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Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan,
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New Delhi-110002

Subject: ACTO's response to TRAI Consultation Paper (No. 21/2016) dated 18th October 2016 on Spectrum, Roaming & QoS requirements in Machine-to-Machine (M2M) Communications

Dear Sir,

Association of Competitive Telecom Operators (ACTO) is pleased to submit its response to TRAI Consultation Paper (No. 21/2016) on Spectrum, Roaming & QoS requirements in Machine-to-Machine (M2M) Communications.

We hope that our comments (enclosed as Annexure – I) will merit consideration of the Hon'ble Authority.

Thanking you,
Respectfully submitted

Yours sincerely,
for **Association of Competitive Telecom Operators**

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Encl.: As above

Annexure-I

ACTO's response on TRAI CP on Spectrum, Roaming & QoS related requirements in M2M communications

M2M is an emerging technology service format that will transform the dynamics of ICT across the globe. It is forcasted that <u>IoT Spending is likely to reach $1.3 Trillion by 2019</u> with APAC contributing 40% to worldwide spend in last year. By 2020, more than 33 billion connected devices will be installed, globally, up from 10.4 billion devices installed in 2015. Of those devices installed in 2015, the majority are deployed in the Asia Pacific region of the world**.**

M2M / Internet of Things (IoT) solutions enable a customer's remote machines or devices to communicate wirelessly with customer back-end IT infrastructure. Network-ready devices as diverse as trucks, turbines, heart monitors, and vending machines use a cellular data link to communicate with a computer server. In an IoT solution, a customer database stores and responds to the data that the customer devices exchange, and management applications enable the customer to report, analyze, and act upon the information.

The M2M market is characterized by tremendous diversity in services, platforms, providers, users, applications, industries and technologies. Any policy approach should accommodate multiple solutions; there is not necessarily a standard "one size fits all" solution that fits across the ecosystem. Industry requires flexibility to develop models that best facilitate a rapid and economically viable deployment of M2M services.

M2M applications and solutions are based on global platforms and not country specific standards. Any government mandate that requires establishment of a local, in-country M2M server / gateway / infrastructure must be avoided, as such decisions should be left to market forces.

Indeed for robust growth in M2M applications/services and their associated benefits, the adoption of a policy which promotes free flow of data across borders is essential.

Customer remote devices can uplink to IT systems to report inventories, status or usage information, and customer systems can downlink to the devices to send instructions, update software, or remotely monitor equipment. When a vehicle, instrument, house, or business can transmit real-time information wirelessly and receive valuable feedback, customers can automate manual processes and streamline service provisioning and billing. IoT solutions can help improve business efficiency for many types of services. For example:

- Healthcare providers can remotely monitor patients conditions after medical procedures so that patients can recover in comfort at home.
- Power companies can electronically transmit data from power meters to company billing systems and eliminate the cost and time of on-site readings. In addition, they can monitor electricity grids for capacity and outage conditions to help isolate and repair disruptions.
- Shipping or other service companies can track vehicle locations and assets to plan service routes and monitor pick-ups and deliveries.
- Construction companies can monitor the status of remote assets like construction equipment or pipelines.

As the above examples show, M2M/IoT solutions can help customers streamline processes, save time, reduce labor expenses, and improve service quality.

Investors will only view the M2M market as an attractive investment opportunity if it is incentivized by a flexible light touch regulatory framework. Restrictive requirements by way of over regulations, including data and content localization will discourage investment and deprive consumers of innovative products.

In order to promote global innovation and investment throughout the digital economy, Regulators/ Government should adopt light-touch and flexible regulatory frameworks to facilitate faster and efficient deployment and adoption of M2M in the country. These include, but are not limited to:

- Avoiding unnecessary regulations that could impede the pace of innovation and find mechanisms to address divergent national standards.

- Support seamless cross-border data flows for all types of services, and avoid data localization and infrastructure localization requirements.

- The National Telecom M2M Roadmap released by Department of Telecommunications in May 2015, has opened up tremendous opportunities to make enormous positive impact for consumers, Indian manufacturers, and Government by adopting policies that encourage competition and innovation in the machine-to-machine market in India.

