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Value networks of embedded SIM-based remote subscription management

Introduction

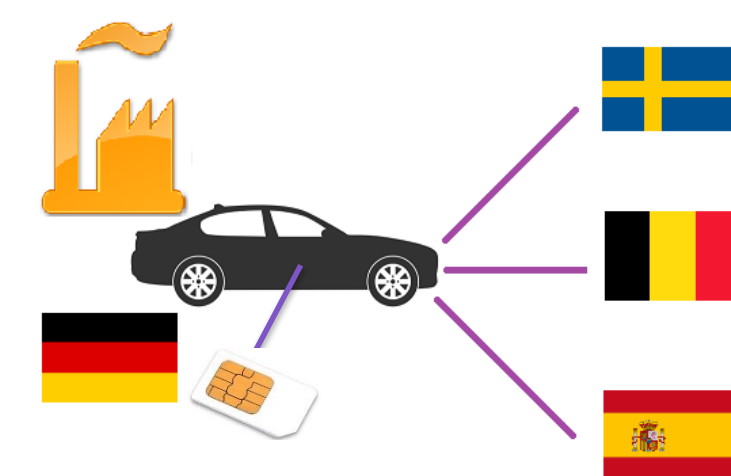
The number of mobile M2M devices is expected to reach 3,2 billion by 2019 [1]

All these machines will have to be equipped with SIM cards for obtaining access to the mobile network

The usage of conventional SIM cards in M2M devices is challenging



Devices are numerous and remotely located → the change of SIM cards is costly



Country of device deployment is not known during manufacturing

Research question

How can eSIM be implemented business-wise and what changes it will bring to the established business processes of M2M communications?

