservations of any spectrum band for M2M services is not desirable.

Q6. Can a portion of 10 MHz centre gap between uplink and down link of the 700 MHz band (FDD) be used for M2M communications as de-licensed band for short range applications with some defined parameters? If so, what quantum? Justify your answer with technical feasibility, keeping in mind the interference issues.

TTL is of the view that it will not be appropriate to use 700 MHz band for M2M communication as de-licensed band for short range application with some defined parameters as it can lead to reduction in the amount of spectrum that is licensed for mobile services and also the same may interfere with licensed spectrum in the same range due to its proximity. Also, it may be premature to finalize the details referred in this question and lot would depend upon further studies as clarified in the questions above.

Q7. In your opinion should national roaming for M2M/IoT devices be free?
(a) If yes, what could be its possible implications?

(a) : There are wide range of deployment models, alternatives and often a combination can be utilised for M2M and IoT connected services.

Most of the use cases in M2M domain that involve inter-circle mobility of devices/sensors are cases of low bandwidth data usage.
M2M service Provider has to carefully consider, how the various needs of each case can be met in a commercial and competitive manner.

Considering the above, TTL believes that National Roaming Charges for M2M/ IoT devices should be left upon the Mobile Service Providers. MSPs should have the flexibility to choose a business model that facilitates a rapid and economically viable deployment of M2M and IoT solutions.

b) If no, what should be the ceiling tariffs for national roaming for M2M communication?

(b) In order to deliver the wide social and economic benefits of M2M and IoT, TSP/ MSP will need the ability to make significant network investments. In order to do this, TTL do not recommend a different National Roaming Ceiling Tariff other than the present National Roaming Ceiling Tariff for retail subscribers.

Q8. In case of M2M devices, should;
(a) roaming on permanent basis be allowed for foreign SIM/eUICC; or

(a) TTL does not recommend to allow roaming on permanent basis for foreign SIMs, since that may be open to misuse and harm the security of solution & nation. We recommend to replace the foreign SIM to an Indian SIM, within a predefined time assigned by the authority. The replaced SIM of an Indian TSP/ MSP can be as per the commercial arrangements of M2MSP with Indian TSP.

(b) Only domestic manufactured SIM/eUICC be allowed? and/or

(b) Yes ! As mentioned in A8(a), only domestic manufactured SIM/ eUICC should be allowed in the M2M devices in India.

(c) there be a timeline/lifecycle of foreign SIMs to be converted into Indian SIMs/eUICC?

(c) TTL recommends to convert the foreign SIM/ eUICC to Indian SIM/ eUICC on urgent basis. We would recommend the authority to lay down the guidelines of SIM replacement to Indian SIM. The embedded SIM (also called eSIM or eUICC) is a new

secure element designed to remotely manage multiple mobile network operator subscriptions and be compliant with GSMA specifications available in various form factors, either plugged-in or soldered, the eSIM is easy to integrate in any kind of device.

(d) any other option is available?

(d) TTL do not recommends any other option and is of view that only Indian SIM should be allowed in M2M devices in India. GSMA has already released the specifications and a secure process for embedded SIMs that may be provisioned Over The Air (OTA), which if approved by the required authorities will obliviate the need for continuing with foreign SIMs

Please explain implications and issues involved in all the above scenarios.

Q9. In case permanent roaming of M2M devices having inbuilt foreign SIM is allowed, should the international roaming charges be defined by the Regulator or it should be left to the mutual agreement between the roaming partners?

Since TTL recommends not to use foreign SIMs in M2M devices, regulation on International roaming charges are not applicable.

Q10. What should be the International roaming policy for machines which can communicate in the M2M ecosystem? Provide detailed answer giving justifications.

TTL does not recommend use of International SIMs in M2M devices. On the other side it is recommended that no amendment is made in the the current policy on International roaming for machines communication as well.

Q11. In order to provide operational and roaming flexibility to MSPs, would it be feasible to allocate separate MNCs to MSPs? What could be the pros and cons of such arrangement?

Allocation of a separate Mobile Network Codes to MSPs, require detailed study of it's technical and logistical complexities and it's implementation cost.

While this solution will enable MSPs to select the connectivity provider depending upon their commercial arrangements and wide-spread coverage, leading towards rapid growth of this industry, however it also exposes to security , fraud risk and misuse of allocated numbering resources to MSPs, as this solution will allow private parties to procure and issue SIM cards. Moreover, since most of the M2M solutions are likely to work on data technology, a separate number series may not hold significance.

Q12. Will the existing measures taken for security of networks and data be adequate for security in M2M context too? Please suggest additional measures, if any, for security of networks and data for M2M communication.

TTL is of the view that current best practice principles for securing network and data are an excellent starting point for achieving security and privacy in an M2M context and it is Service Provider's responsibility to ensure such best practices are applied to their services.

The M2M devices should be tested by certified Agency like TEC. Other methods like SIM binding with hardware ID etc., should be in place.

On the data security part, M2M service provider should undergo a VAPT certification form listed audit companies and also get regular audit done to ensure that the customer data does not leak from their possession.

The M2M Service Provider can also undergo an "IoT Self Assessment Scheme" created by GSMA recently. M2M Service Provider can complete this self assessment and exhibit the security measures they have taken to ensure that their products and services are protected from cyber security risks.

Q13. (a) How should the M2M Service providers ensure protection of consumer interest and data privacy of the consumer? Can the issue be dealt in the framework of existing laws?

(a): This question requires further comprehensive study, as there are huge types of variations in the applications and services. However, it is vital to develop the trust of consumers in M2M solutions for faster development of IoT, in the interest of society in general. In order to develop this trust, it needs to be ensured that data privacy of the consumer is maintained. Confidential data of consumer must be protected and should not be transferred to another jurisdiction without the consent of the consumer.

The private communication should be kept confidential. It should be ensured that the systems should use and process only that part of the content from communication, for legitimate reasons, such as fraud prevention and security.

(b) If not, what changes are proposed in Information Technology Act. 2000 and relevant license conditions to protect the security and privacy of an individual? Please comment with justification.

TTL is of the view that although the Information Technology Act 200 is well-built to protect the security and privacy of an individual, but considering the M2M and IoT space, the current IT Act 2000 and relevant license conditions requires in depth study of the act, applicable clauses, the role of inter-mediatory providers.

Q14. Is there a need to define different types of SLAs at point of interconnects at various layers of Heterogeneous Networks (HetNets)? What parameters must be considered for defining such SLAs? Please give your comments with justifications.

TTL is of the view that there is no need to define different types of SLAs at point of interconnects at various layers of HetNets. In India, TSPs compete along many dimensions such as calling and data plans, innovative applications, network coverage and quality. There is a high degree of competition in the telecom space in India which allows the consumer to choose between the services of Service Providers depending upon the price, coverage and QoS. There are ample of incentives to ensure that the customer enjoys the best available benefits of an open internet.

Q15. What should be the distributed optimal duty cycle to optimise the energy efficiency, end-to-end delay and transmission reliability in a M2M network?

End to end delays and transmission reliability are applications and need dependent in the domain of M2M Solutions. Existing UASL already covers QoS very comprehensively and keeping in the evolving nature of various communications technologies and standards to support M2M use cases, it may be premature to make amendments to the existing license to address the requirements of M2M.

Q16. Please give your comments on any related matter not covered in this consultation paper.

The consultation paper does not talk about storage of data logs. This is a critical issue which needs to be analysed and defined considering large number of M2M devices generating huge amount of data.