- TRAI should consider facilitating new business models for machine-to-machine services by permitting the use of "Global SIMs" for the delivery of M2M services in India to industries relying upon on a single global platform and service delivery model. Global SIMs are the SIMs of one MNO used globally, on a single platform. Global SIMs allow a manufacturer, for example, to contract with only one operator for all its global needs, and to use one platform for global ordering, provisioning, rather than having to acquire services from different operators in each country into which they distribute their products, each of whom has different platforms that may record information in different ways, preventing the consistent collection of information across countries.

- International roaming is the vehicle for data transport for the Global SIM. In each country, an underlying MNO that is subject to local regulation provides the wireless service, but the service is sold to operators in other countries who can then offer roaming on their Global SIM, using a single platform worldwide, to their customers who have global distribution needs.

- The efficiency of such an arrangement is imperative to the success of M2M services in a very low margin business (relative to cell phones and tablets). The business models that apply to M2M services are significantly different from the business models that apply to standard handsets and, therefore, require much more flexible solutions.

In the M2M environment, economies of scale are essential:

- Compared to mobile phones and tablets, M2M devices typically have low data consumption and very low ARPU.

- Manufacturers typically do not sell, or charge end users separately, for wireless connectivity. Instead, wireless connectivity is a cost of doing business that may be included in the overall price of the M2M product.

- Because their products usually have very low ARPU, manufacturers are *extremely sensitive* to development and deployment of input costs.

- To efficiently amortize their costs, manufacturers tend to develop standardized products with long useful lives that can be sold in significant volumes across many countries.

- In sum, to be economically viable, M2M device manufacturers must be able to "build it once, sell it everywhere."

The emergence of new M2M and IoT business models pose unique challenges that require fresh thinking and innovative solutions, such as a light-touch regulatory approach for the introduction of a M2M Service Provider ("MSP") (which has been the draft registration based framework proposed by DoT with industry consultation), liberalized policies for the allocation and use of numbering resources, and industry-driven security and privacy practices.

Given that M2M communications, and the IoT, are evolving at a dynamic pace, government and industry must work together to create flexible, global, interoperable and future-focused policies to ensure the IoT and M2M communications deliver their potential for economic and social development in and across all sectors, private and public.

In light of the above background, we now provide detailed responses to the issues raised in the consultation paper.

Question 1. 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.

<u>**ACTO's Response:**</u>

Department of Telecommunications (DoT) has already identified and proposed a draft framework which is a light touch regulatory based on registration of M2M service provider. We believe that this approach as against having a licensing framework is far better for the growth of M2M services.

M2M is inherently a global business which requires regulatory policies to reflect the global essence and recognize as well as facilitate cross border data flow amongst many other requirements. There are inherent restrictions in voice related licensing framework, which do not always permit free flow of cross border data.

It is estimated that there will be 50 billion connected devices by 2021. Apart from the uniform underlying connectivity piece there will be multiple M2M based applications. The telecom license can only regulate the underlying connectivity which is already part of the license provided to mobile operators. Consequently, no license should be prescribed for the application part. M2M application is platform based.

TRAI has in the current consultation under clause 1.2 stated that "*M2M communication has potential to bring substantial social and economic benefits to governments, citizens, end-users and businesses*". TRAI has further stated under clause 1.3 that "*Although forecasts indicate a significant opportunity in this field, this industry us still in a*

nascent stage. The M2M ecosystem is composed of a large number of diverse players, deploying innovative services across different networks, technologies and devices. Providing clarity and consistency of regulation for equivalent services, as well as policies that enable growth will play a significant role in fully capturing its opportunity to stimulate this market".

Therefore in view of the above it is imperative that such a nascent and emerging technology service format should not be placed under any licensing or regulatory barrier which impedes its growth.