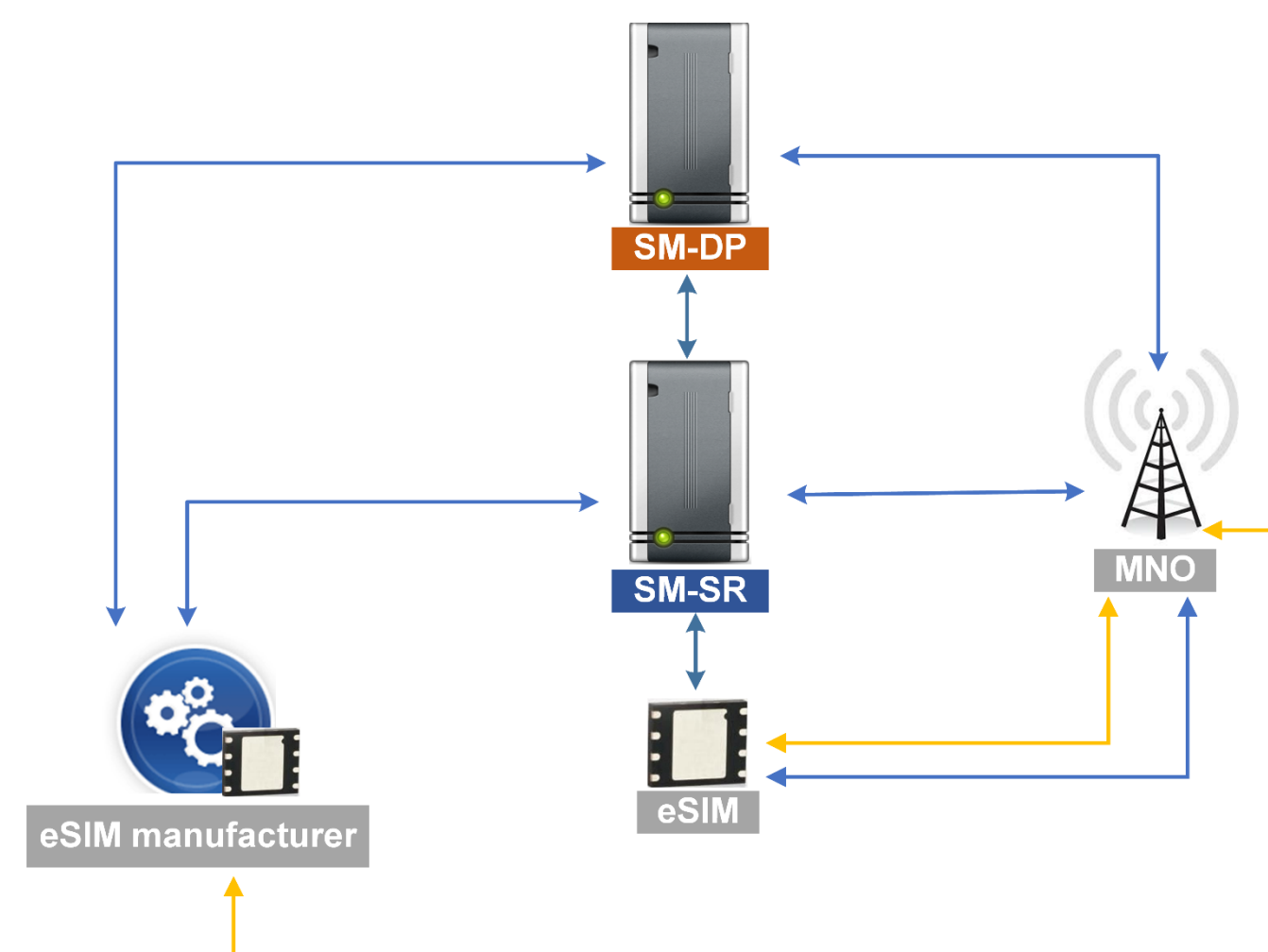
The concept of embedded SIM

Embedded SIM is a specification for remote subscription management [2]



Embedded SIM (eSIM) is a specification for M2M SIM card which is not easily accessible or replaceable that enables the secure remote provisioning and changing of subscriptions

