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TRAI/FY22-23/052
Dated: 16.09.2022

To,
Shri Akhilesh Kumar Trivedi,
Advisor (Network, Spectrum and Licensing)
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
JawaharLal Nehru Marg,
New Delhi – 110 002.

Subject: Response to Consultation Paper on “Embedded SIM for M2M Communications”

Dear Sir,

This is in reference to TRAI’s Consultation Paper on “Embedded SIM for M2M Communications” dated 25.07.2022 (CP No. 9/2022).

In this regard, please find enclosed our response for your kind consideration.

Thanking You,

Yours’ Sincerely,
For Bharti Airtel Limited

A handwritten signature in blue ink, appearing to read 'Rahul Vatts', is written over a light blue circular stamp.

Rahul Vatts
Chief Regulatory Officer

Encl: a.a

Response to TRAI CP on “Embedded SIM for M2M Communication”

Summary:

We thank TRAI for coming up with a comprehensive Consultation Paper on the ‘Embedded SIM for M2M Communication’ that deals with issues which are fundamental to the success of M2M/IoT in the country.

Furthermore, we believe that Machine-to-Machine (M2M) Communications and Internet of things (IoT) together represent a huge opportunity for Indian users, businesses and government, alike. If this opportunity were to be unlocked through the actions of the government and policy makers, it would make a transformative difference to citizens and businesses since it is well-recognised that M2M/IoT can elevate various sectors/industry verticals/ businesses by providing automation and intelligence to end devices.

The use of embedded SIM or eSIM or eUICC in this context will help work on two crucial fronts, i.e., serving multiple innovative use-cases and taking care of security.

As per GSMA Intelligence¹, globally, a more substantial acceleration in eSIM adoption is expected from 2025 onwards, with a baseline scenario of 850 million eSIM smartphone connections by 2025, growing to 6.7 billion by 2030. This would account for 76% of the total number of smartphone connections. **In India, penetration is expected to be 65% by 2030.**

Another GSMA study highlights the importance of eSIM in addressing IoT security challenges. To quote from the report²:

“Leveraging the SIM as the root of trust can eliminate IoT security challenges. The evolution of the SIM into eSIM and iSIM can help eliminate the laborious tasks facing enterprises in deploying secure IoT. Our survey showed that enterprises are already familiar with eSIM: around 85% of enterprises indicated that eSIM is important to achieving success in their IoT deployments. They also expect eSIM to additionally deliver benefits, beyond the ability to switch operators/providers, such as device to cloud security...”

It is thus critical to frame **clear, enabling regulatory provisions for the deployment of eUICC/ eSIM that** support innovation while protecting the security of the nation, businesses and consumers. We recommend that TRAI facilitates a regulatory framework which leverages the GSMA specifications on eSIM / eUICC, while ensuring national security and allowing Indian TSPs to flexibly serve the market.

¹ eSIM: market progress, consumer behaviour and adoption to 2030, GSMA Intelligence, July 2022

² IoT security and the role of eSIM, GSMA Intelligence, March 2021

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In summary, we recommend the following:

- Mandatory conversion of foreign roaming SIMs in the Indian TSP profile through uniform guidelines for all M2M/IoT use-cases irrespective of said use-case being based on UICC (**1FF/2FF/3FF/4FF/MFF2**) and/or eUICC (**MFF2/pluggable**) e-SIM capable of OTA remote provisioning.
- eUICC and/or a UICC manufactured outside India and on international roaming in India to be mandatorily migrated to the Indian TSP profile within six (6) months.
- Global IMSI series (901.xx) can be permitted in India subject to the condition that all non-Indian TSP profiles must be converted to an Indian TSP profile within six months as these (non-Indian TSP profiles) will be foreign roaming IMSIs.
- The SM-DP must remain within India. The SM-SR can be allowed to be outside if it is a GSMA-certified site. Notwithstanding this, if it is decided to mandate the SM-SR to be hosted in India, then at least six (6) months (*from the date of activation of eUICC which are imported from outside India*) should be allowed for an SM-SR swap (foreign SM-SR with Indian SM-SR).
- **Integration of a TSP’s SM-SR with another TSP’s SM-DP within India is not an urgent need at this stage.** Sharing of profiles between TSPs can always occur through other mechanisms such as ‘profile donation’ where one TSP can share its profile with another, which would reside in latter’s SM-DP to be downloaded in the eSIM. **Hence, this should be left to market forces without any regulatory intervention.**
- In India, SM platform should be established only under the ownership of TSPs.
- In case of consumer eSIMs, considering how widely eSIM devices are likely to proliferate in the near future, an appropriate solution may be to mandate that the handsets must have the facility for device to device transfer so customers can switch/change eSIM handsets. This will make the process of switching the handsets seamless for customers.

Using these as our guiding principles, we provide our views on the issues raised in the Consultation Paper in the remainder of this document.