On MSP registration, the National Telecom M2M roadmap dated May 12, 2015 has stated: "*To have lightweight regulation towards M2M services and addressing concerns like interface issues with Telecom service provider, KYC, security and encryption (for the purpose of lawful interception at TSP level), all M2M service providers utilizing telecom facilities from authorized TSPs should have MSP (M2M service Provider) registration as in case of OSP registration. The terms, conditions and related guidelines of MSP registration will be released in due course.*"

Given M2M/IoT are still in a nascent stage, ACTO recommends that India should have a light touch regulatory environment like notification / registration based and not a license for M2M services. The framework should foster innovation and encourage growth of M2M services There are several precedents for permitting providers of M2M services in a national context (such as in USA or UK) without a notification/registration.

The registration / notification requirement for M2MSPs, should be in the form of a simple intimation or a notification. .There should not be any requirement to register SIM to facilitate deployment and ease of registration requirements. This would also mean less administrative burden on the DoT/TRAI and facilitate the current moto of Government on "ease of doing business". It is important to note that the majority of M2M devices will be sending data to specific destinations and that voice capabilities will be limited to the capability to call specifically designated call centers associated with the service that too only in emergency situations.

Furthermore, the M2M device makers or the M2M service providers typically contract with an MNO; the MNO does not typically contract with the consumer/end-user. Thus with M2M services, the threshold policy question of actual consumer harm must be evaluated and the technological advancements and innovations that continue to define the M2M marketplace considered before imposing over prescriptive requirements.

Licensing of M2M services in the existing Unified License and UL (VNO) license:

ACTO members do not support any a licensing for M2M services under the existing Unified License and UL (VNO) license for the following reasons:

Machina Research 2016 projects that by 2021 there will be merely **8.4**% connected devices on cellular connectivity. This implies vast majority of the potential M2M service providers who neither come from the traditional telephony business nor wish to offer voice as a part of their portfolio.

Other connectivity options (sensors, RFID, blue tooth, zig bee protocol etc.) are expected to proliferate the M2M connectivity in a significant manner. Provisions for these connectivity options do not require any telecom license or authorization. Therefore any policy should account for such options.

Since cellular connectivity is projected to be abysmally 8.4%, therefore there is no merit in placing M2M services under a license.

M2M services have very low ARPU.

1. M2M involves many sectors/ verticals and only a miniscule part of the service uses data communications which is already under the existing license regime.

2. Licensing arrangements are only applicable in telecom sector unlike in other sectors like agriculture, health etc.

3. UL/VNO model will undermine the M2M business model because, as currently formulated, licensing fees are assessed without the ability of a license holder to deduct the cost of inputs that already include licensing fees. This result in an unequal assessment of licensing fees, where some license holders pay licensing fees for their own license and on the licensing fees assessed on the services they may purchase from another licensed provider in India. Requiring MSPs to obtain a Unified License or VNO license would result in a regulatory imbalance and a disincentive for efficient deployment of M2M services.

4. Regulations are different in different sectors. Licensing/regulation will be viewed as an infringement upon the jurisdiction of any authorized telecom licensee / OSPs.

5. Licensing requirements will prevent the entry of new service providers in the M2M space due to inherent advantages of incumbent providers, thus leading to less competition for existing operators. This lack of competition will not only impede the rapid proliferation of M2M services but will also impact end users / consumer choice and cost of service.

ACTO members strongly believe that there should be no additional regulation of any kind for M2M services. If any regulation is required it should be light touch, in line with global practices, and horizontal in nature.

Bringing the MSP under the existing use of Other Service Provider (OSP) regime:

If any type of light touch framework is envisaged then it should permit Global SIMs used for M2M to be covered by the existing practice of OSP registration. This would be similar to other OSP activities (e.g. call centers), where there is an underlying network operator who has the network license, but the OSP is a non-network operator who still registers its activity with DoT. In this instance, an Indian affiliate of or an entity with a commercial relationship with a global roaming SIM provider would register as an OSP, and then bear responsibility for a high-level KYC compliance for SIMs in India.

ACTO believes that a simple M2MSP registration (the framework promulgated by DoT through industry consultation) is the preferred approach for identifying the M2M players in the industry. This flexible approach would provide the insight into the M2M services market in India without being unduly burdensome. An authorization / registration /notification based regime and not license framework should serve as a means to collect statistical information for identifying the number of M2M players in the industry.