eSIM introduces new elements to the technical architecture of SIM



Technical interface of SIM architecture
Technical interface of eSIM architecture

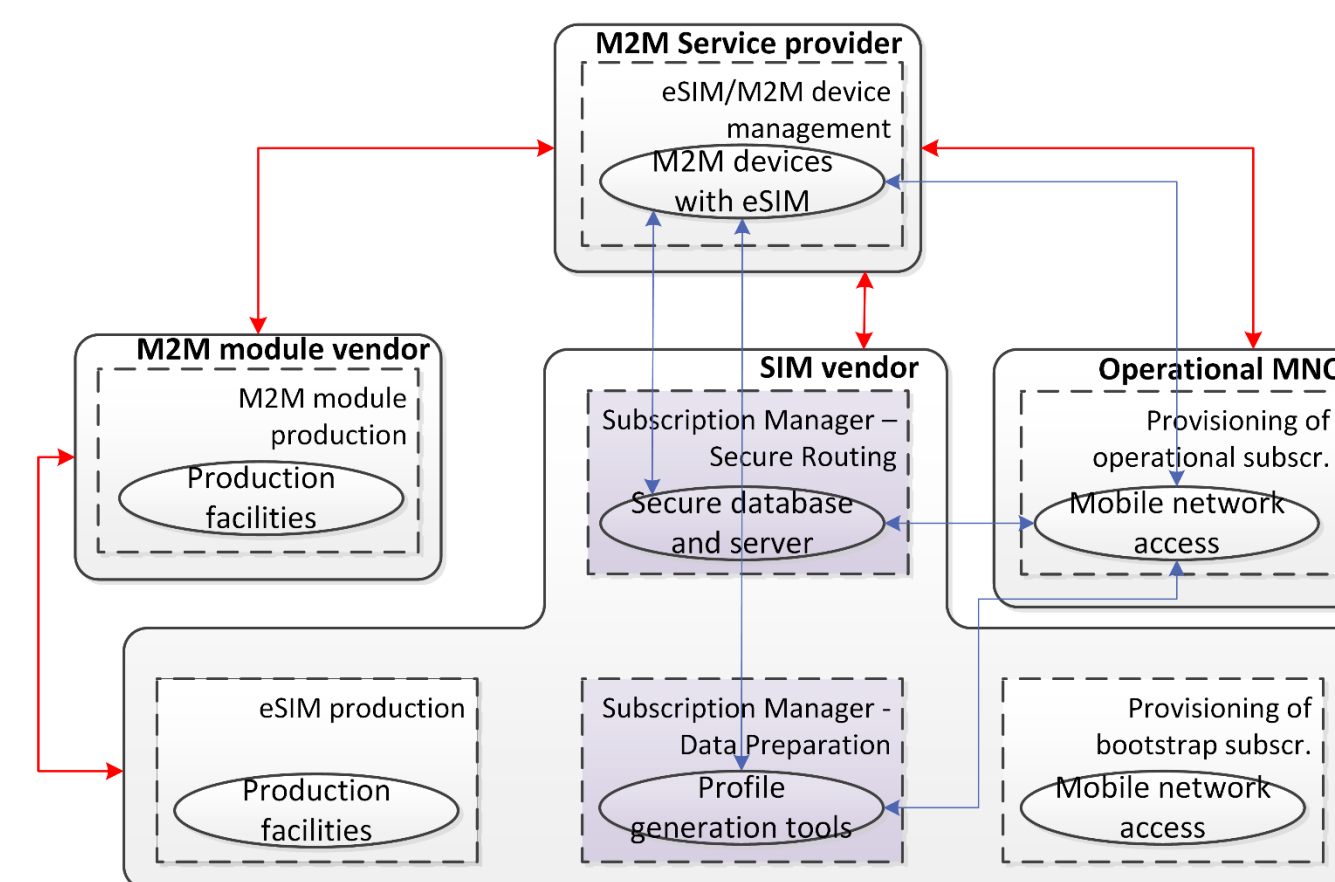
Subscription manager – Data preparation (SM-DP) manages the generation of profiles based on MNO's input information and the installation of these profiles onto eSIM

