G+D
Mobile Security

G+D's Response on

Consultation Paper Issued By The Infocomm Media Development Authority on Embedded SIM Technology

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1 Introduction

Giesecke+Devrient Mobile Security (G+D) is pleased to have the opportunity to submit our views and comments to IMDA for its consideration on embedded SIM technology.

As more types of devices become intelligent, these are being connected to provide valuable services for consumers and enterprises. Much of the connectivity will be over cellular networks that provide reliable and highly-available managed communication services. G+D offers market leading, secure and flexible embedded SIM (eSIM) management that enables the remote change of the subscription profile in an eSIM. The eSIM, or more correctly the eUICC, may either be soldered into the device during production, or later inserted as a plug-in form factor (like the traditional SIM card).

eSIM management enables Mobile Network Operators (MNOs) to offer subscriptions to millions of new devices without the existing SIM card logistics, and to improve the customer experience with "immediate" connectivity for their new device. Device Vendors can manufacture devices with a single generic eSIM that can be delivered and connected anywhere in the world. Service Providers can simply and remotely change the subscription profile, if, for example, the country of use changed over the lifetime of the device, which for a vehicle might be 15 years.

G+D is a market and thought leader in eSIM Management with multiple production deployments in place since 2012. G+D's eSIM Management technology brings the flexibility to remotely download, change and remove mobile network subscriptions in a secure manner on the eUICC (eSIM enabled UICC).

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2 NO SIM-LOCK POLICY

QUESTION 1: IMDA WOULD LIKE TO SEEK VIEWS AND COMMENTS ON THE POLICY PRINCIPLE OF EXTENDING THE **NO SIM-**LOCK POLICY TO E**SIM** DEVICES.

G+D is of the view that the current policy principle of extending the no SIM-lock policy to eSIM device should be encouraged.

On the contrary, allowing SIM-lock for eSIM devices will only discourages the adoption of consumer eSIM devices as it will cripple consumers freedom of choice while encouraging a captive market that will result in higher prices and less diversity for consumers.

Today, even though SIM-lock devices are not allowed, consumers are still time-bound to mobile operators and have to pay a termination fee in lieu of early termination. Such a practice is also expected to be extended for eSIM devices to safe guard the subsidies that mobile operators provide to consumers to subscribe to their service plans.

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 E**SIM-**ENABLED.

As above, G+D is of the view that the current no SIM-lock policy should apply on eSIM-enabled consumer devices.

However, as there are no physical SIM card in eSIM-enabled consumer devices, the policy will have to allow consumers to be able to replace the mobile profile that he/she has previously installed on the device with that from another mobile operator without restriction.

It may be of interest to note that within the GSMA specification for Consumer eSIM Management (SGP.22), a profile component is defined to consist of several elements and may include Profile Policy Rules (PPR) – PPR1 and PPR2. These PPRs are defined by the Profile

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Owners (i.e. mobile operators). The current version of the specifications defined two PPRs namely:

- Disabling of this Profile is not allowed
- Deletion of this Profile is not allowed

Hence if IMDA wants to apply this no-SIM lock policy to eSIM-enabled consumer devices, the setting of the above PPRs must be reviewed.

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.

G+D's response to this question will address two types of M2M devices

(1) **M2M devices that are supplied with local mobile operator profiles as the initial contract (e.g. as a bootstrap subscription)** – in this case, the responsibility of facilitating switching of mobile operator should be placed with the initial contract mobile operator, which may include the handing over of the management of the eUICC as well via GSMA SM-SR Change use case. After handover, the onus will be on the new mobile operator to facilitate future switching.

(2) **M2M devices that are imported into Singapore with foreign mobile operator profiles and operating in a roaming mode** – it will be challenging to enforce the intention of placing the onus on the mobile operator. Hence a proposal would be to mandate such services be switched to a local mobile operator profile within a grace period. Once this profile switch is performed, future switching of mobile operator profiles can be operated in the same fashion as the previous paragraph. This mandatory switching of profiles to that of a local mobile operator is seen in other countries such as Saudi and Brazil.

Question on the removal of the bootstrap profile after switching should be evaluated on a case by case basis.

3 ESIM TECHNOLOGY

QUESTION 4: IMDA WOULD LIKE TO SEEK VIEWS AND COMMENTS ON THE ADOPTION OF **GSMA** SPECIFICATIONS FOR E**SIM** DEVICES THAT ARE TO BE SOLD AND USED IN **SINGAPORE** TO FACILITATE THE DEPLOYMENT OF **OTA REMOTE PROVISIONING** FUNCTIONALITY.

G+D strongly recommend that the GSMA specifications should be adopted as newer eSIM devices are appearing in the global market following the specifications.

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 E**SIM OTA REMOTE PROVISIONING** SUPPLY CHAIN WITH THE ABOVE-MENTIONED STANDARDS IN THE PROVISIONING OF E**SIM**S.

G+D strongly recommend that this should be mandated. The relevant security standards will give the mobile operators and providers a security framework to support the adaptation of eSIM remote provisioning services. The passing of GSMA SAS security audit is also mandated by GSMA prior to granting the relevant certificates to the service providers.

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 E**SIM**S, PARTICULARLY IN SAFEGUARDING THE **OTA** PROFILE MANAGEMENT PROCESS.

None identified.