To summarise below are the specific reasons why M2MSP should not be linked to a UL or UL-VNO.

1. VNO is essentially a licensing requirement. It comes with a cost of US$1.1 million and multiple compliances. Making VNO a precondition to M2M SP Registration, is an attempt to reduce competition and erect an entry barrier where non-exist and do not need to.

2. The reason why VNO option was perhaps not considered by DoT during the formulation of the draft M2M SP Guidelines was they do not wanted to restrict innovation, growth and competition by burdening M2M ecosystem with legacy traditional voice linked license regime.

3. M2M is at very early stages of development. It requires very light touch regulation akin to notification or a registration at most. Any regulation beyond that would be considered heavy handed, and dampen the ecosystem for investments due to costs, compliance and other related issues, included in the UL VNO licensing specifications.

4. M2M business is very different from traditional voice. M2M is a high volume and low ARPU business. UL-VNO license has huge financial entry cost (Entry Fee of INR 7.5 crores (USD 1.2 Million), Recurring license fee and spectrum charges totaling to 13% approximately, coupled with bank guarantee cost will make the M2M business financially unviable.

5. A UL-VNO in India for M2M services may also entail that the M2M devices will work solely on the underlying cellular connectivity. Machina Research 2016 projects that by 2021 there will be merely **8.4**% connected devices on cellular connectivity. This implies that vast majority of the potential M2M service providers neither come from the traditional telephony business nor wish to offer voice services as a part of their portfolio.

6. Other connectivity options (sensors, RFID, blue tooth, zig bee protocol etc.) are expected to proliferate the M2M connectivity in a significant manner. Provisions for these connectivity options does not requires any telecom license or authorization.

Any telecom license carries a host of associated compliance requirements spreading from technical, financial, commercial, etc.. The current licensing framework is not aligned to the requirements of M2M business which requires a light touch regulatory approach for which licensing is not the right option.

Question 2. 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.

<u>**ACTO's Response**</u>:

Since we do not recommend any type of licensing framework for MSP, there should be no entry fee, Performance Bank Guarantee or Financial Bank Guarantee.

Question 3. Do you propose any other regulatory framework for M2M other than the options mentioned above? If yes, provide detailed input on your proposal.

<u>**ACTO's Response**</u>:

Please refer to our response to Question No 1.

Question 4. 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.

ACTO's Response:

Spectrum is an essential building block for M2M device connectivity. Ubiquitous, affordable, high-speed broadband connections over licensed and unlicensed airwaves are crucial to enable consumers and the public and private sectors to benefit from this emerging technology format throughout the IoT ecosystem. Thus, effective and technologically neutral management of this increasingly scarce resource must be a priority for policymakers.

On the issue about spectrum and its requirements under M2M/IOT, it is to be noted that the projected number of IoT devices will place additional demands on spectrum resources, requiring a continued growth in spectrum available for general commercial use, both licensed and unlicensed.

However, there is no need for governments to allocate dedicated spectrum specifically for IoT or IoT segments. Government should continue efforts to find and reallocate spectrum for commercial mobile broadband use. It should be left to spectrum licensees to manage and employ their spectrum in an optimized fashion for the mix of traffic types that may be simultaneously using licensed bands. Government should continue to support the progress being made by industry standards bodies in the development of new standards, and work toward international harmonization of spectrum allocations where appropriate.

The pricing and release of spectrum should follow a transparent process with no arbitrage advantage vis-à-vis access spectrum. Also, the M2M service provider, in case they wish to build networks by acquiring the M2M spectrum, would need to take a UL.

M2M can also operate over wired networks, private wireless (Wi-Fi) or public mobile networks, the latter two of which already have allocated spectrum. As traffic grows on mobile networks, additional spectrum may be required to accommodate the increase in the data volumes, some of which may be M2M, including some applications that would be made possible through expected high-speed 5G technologies. Any spectrum allocated would best be used by expanding public mobile networks which provide new capacity across all applications and users, and not dedicated to particular use such as M2M.

