ASIA PACIFIC CARRIERS' COALITION

(Incorporated in the Republic of Singapore)

CONSULATION ON EMBEDDED SIM TECHNOLOGY
SUBMISSION TO THE INFOCOMM MEDIA DEVELOPMENT AUTHORITY
BY THE ASIA PACIFIC CARRIERS' COALITION
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A. **Introduction**

1. The APCC thanks the Infocomm Media Development Authority ("**IMDA**") for the opportunity to comment on the consultation paper on Embedded SIM ("**eSIM**") technology ("**Consultation Paper**").

2. The APCC is an industry association of global and regional telecommunications carriers operating in the Asia Pacific region, formed to work with governments, national regulatory authorities and users in advocating open market policies and best practice regulatory frameworks, in order to promote competition and efficient investment in telecommunications markets.

3. The APCC appreciates that the IMDA is adopting a consultative approach with the licensees and the wider industry players and is committed to working on establishing a progressive and well balanced M2M/IoT framework. M2M/IoT market is developing fast in Singapore, with intense competition across different technologies and sectors, which is driving innovation and leading to economic growth.

4. As the members of the APCC mostly provide M2M/IoT services to businesses customers (with limited IoT solutions to consumers – some comments noted below) and, mostly based on roaming global SIM, we will provide the responses only to some of the questions presented by the IMDA in the Consultation Paper – the ones that are relevant to our services.

5. The APCC does not assert confidentiality in respect of any part of this submission. As always, the APCC are happy to meet the IMDA and discuss any of the points raised in this document.

B. **Detailed responses**

>   *a.* *Question 1: IMDA would like to seek views and comments on the policy principle of extending the No SIM-lock policy to eSIM devices*

6. There should be no mandated 'one size fits all' technical solution for eSIM devices. Mobile carriers and equipment manufacturers should have the discretion to determine their preferred approach to manage operating costs in a typically low-margin and developing market. Further, a no SIM-lock mandate would be at odds with the prevailing global trends, including the EU. Please see response no. 12 for further discussion of this important topic.

7. A 'no SIM-lock policy' also carries with it concerns as to the ongoing security of the device and updating software or firmware on such device. The device manufacturer should therefore follow industry standards relating to security and services, such as the NIST Cybersecurity

Framework and the GSMA IoT Security Guidelines and Assessment adopted by many network operators around the world, and undergo rigorous security evaluations before entering the market. Testing usually includes not only device security, but necessary software and firmware updates.

8. Based on the above, **we do not support extending a mandated 'no SIM-lock policy' to eSIM/M2M devices**.

    b.   Question 2: IMDA would like to seek views and comments on the application of the No SIM-lock policy on Consumer devices (e.g., mobile phones, tablets and wearables (such as smart watches and fitness trackers)) where they are eSIM enabled.

9. As per the above, we do not support a mandated 'no SIM-lock policy'.

    c.   Question 3: For M2M devices, IMDA would like to seek views and comments on placing the onus on mobile operators to facilitate switching of mobile operator profiles where consumer and enterprise end users request to switch mobile operators.

10. A regulatory mandate requiring number porting should not be imposed. We do not support regulatory policies mandating M2M service providers to port the numbers, switch the customer profiles, or base all the in-country solutions on an eSIM or similar solution. M2M services are separate from traditional mobile voice services and typically do not include a dialable service. In those limited circumstances where a M2M SIM does include voice service, it is typically used for a closed user group (e.g., connected car service to helpdesk). Imposing a number portability regulatory requirement for M2M services would not provide consumer benefits, only unnecessary cost to the market place.   Any technologically and commercially viable M2M solution should be acceptable from a regulatory perspective.

11. Overall, we agree with the IMDA's position that "M2M devices are likely to benefit more significantly from eSIM and Remote Provisioning developments."[1] In fact, the benefits of such are already being realized. However, M2M service providers are best positioned to select the appropriate business model and technical solution, including eSIM device solution.

12. Number portability: for the majority of M2M services, the typical business model is that the E.164 number (mobile telephone number or MSISDN) is assigned to the M2M service provider and not the consumer end-user (i.e., the smart object and connectivity are bundled as a service, such as with a connected car business model). Number portability, therefore, may have limited, if any, applicability and specific requirements should not be prescribed. In addition, the

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[1] Section 3 of the Consultation Paper.

consumer end-user of an M2M device typically does not know—or need to know—the number associated with the device.