Response to TRAI CP on “Embedded SIM for M2M Communication”

1. Whether the TRAI recommended timeline, about the foreign eUICC fitted devices to be on roaming with Indian TSP’s network for a maximum period of three years only, needs a review? If yes, what should be the timeline after which the eUICC should mandatorily be configured with Indian TSP’s profile?

Airtel’s Response:

We would like to state at the very outset that first and foremost we **recommend that uniform guidelines be put in place for conversion (of foreign roaming profiles) to the Indian Telecom Service Providers (TSP) Profile for all M2M/IoT use-cases irrespective of whether they are based on universal integrated circuit cards (UICC) (1FF/2FF/3FF/4FF/MFF2) or embedded universal integrated circuit cards (eUICC) (MFF2/ pluggable eSIM capable of OTA remote provisioning).**

In line with the above, we also recommend that the **eUICC and/or UICC** that are manufactured outside India and enter India on international roaming **should be mandatorily configured with an Indian TSP profile within a time period of up to six (6) months. There are multiple reasons for this and we elaborate on them below.**

While international roaming allows foreign eUICC/UICC fitted devices to be introduced or launched in India, without a **framework for time-bound migration, these SIMs will end up not being compliant with Indian security norms.** As per the M2M guidelines laid down by the DoT in 2018, there is a need to enforce restrictive communication features on M2M SIMs or eSIMs given the flexibility provided with respect to relaxed KYCs. Also, there is a mandate on M2M Service Providers (M2M SPs) to ensure that end customer/user details are made available to TSPs. Both of these requirements were introduced in the spirit of national security and to prevent potential misuse/abuse of M2M SIMs. In contrast to this, telecom service providers in many countries do not need to fulfill any CAF/KYC guidelines and are issuing UICC/eUICC to global IoT service providers. Therefore, if international roaming SIMs are not converted to Indian TSP profiles within a specified timeframe, it will lead not only to non-fulfilment of Indian security requirements but will also lead to a non-level playing field being established between Indian TSPs and foreign TSPs.

Additionally, since a UICC/eUICC provisioned by a foreign operator being used on international roaming in India is controlled by entities outside India, **security features as required by the Indian Regulatory framework cannot be practically enforced on these connections unless they are converted to Indian TSP profiles.** Therefore, all such connections need to be brought within the ambit of the Indian KYC rules by converting them to Indian TSP profiles. This will allow for dealing with any security threats and/or prevent the misuse of UICC/eUICC in India.

Hence, for a foreign manufactured eUICC and/or a UICC entering India on international roaming, we recommend granting a time period of up to 6 months for the eUICC and/or UICC to be mandatorily configured with an Indian TSP profile. We also request that DoT clearly outlines the guidelines for monitoring the time period of international roaming in consultation with industry stakeholders.

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2. Whether there is a need to change the controlling SM-SR from foreign TSP to Indian TSP in case of foreign eUICC fitted devices operating in India? If yes, what should be the methodology and time period within which it should be done?

Airtel’s Response:

We are of the view that **while SM-DP should remain within India, the SM-SR should be allowed to be situated across geographical boundaries, provided that it is a GSMA-certified site. To cater to various use-cases, local SM-DP (of Indian TSP) will be integrated with the foreign SM-SR for downloading the Indian TSP profile into the eUICC.** We believe that the GSMA framework for eSIM solutions is a comprehensive framework and has well-defined interfaces with the requisite security features. GSMA also provides certification to all sites for the SM-SP/SM-SR set-up. Therefore, GSMA certification can be made a requirement for using SM-SR outside India.

Notwithstanding the above, if the Authority still feels that SM-SR is to be mandatorily hosted in India, then a **timeframe of at least six (6) months (from the date of activation of eUICC which are imported from outside India)** should be allowed for an SM-SR swap (foreign SM-SR with Indian SM-SR).

3. Whether there is a need for the SM-SR of each TSP to be integrated with the SM-DP of each other TSP? If yes, what should be the methodology for integration?

Airtel’s Response:

There are two scenarios here that can potentially emerge - first, arrangement between two TSPs in India, and second, a device brought from outside India. We explain the modalities under each case.

I. Arrangement between Indian TSPs:

Within India, **we do not see an urgent need to integrate TSP’s SM-SR with the SM-DP of other TSPs** as there are other methodologies available for enabling the sharing of profiles between TSPs. Indian TSPs can always donate/share profiles with other TSPs which would then reside in the latter’s SM-DP to be downloaded in the eSIM.

II. Device brought to India from abroad and vice-versa:

The Indian TSP profile cannot be donated to foreign players as it would mean sharing an Indian TSP profile to an entity outside India and would be against the principles behind the mandate of

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performing SIM personalisation within India. This would apply to all eUICCs manufactured outside India and imported to India.

However, as mentioned earlier, a cross-integration of foreign SM-SR with Indian TSP SM-DP within the GSMA framework and at GSMA-certified sites could ensure the smooth working of various use-cases. It would ensure that the Indian subscriber profile is securely stored in India and securely transferred to the eSIM through the GSMA framework. In a similar manner, an eUICC being exported outside India could work on a cross SM-platform established by integration of India-located SM-SR with foreign located SM-DP.