Thus, there is no need to allocate dedicated spectrum for M2M services or industry verticals. However, there is great benefit for the adoption of all services, including M2M services, if spectrum bands are harmonized across multiple countries, but this is a matter of regional/global planning, rather than of solely domestic spectrum allocation. India should continue to engage at the ITU and monitor global developments for future spectrum use with respect to 5G in order to benefit from global harmonization through the ITU and as a result of market forces.

Machina Research 2016 projects that by 2021 there will be merely **8.4**% connected devices on cellular connectivity. This implies vast majority of the potential M2M service providers who neither come from the traditional telephony business nor wish to offer voice as a part of their portfolio.

Other connectivity options (sensors, RFID, blue tooth, zig bee protocol etc.) are expected to proliferate the M2M connectivity in a significant manner. Provisions for these connectivity options do not require any telecom license or authorization. Therefore any policy should account for such options.

Question 5. 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?

ACTO's Response

Please see response to Question 4. Since, M2M services will in part rely on existing commercial wireless networks, discussions on spectrum should be reserved to those types of services, which will be designed to meet multiple needs, not just M2M. We point to the recent Spectrum Frontiers Order by the FCC in the U.S. as an indicator of what other countries are considering with respect to licensed, unlicensed and shared spectrum for 5G.

Please see: https://www.fcc.gov/document/spectrum-frontiers-ro-and-fnprm

Question 6. 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 delicensed 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.

ACTO's Response:

No response is provided.

Question 7. In your opinion should national roaming for M2M/IoT devices be free?
(a) If yes, what could be its possible implications?
(b) If no, what should be the ceiling tariffs for national roaming for M2M communication?

ACTO's Response:

The M2M devices typically use much less data as compared to traditional consumer facing voice/data services. The TRAI tariff order should not be applicable to M2M devices. Commercial negotiations among operators will be the best option for roaming on M2M communication.

Question 8. In case of M2M devices, should;

(a) roaming on permanent basis be allowed for foreign SIM/eUICC; or

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

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

(d) any other option is available?
Please explain implications and issues involved in all the above scenarios.

ACTO's Response:

M2M is inherently a global business which requires regulatory policies to reflect the global essence and recognize as well as facilitate cross border data flow amongst many other requirements. There are inherent restrictions in the traditional voice related licensing framework, which does not always faciliate free flow of cross border data.

It is estimated that there will be 50 billion connected devices by 2021. Apart from the uniform underlying connectivity piece there will be multiple M2M based applications. The telecom license can only regulate the underlying connectivity which is already part of the license provided to mobile operators. Consequently, no license should be prescribed for the application part.

TRAI has in the current consultation under clause 1.2 stated that "M2M communication has potential to bring substantial social and economic benefits to governments, citizens, end-users and businesses". TRAI has further stated under clause 1.3 that "Although forecasts indicate a significant opportunity in this field, this industry us still in a nascent stage. The M2M ecosystem is composed of a large number of diverse players, deploying innovative services across different networks, technologies and devices. Providing clarity and consistency of regulation for equivalent services, as well as policies that enable growth will play a significant role in fully capturing its opportunity to stimulate this market". Therefore it is imperative that such a nascent and emerging technology service format should not be placed under licensing or regulatory barrier which impedes its growth.

Roaming on a permanent basis is simply roaming which is permitted under existing license terms and conditions. Prohibiting the use of foreign SIMs / numbers for roaming will impede the growth of M2M applications / services. Requiring the use of a local number will not enhance the availability of data significantly. We understand that the language in the draft policy does mention providing a reasonable time-frame for transition to local SIMs in consultation with stakeholders, but we strongly believe that there should not be any requirement to replace foreign SIMs in cases where a device is already fitted with hard or soft / embedded SIMs.

Vehicles and Devices with embedded SIMs from other countries would come into India and roam on the network of India telecom operators in exactly the same way as any individual with a mobile phone would roam with an international SIM with the number from the country of origin.

There are also technical challenges with respect to the technical feasibility of SIM replacement/ integration /refitting etc. and there is possibility that the M2M device could be compromised and potentially render the service inoperable.