13. The mobile carriers typically allocate a block of IMSIs to each manufacturer/enterprise customer who provisions the number in the M2M device. The consumer end-user is likely not able to change wireless connectivity providers, as they do not have a relationship with such provider. If the manufacturer changes the connectivity provider, the expectation is that the E.164 number would be changed along with the assigned E.212 number (Mobile Country Code + Mobile Network Code). Porting would not be required because the new mobile carrier serving the manufacturer would provide a new IMSI (E.212 number + Mobile Subscriber Identification Number) and a new MSISDN associated with it. Therefore, number portability obligations should not apply to M2M devices, because for M2M devices for consumer end-users, number porting is generally unnecessary, and in fact could inhibit growth and serve as a barrier to market entry[2].

14. <u>Other switching options</u>. Alternatively, where an M2M service provider does need to change the underlying connectivity provider for enterprise end-users, for example, there are other commercial operational models successfully in effect today. For example, over-the-air ("**OTA**") provisioning is being used in certain sectors (e.g., automotive). The industry has made significant progress in developing and promoting OTA capability since the first release of the GSMA eSIM specification. The later versions of the specification, now at version 3.2[3] enable full, interoperable OTA re-provisioning between different carriers and different SIM card vendors. With the eSIM or embedded Universal Integrated Circuit Card ("**eUICC**"), the profile of the SIM can be changed over-the-air after manufacture (i.e., remotely provisioned and managed).

15. The OTA and eUICC solutions allow for changes to profiles of mobile carriers over the lifespan of the product, preventing dependence on the original MNO and offering increased options to M2M service providers without the need for regulatory intervention. Importantly, despite the flexibility OTA offers, incorporating an OTA capability inevitably adds costs to an M2M solution. While this may be warranted for higher value products such as automobiles that will be in use for many years, given the economics of many lower value, more disposable M2M devices, such

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[2] For example, the Body of European Regulators for Electronic Communications (BEREC) said that in the context of the IoT/M2M, a number portability obligation might not be suitable, as the IoT/M2M user generally does not know the E.164 number of the connected device. BEREC added that number portability obligations could create unnecessary barriers to entry due to costs to participate in the porting process. And given the extra-territorial use of numbers, a global porting solution would be needed. BEREC suggested that "such efforts are not proportionate in view of none or very limited portability use cases." See 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.

[3] GSMA's Remote Provisioning Architecture for Embedded UICC Technical Specification, V 3.2 (June 2017). See https://www.gsma.com/newsroom/wp-content/uploads//SGP.02_v3.2_updated.pdf

as certain consumer tracking devices (e.g., wearables), the benefit of OTA capability is outweighed by the expense.

16. Given the varying economics, an OTA re-credentialing capability is an option but should not be prescribed. We specifically caution against the adoption of a blanket regulatory policy approach towards OTA (or other mandated) switching, which would reduce operating flexibility, inhibit innovation, and increase costs in new M2M offerings and business models while not necessarily addressing the needs of all service types or all market participants (e.g., manufacturers, device distributors, systems integrators).

17. Noting, the successful cooperation between various market participants in designing and implementing working solutions for carrier switching for M2M, and the absence of any demonstrable market failure, **a regulatory mandate to require number porting or other switching mechanisms is premature and unjustified**. **Mobile carriers should be free to pursue a choice of commercial models and technical solutions and accommodate switching where appropriate for the device and circumstances. However, no obligations on such switching should be imposed**.

 d. *Question 4: IMDA would like to seek views and comments on the adoption of GSMA specifications for eSIM devices that are to be sold and used in Singapore to facilitate the deployment of OTA Remote Provisioning functionality.*

18. We support the adoption of GSMA specs for eSIM.

 e. *Question 5: IMDA would like to seek views and comments on whether IMDA should require the mobile operators to adopt the GSMA SAS and ISO 27001 standards and secure the compliance of Relevant Providers in the eSIM OTA Remote Provisioning supply chain with the above-mentioned standards in the provisioning of eSIMs.*

19. Both 'standards' have a different scope. SAS-SM is targeting at components (SM-DP, SM-DP+, SM-DS, …), whereas ISO 27001 is targeting at organization and processes. From a subscription management service perspective, both standards may accompany each other. SAS-SM is a mandatory requirement for any GSMA compliant subscription management solutions, ISO 27001 is not a requirement, but might be considered as a useful extension.