Subscription manager – Secure routing (SM-SR) is responsible for secure transportation of information to eSIM and keeps eSIM information at the database

eSIM must have **initial bootstrap profile** for downloading a normal operational profile

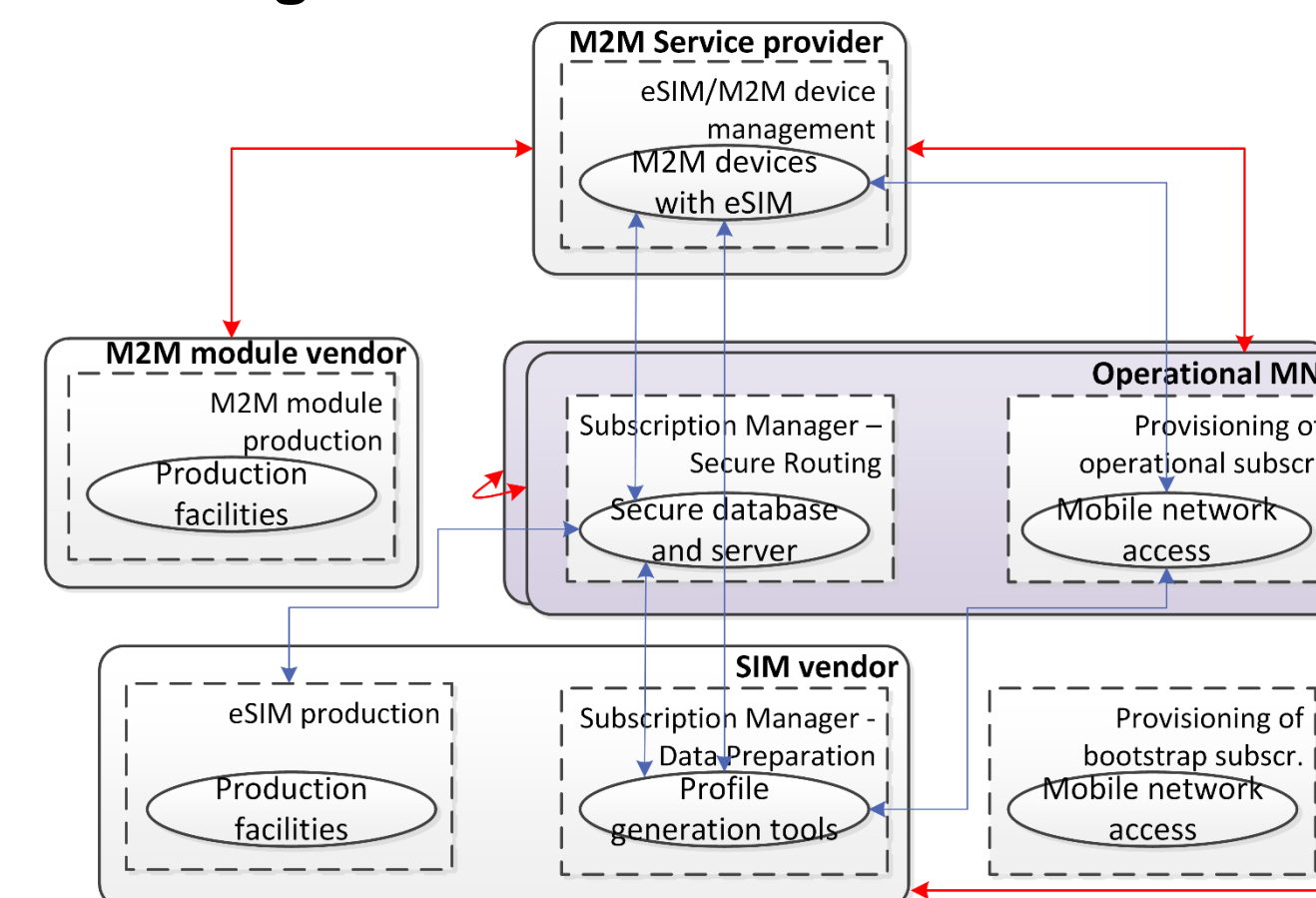
Value network configurations

VNC 1: SIM vendor is in power, the role of MNO is decreasing

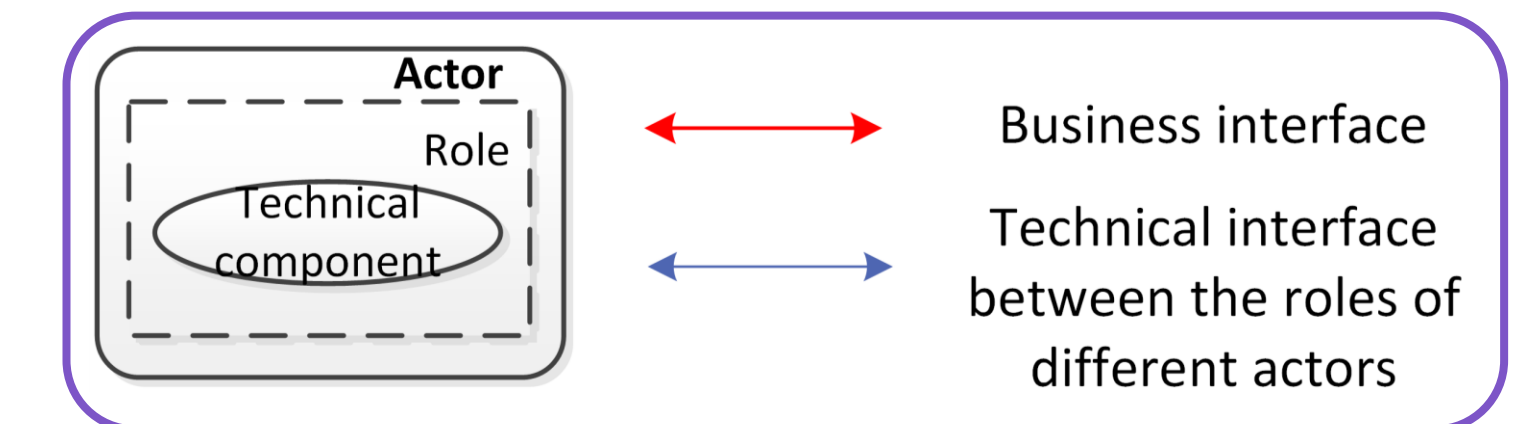


- SIM vendor acts as subscription manager and gets new recurring sources of revenue
- MNO provides connectivity and tries to retain customers