ACTO believes that the use of so-called permanent roaming as a technical and commercial platform brings unparalleled efficiency for the deployment of M2M communications across the globe. Without roaming M2M applications simply may not be viable. Therefore, in order to facilitate the growth and development of M2M services, as well as to mitigate unnecessary demand for numbering resources, the TRAI should explicitly allow the extra-territorial use of national numbering resources (*i.e.*, E.212 and E.164 number resources). This will foster M2M objectives that are broadly important to the Indian government, such as advances in agriculture.

Question 9. 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?

ACTO's Response:

ACTO believes that the roaming charges should be market driven rather than prescriptive in nature. Given the availability of commercial roaming agreements in India, there is no need for any regulatory intervention on this matter.

Question 10. What should be the International roaming policy for machines which can communicate in the M2M ecosystem? Provide detailed answer giving justifications.

ACTO's Response:

The MSP shall utilize Telecom Resources operated by an Authorized Telecom Licensee having valid license under Indian Telegraph Act, 1885, which may include international roaming under the international roaming arrangement / agreement with telecom carriers / operators worldwide. The telecom resources should be technology neutral, as the provision of M2M services can be on any technology or standard. Nothing should prohibit M2M devices from being able to roam on an Indian TSP's network under a legitimate international roaming arrangement.

We further note that the M2M roadmap released by DoT recognized the global nature of M2M services and underscore that a locally registered MSP in India may have commercial arrangements with MSPs in foreign markets. Therefore it is important that resources being used to provide service be able transit countries throughout a product's lifetime. Additionally "international roaming" is an accepted concept, and is specifically mentioned under clause 4.3.4 of the National Telecom M2M Roadmap as well. The TRAI should f follow the same recommendations in order to be consistent with the roadmap.

As an example as international practice, the U.S. Government places no conditions on the use in the United States of M2M devices containing SIM cards/IMSIs from other countries, and such devices are not subject to roaming requirements or regulations any different from other types of mobile devices.

Question 11. 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?

ACTO's Response:

ACTO believes that while there may be potential benefits to liberalizing some numbering assignment policies to extend the direct allocation of MNCs to MSPs, there are concerns in granting MNCs to parties other than telecom operators (*i.e.,* to M2M users or MSPs, rather than MNOs or MVNOs). According to BEREC, for example, allowing IoT users to be assigned MNCs raises questions of the technical and economic conditions of MNC assignees.[1] Operational and security issues also would need to be addressed, including what infrastructure requirements would apply to the M2M user, how would switching operate and with what risks, and what would be the impact on MNC resources. Thus, before making any policy decisions, it would be prudent for the TRAI to observe what countries with more open MNC assignment polices have experienced relative to uptake and perhaps to consider a phased approach to changes in assignment policy.

We believes that over-the-air ("OTA") provisioning offers a preferable way to facilitate switching in the M2M space and highlights the progress that the industry has made in developing and promoting OTA capability since the first release of the GSMA embedded

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[1] *BEREC Report on Enabling the Internet of Things*, Report BoR 16(39), 12 February 2016 at http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/5755-berec-report-on-enabling-the-internet-of-things, at page 30. The TRAI also acknowledges there are "technical challenges in the implementation, allocation and utilization of various network codes." Consultation, at 1.31.

SIM specification.[2] With the embedded SIM or embedded Universal Integrated Circuit Card ("eUICC"), the profile of the SIM (which includes the MNC), can be changed over-the-air after manufacture, as the TRAI acknowledges.[3] This allows for changes to profiles of different MNOs over the life span of the product, preventing lock-in to the original MNO. What is important to note is no single business model will meet the needs of all service types or all market participants (*e.g.*, manufacturers, device distributors, systems integrators).[4]

Question 12. 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.

<u>**ACTO's Response:**</u>

Industry is keenly focused on the security issues around M2M services. Indeed, as devices become ever more connected it follows that security risks are likely to increase across the ecosystem. Threats can include unlawful interception of data transmissions, network and device denial of service attacks, malware infections and other forms of threats—with some as yet unknown. M2M security, therefore, is a necessity, but a prescriptive regulatory approach is not. In fact, any service provider or M2M solution failing to adequately address security from the outset (*i.e.*, security by design) will not have commercial success. For this reason, there are a wide variety of standards bodies and industry coalitions and working on security specifications for M2M.