20. SAS was originally intended to provide assurance about the security of SIM production and was more recently extended to subscription management components (SAS-SM).

21. Overall, **we support the GSMA SAS and ISO 27001 standards and encourage the adaptation of the scheme in Singapore**.

f. Question 6: Are there security gaps that GSMA SAS and ISO 27001 do not address, and if so, how should these gaps be plugged to facilitate trust and security in the provisioning of eSIMs, particularly in safeguarding the OTA profile management process.

22. In practice, mobile carriers will additionally apply their own internal security standards/policies which their suppliers and equipment manufacturers will have to comply with. Therefore, gaps in the standards, if any, are best addressed through the standards internal companies' processes.

g. Question 7: IMDA would like to seek views and comments on which eSIM provisioning model is best suited for mobile operator's needs, and why.

23. Both models of "managed service" and "fully owned" provisioning system exist and are being rolled out by mobile carriers around the world. Many carriers have chosen the "managed service" approach from traditional SIM vendors offering provisioning services as they have historically the knowledge and the know-how on data generation and security schemes of traditional SIM cards. In the M2M space, some mobile carriers have chosen to "build and own" the provisioning system to have more control on the M2M service features.

24. It is still too early to assess which is the most suitable model. Mobile carriers providing M2M/IoT services using eSIMs require flexibility in provisioning models to match the right model to the particular device and service, for the customer's use case. Requiring one specific model would reduce that flexibility and limit business opportunities for carriers and their customers alike.

h. Given the wide variety of applications for eSIM M2M devices, IMDA would like to seek views and comments on the proposed licensing framework and the proposed licence conditions for Consumer and M2M devices that are enabled with eSIM technology.

25. We support the IMDA proposal for a "light touch" approach to licensing relative to the provision of M2M services in Singapore.

26. The imposition of any registration and compliance requirements on M2M providers and equipment importers/dealers could stifle the emerging M2M market by increasing operational costs or foreclosing market entry, thereby harming consumers by limiting innovation and competitive offerings.

27. It is not clear from the IMDA's proposal in Section 5 of the Consultation Paper, whether the licensing rules of current mobile carriers and SBO/FBO license holders (that have the M2M license) will be changed to reflect a light touch approach.

28. The IMDA is proposing a modification of the licensing regime where licensing would not be required for entities providing the connectivity services to M2M devices that *do not support mobility or have no voice communication features*, if the entity (i) does not have a direct contractual relationship with the consumer or enterprise end user in Singapore, and (ii) the eSIMs are roaming on local mobile operators' network. [citation needed]

29. We would like to raise a concern about the above mentioned qualifying criteria for international mobile carriers providing M2M services in Singapore based on globally roaming SIMs. It is practically impossible from an operational perspective for telecoms carriers to verify and register the "mobility" of the M2M SIMs roaming around the world. There is a significant number of solutions that typically would be static, but may have certain "nomadic" or "mobile" capabilities (e.g., would a refrigerator or an elevator be considered "mobile"?). In fact, it is rare to find totally "immobile" solutions (e.g., street lights, which often use fixed M2M connectivity rather that mobile SIMs). Moreover, the difficulty in verifying the "mobility" of a feature is compounded by the complexity of checking for every customer/SIM/solution.

30. In order to facilitate the deployment of M2M services by all market players, such as international mobile carriers, **we recommend that the IMDA adopt a "light touch" approach to <u>all M2M solutions (i.e., a technology neutral approach), for those entities meeting the aforementioned (i) and (ii) requirements</u> such that the FBO/SBO license and related compliance requirements would not be required**.

31. One additional area where IMDA can further facilitate the deployment and adoption of M2M services in Singapore is to streamline the custom's approval process. Currently, M2M service providers or their customers are required to seek approval for each and every SIM model and/or equipment with embedded SIMs that are imported into Singapore, imposing cost and delay. We recommend that IMDA simplify the process to allow the FBO/SBO M2M licensees to record these details in the register they are already maintaining for IMSI codes for Groups of SIMs.