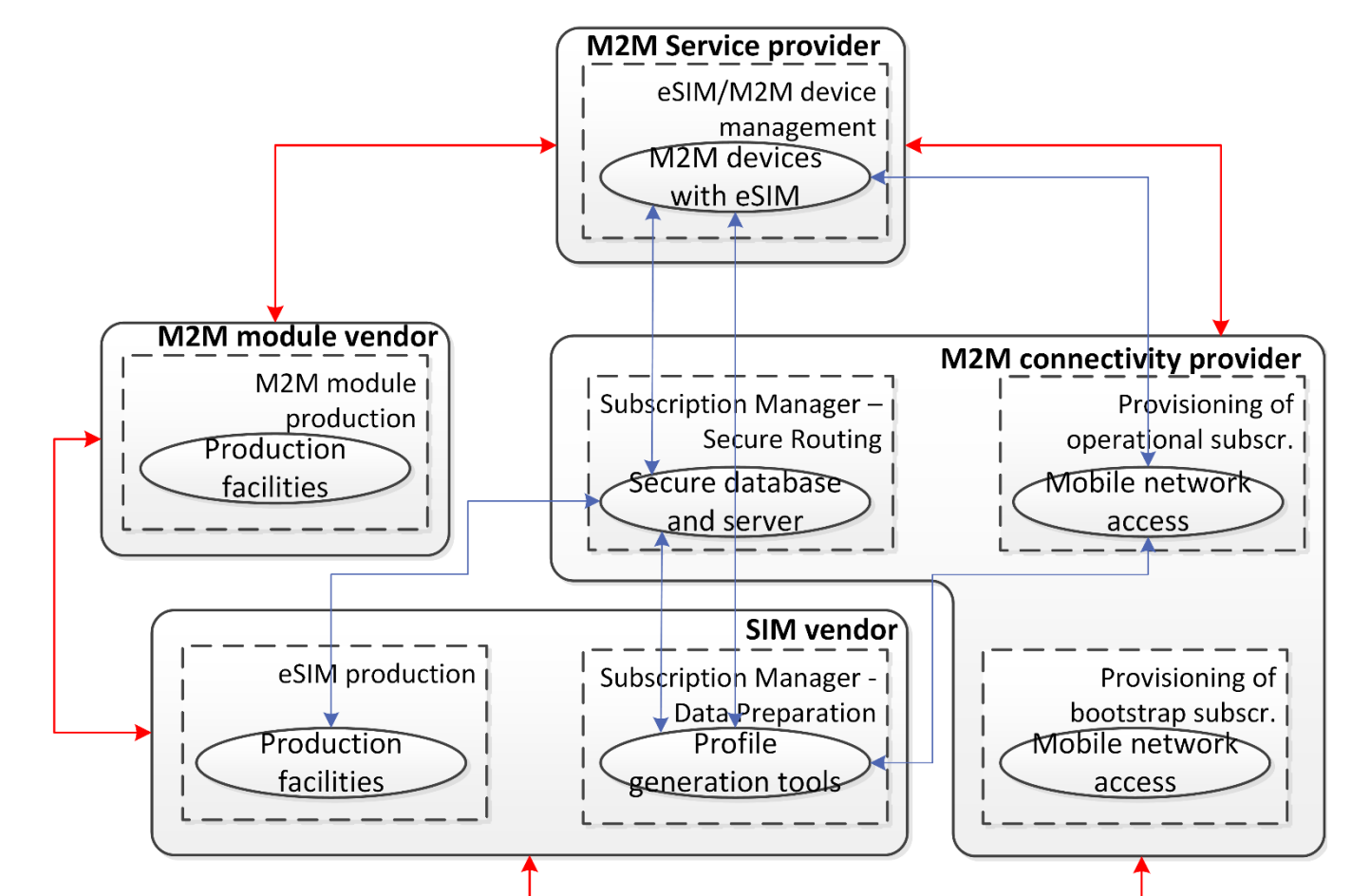
VNC 2: Mobile operator alliance as a walled garden



- MNO form international alliances. Depending on the country of device's use, local operator's profile is downloaded → no roaming charges
- Walled garden: customers are contractually locked-in to the MNO alliance



VNC 3: Connectivity provider (Google or Apple?) rules, MNO is a bit pipe



- Connectivity provider acts as reseller MVNO
- International and local scenarios of the configuration are possible

Conclusions

- eSIM is regarded as inevitable evolution of M2M communications, so it will eventually be adopted and bring certain changes to M2M and whole telecom industry
- Industry stakeholders will take the initiative in shaping an emerging value network of eSIM so that they can take the most favorable positions
- eSIM may deprive mobile operators of their traditional SIM card ownership and customer lock-in opportunity. Thus, they may try to restrict remote subscription management.