Security must be a priority in the device design, network, and system integrator level. Security is a never-ending effort, and the focus by the private sector on security must always be a priority. With security, it is important for public policy to provide incentives to the private sector to develop secure systems, but not to establish "one size fits all" security prescriptions; because the latter approach can mandate rigid regulations that do not keep pace with the security risk environment. The private sector must be nimble and quick to innovate, to predict security risks and prevent loss.. The Government on the other hand should recognize the innovations as acceptable and develop a policy model to complement the same. As part of its deliberations, India may find helpful the OECD recommendations on Digital Security Risk Management and Economic and Social Prosperity. Please see: http://www.oecd.org/sti/ieconomy/digital-security-risk-management.htm.

Additional security in sensors may be incorporated by IMEI & SIM PAIR LOCKING so that sensor shall work with the SIM configured by MSP. However the reverse is not encouraged i.e. locking by TSP as it will unnecessarily bind MSP with TSP.

Additionally we would like to emphasize that while making the M2M guidelines we need to be cognizant of the pace at which technology is evolving and touching the lives of ordinary citizens.

  a) Government/ Regulator should refrain from making prescriptive policy guidelines that restrict cross border data flows, mandate localization and international operability.

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[2] *See* http://www.gsma.com/connectedliving/profile-interoperability-now-included-within-gsmas-solution-for-remote-sim-provisioning/
and
http://www.gsma.com/newsroom/press-release/automotive-industry-adopts-gsma-embedded-sim-specification/
[3] Consultation, at 1.32.
[4] While the embedded SIM (*i.e.*, the ability to change the IMSI) may enable new business models, it should not dictate them. The global SIM model offers a superior solution to enable multi-country distribution of, for example, M2M devices.

b) Governments need to work on a flexible, technology neutral, and market oriented policy frameworks. M2M policies that allow the Industry to continue to innovate foster technologies that leads to accelerate deployment and enablement.

c) This flexibility in turn will allow consumers to enjoy the benefits of expanded, new, and innovative services.

Moreover, privacy and security frameworks should reflect this diversity and should not vary depending on the type of device or technology used to collect or transmit data. Instead, a framework should be technology & location neutral and apply "in a way that is proportional to the nature, sensitivity, and amount of data collected. Furthermore, such frameworks should be horizontal in nature rather than sector-specific, especially when considering that M2M applications will be employed in a wide variety of economic sectors. Furthermore, certain consumer protection regulations may be inapplicable to B2B M2M applications.

Question 13. (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?
(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.

ACTO's Response:

ACTO members believe that the issues of consumer interest and data privacy are adequately covered by the framework of existing laws and the IT Act of 2000. Security & privacy risks, however are not static, so as time goes by, there may be a need to update them.

We believe there is no reason for prescriptive privacy regulations. Industry stakeholders, device makers, connectivity providers, application developers, and platform operators are proactively engaged in voluntary and collaborative processes to provide appropriate privacy protections for M2M applications. Establishing this trusted environment for consumers will be crucial to commercial success, separate and apart from any policy frameworks for these issues. Indeed, with this broad variety of industry players, it will be impossible to regulate a path to effective privacy protection. Rather, those protections will depend on a robust multi-stakeholder process to define the practices that will engender consumer trust and therefore adoption across the system. Thus, for privacy concerns, as with security, government should opt for a common, M2M-wide framework that relies not on regulation, but rather on multi-stakeholder efforts that will facilitate development of effective privacy approaches.

Overemphasizing concerns over security & privacy at the initial stages of implementation of new services like M2M will deter investor sentiment and the future development of new technologies.