Therefore, for use-cases involving foreign-manufactured eUICCs entering India or Indian-manufactured eUICCs leaving India, cross integration of SMSR-SMDP across TSPs (Indian TSPs’ SM platform with Foreign SM Platform) might be needed.

Overall, we recommend that in order to enable the proliferation of M2M Services, the methodology/framework to be used should be left to the discretion of TSPs and decided on the basis of business use-cases and commercial requirements.

4. Whether there is a need to prescribe SM-SR swapping among the Indian TSPs? If yes, what should be the modalities and procedure for such swap?

Airtel’s Response:

The SM-SR swap is still at a nascent stage worldwide and there are various other approaches, other than the SM-SR swap, that have already been implemented with success to enable profile exchanges between TSPs. For example, ‘profile donation’ in which the profile of one TSP can be securely transferred to another TSP.

We recommend that instead of the SM-SR swap, methodologies such as profile donation be considered, based on the mutual agreement between parties, as ways of implementing multi-profile offerings in the market for M2M eUICC.

In view of the above, we submit that SM-SR swap within India is not a necessity and, hence, there is no need to prescribe an SM-SR swap between TSPs. However, if TSPs mutually decide to perform the SM-SR swap based on their business requirements, they should be allowed to do so.

5. Whether the profile switchover, from one TSP to another, is driven by the user or OEM? If yes, what methods can be deployed to execute such switchover?

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Airtel’s Response

We understand that the above question could be either in context of switchover from one profile to another within a multi- profile SIM or in the context of migrating an M2M connection from one TSP to another.

If it is in the context of a switchover from one profile to another within a SIM, in the instance of a multi-profile SIM, we submit that currently, as per the solutions available in the market, both user and OEM are able to drive the profile switchover from one TSP to another depending on the implementation and the use case. In the case of an AIS 140 use-case in India (developed to comply with the Ministry of Road Transport and Highways, i.e., MoRTH AIS-140 guidelines for commercial passenger vehicles), a proprietary automatic business logic is offered locally inside the eUICC/UICC for users. Additionally, OEM- triggered non-proprietary switching logic helps to switch profiles over the air in the case of an eUICC. In a multi-IMSI UICC solution, a proprietary solution is offered in the market for profile switchover over the air and this can be controlled by the OEM/user.

However, if the above query is in the context of migrating M2M connections from one TSP to another, then we would like to submit that the switchover or migration from one TSP to another will be determined by the M2M Service Provider (M2MSP) as M2MSP is the entity that takes the connection from the TSPs and is responsible for providing M2M as a service to customers. This includes connectivity also. Based on the analysis of network performance and commercial considerations, M2MSP may take a decision to use the services of another TSP in case it deems the performance of the current TSP unsatisfactory.

6. Whether non-TSP entities, such as OEMs and M2M Service Providers, should be permitted to own SM-SR and manage the subscribed profiles for their devices? If yes, what should be methodology and procedure?

Airtel’s Response:

Considering the security requirements (due to the involvement of confidential data), the **SM platform (SM-DP and SM-SR) should be established only under the ownership of TSPs**. This will help eliminate the risks involved with misuse of customer profile data.

The SM platform should be established as per GSMA guidelines to promote security and seamless operations. The TSP owns the profile, ensures KYC management and other security requirements as per DoT guidelines and adheres to GSMA M2M IoT guidelines to control profile management. TSPs also have to provision the profile in their network along with the SM platform. This ensures that the required measures are taken to ensure secure profile storage and management of information and the sensitivity of the confidential profile data is given its due importance.

Hence it is recommended that ownership of SM-SR and SM-DP continue to be kept with TSPs.

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7. Whether the use of ITU allocated shared Mobile Country Code 901.XX (Global IMSI) be permitted in India for M2M Communication? If yes, what should be the methodology and procedure? If not, what are the reasons and challenges in implementation of Global IMSI?

Airtel’s Response:

We understand that the 901.XX Global IMSI series is already working in India as per international roaming arrangements. Therefore, while we recommend that use of Global IMSI can be permitted in India, for IoT/M2M use cases they will fall under permanent **International roaming if they do not involve the use of Indian TSP profiles**. This involves the same aspects as mentioned in our response to Q1, i.e., non-availability of KYC information and non-enforcement of restrictive features.

Hence, in line with our response to Q1 earlier, we recommend that such profiles be allowed to be **functional only up to a 6-month period within which they would need to be converted to an Indian TSP profile**.

8. Is there any issue, pertaining to the Consumer eSIM, that needs to be addressed? Please highlight the issue and suggest mechanism to address it with justification.

Airtel’s Response:

Many handset manufacturers have introduced eSIM in their handsets and the trend is expected to continue to grow. Therefore, considering that there is likely to be a huge proliferation of eSIM devices in the near future, a solution may be mandated in the handsets to facilitate device to device transfer of profile (if the customer decided to switch over from one eSIM device to another). This will make the process of switching handsets seamless for customers.