4 ESIM BUSINESS AND OPERATING MODELS

QUESTION 7: IMDA WOULD LIKE TO SEEK VIEWS AND COMMENTS ON WHICH E**SIM** PROVISIONING MODEL IS BEST SUITED FOR MOBILE OPERATOR'S NEEDS, AND WHY.

G+D is of the opinion that all 3 provisioning models are possible depending on the business case. For example, in a fully in-house model, the high setup cost of providing such a service with the relevant security audits performed will be a deterrence in a business with little commercial returns. On the other hand, if there are government regulations, like those in China and India, that forbid the handing of operator profiles data in offshore hosting sites, then such investments in a local setup will be required.

In a fully outsourced model, mobile operators will be able to select and switch service providers, hence able to offer best value to their end customers. We have also seen global mobile operators second-source such services from another service providers from their current provider with this model.

A hybrid model may be optimal to allow for fairer level playing field for the local mobile operators, especially for new entrants.

QUESTION 8: DO YOU SEE ANY FURTHER DEVELOPMENTS ON THE E**SIM** PROVISIONING MODELS, SUCH AS OPPORTUNITIES FOR BUSINESS TO VERTICALLY INTEGRATE AND ADDITIONAL OPPORTUNITIES FOR THIRD PARTIES TO PARTICIPATE IN THE E**SIM** ECOSYSTEM?

G+D has seen an emerging model where the eSIM provisioning service is entirely provided by a third party – like a MVNO, from sourcing subscriptions to provisioning of devices. Mobile operators in this case act as a supplier of profiles and such profiles are purchased in bulk by the third party. The third party is then responsible for provisioning of the eSIM management services to their end customers.

QUESTION 9: GIVEN THE CHANGES TO THE SIM LANDSCAPE, DO YOU SEE ANY VALUE CAPTURE OPPORTUNITIES FOR SINGAPORE IN RELATION TO ESIM DEVELOPMENTS AND ADOPTION? THESE COULD BE FROM A MANUFACTURING OR CYBER-SECURITY FUNCTION, FOR EXAMPLE.

G+D has no comment on this.

QUESTION 10: AS ESIM TECHNOLOGY IS STILL RELATIVELY NASCENT WITH FEW MASS MARKET DEVICES USING SUCH TECHNOLOGY, WHAT ADDITIONAL SUPPORT IS REQUIRED TO ENCOURAGE THE DEVELOPMENT OF THE ESIM PROVISIONING ECOSYSTEM IN SINGAPORE, IN PARTICULAR THE OTA PROFILE MANAGEMENT FUNCTION?

G+D sees that in the Consumer Device, the growth will be pretty much self-driven by the desires of the consumers to have to have the latest gadgets such as an eSIM-enabled device.

However, in the M2M space, the adoption of eSIM-enablement has been lukewarm. Several reasons for these – such as high investment cost to setup such services, low demand for such requirements and no government regulations to deter foreign mobile operators roaming on a long-term or permanent basis. For example, Emergency Call or eCall (https://en.wikipedia.org/wiki/ECall) - eCall was made mandatory in all new cars sold within the European Union from April 2018. G+D has commercial deployment with major car manufacturers for eCall.

Hence to encourage such further developments, the above reasons needs to be reviewed.

QUESTION 11: WHAT WOULD BE THE BENEFITS AND CONCERNS FOR MOBILE OPERATORS TO ENGAGE ONE TRUSTED THIRD PARTY TO PROVIDE SERVICES IN SUPPORT OF OTA REMOTE PROVISIONING IN SINGAPORE, SIMILAR TO THE EXISTING NUMBER PORTING ARRANGEMENT.

Benefits

- Potentially lower service setup cost

- Mobile operator portability can be ensured if the third party have the control of the eSIM in the case of M2M.
- Assurance to service providers that they are not bounded to the same mobile operator throughout their service provisioning lifecycle.

Concerns

- Security
- Service availability
- Authenticity
- Price war to offer the lowest cost to service providers

5 LICENSING AND REGULATION OF ESIM DEVICES AND SERVICES

QUESTION 12: 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.

G+D has no comment on this but the question remains on how to apply the proposed licensing framework and conditions for foreign mobile operators players having the eSIM devices provisioned with their profiles and operating on a perpetual roaming basis.

QUESTION 13: TO THE EXTENT WHERE THEY ARE RELEVANT, DO YOU AGREE THAT THE CODES OF PRACTICE, GUIDELINES AND CONSUMER PROTECTION MEASURES ESTABLISHED BY IMDA FOR THE PROVISION OF MOBILE SERVICES SHOULD REMAIN APPLICABLE TO THE OPERATORS WHO OFFER TELECOMMUNICATION SERVICES FOR THE USE OF ESIM-ENABLED CONSUMER DEVICES?

G+D agrees to this statement.

As mentioned, eSIM involves an evolution of the SIM card form factor and the core functions are not altered, hence where relevant, the practice, guidelines and consumer protection measures should remain.

One area that may be of interest and require further review is use of locally purchased pre-paid plans when travelling to other countries. With the use of eSIM-enabled consumer devices, it will not be able to do this easily as there is no swapping of physical SIM cards anymore. Where applicable and available, if consumers are able to purchase a local pre-paid eSIM plans, they should not be hindered from downloading and using of these newly purchase plans into their eSIM-enabled devices when travelling overseas.