For example, in the IT/ITES/BPO sector, India is a net importer of data whereby India hosts a wide range of information belonging to customers located globally. Such geographical mandates may be construed as significant trade barriers and will have negative consequences as there will be possibilities of other countries also start imposing such restrictions. This will severely impact the export market (including the BPO/ITES sector). One of the key thrust under the prestigious "Make in India" programme is to make India an export hub for the world. This has the potential of being impacted if such mandates continue and other countries reciprocate in the same manner. Rather, there should be a policy of attracting and incentivizing, investment.

Be it a government , enterprise, or individual user, it should be the user's prerogative/ choice where to keep their data, it is not the regulator's role to mandate how a user selects cloud services providers.

Government policy should offer complete flexibility to move the data as the ability for information to flow across borders will be increasingly important to economic growth as all businesses are dependent on the flow of digital, cloud-based information.

As recognized worldwide, the ICT services have important multiplier effects across other economic sectors and thus play an important role in stimulating broader economic activity. As digital services and global access to the Internet expand, there are enormous opportunities for economic growth. Thus regulatory provisions should not require ICT service suppliers to use local infrastructure, or establish a local presence, as a condition of supplying services. In addition, governments should not give priority or preferential treatment to national suppliers of ICT services in the use of local infrastructure, national spectrum, or orbital resources. The same should be based on user preference and choice depending the individual parameters and technical competence.

Given the rapid pace of innovation in digital technology and services, governments are urged to maintain a light touch regulatory approach to avoid stifling growth in the digital economy. It is important that governments find a balance that enables adequate protection for data without burdening industry with unworkable data privacy and protection obligations.

Question 14. 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.

ACTO's Response:

In a competitive market, market players should determine the terms of the SLAs. Since SLAs may require different measurements depending on the M2M service provided, any attempt by government to set those parameters could result in impeding the deployment of new and innovative services.

Question 15. What should be the distributed optimal duty cycle to optimise the energy efficiency, end-to-end delay and transmission reliability in a M2M network?

ACTO's Response:

No response is provided.

Question 16. Please give your comments on any related matter not covered in this consultation paper.

ACTO's Response: None

Summary of Recommendations:

- **M2M/IoT is a key enabler for the economy as a whole**, **it is essential to focus on promoting investment and innovation.**

- **It is about emerging business models and technology evolution not revolution, therefore needs flexible, technology neutral and light touch approach.**

- **No need for M2M/IoT specific regulation.**

- **M2M/IoT needs to be considered globally not at national and regional level.**

- **International roaming, and extra-territorial use of IMSIs and numbering resources are essential to M2M.**

- **The regulatory framework should work to remove barriers to cross border data flows and prohibit data localization requirements.**

- **Security and technical standards: Voluntary, industry-driven, and consensus-based standard-setting models engaging all relevant stakeholders.**

- **Registration of M2M/IoT services provider and classification of M2M/IoT services: careful consideration to foster and not have any prescriptive regulations.**

M2M communications are already demonstrating the potential to massively improve efficiency, productivity and social welfare in diverse fields. Indeed, the Government of India, recognizing the potential of M2M communications to advance all aspects of Indian society, enshrined M2M as early as 2012 in its National Telecom Policy ("NTP-2012").[5] DoT in May 2015, introduced the National Telecom M2M Roadmap[6] to guide the development of M2M-related policies. Today India boasts one of the world's fastest growing economies as well as telecommunications markets and is looking to harness the power of telecommunications as a "key driver of economic and social development in an increasingly knowledge intensive global scenario."[7] Therefore, as India develops a telecom platform to transform the country into "an empowered and knowledge based society,"[8] it must adopt flexible, globally-minded, industry-driven and technologically-neutral policies to create conditions for pioneering technologies, services, business models and investment to flourish.

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[5] "To facilitate the role of new technologies in furthering public welfare and enhanced customer choices through affordable access and efficient services delivery. The emergence of new service formats such as *Machine-to-Machine communications*…represent tremendous opportunities, especially as their roll-out becomes more widespread" at 11.2   *See*
http://www.trai.gov.in/WriteReadData/userfiles/file/NTP%202012.pdf
[6] *See* http://www.dot.gov.in/sites/default/files/National%20Telecom%20M2M%20Roadmap.pdf
[7] NTP-2012, at page1.
[8] Ibid.