5G SIM: Maximising MNO Investment in 5G Networks
MNO migration to 5G has begun…

67 Mobile Network Operators (MNOs) in 39 countries have announced 5G availability between 2018 and 2022
Source: GSA

1.36 billion 5G consumer mobile connections by 2025
Source: GSMA Intelligence

50% penetration by 2025 in some markets
Source: GSMA Intelligence

Countries committed to deploy 5G by 2022

(GSA, Evolution from LTE to 5G: Global Market Status, Aug 18)

Projected 5G share of the mobile subscriber base

(GSMA Intelligence, Global Mobile Trends, Sept 18)
Tamper resistant hardware component is mandatory according to 3GPP R15; only the UICC is mandated.
MNOs: What are the challenges?

- Extended battery life
- Delivery of all IP services
- Network resource optimisation
- Security
- Ensuring good quality of experience
- Subscriber privacy
- GDPR
Advantages of SIM technology

- Quality of Experience monitoring
- Subscriber ID encrypted
- Features to reduce power consumption
- Authentication to the IMS/SIM can be refreshed through HTTPS
- Service prioritisation stored in SIM
- 5G network access security
How does the 5G SIM address each MNO challenge?
Ensuring good quality of experience

The challenge for MNOs:

• Preventing end user service failure
• How to optimise end user roaming experience while minimising MNO roaming cost

How the 5G SIM helps:

• End user Quality of Experience can be monitored through SIM card without a phone application
• Roaming configuration managed via the SIM card:
  • Automated selection of relevant network
  • Selection of network technology depending on the business agreement between operators
Ensuring mobile subscriber privacy

The challenge for MNOs:

- Mobile subscriber identity on today’s network can be easily misused to locate, trace individuals and collect data
- Protection of end user digital ID is an MNO concern for protection of MNO’s reputation
- MNO must comply with regulation

How the 5G SIM helps:

- Encryption of end user digital identity is supported by 5G network
- 5G SIM offers a trusted & standardised technical answer controlled by MNO
Addressing IoT Low Power devices

The challenge for MNOs:

- SIM cards must consume low level of energy, enabling batteries to last for years.
- Increase in use cases with requirement for low power IoT sensors, e.g.:
  - Agriculture (temperature / humidity sensors etc)
  - Waste management

How the 5G SIM helps:

- SIM in hibernation mode with device can be reactivated quickly and easily (suspend and resume)
- SIM interaction with device can be adjusted / optimised to save energy
- Can help optimise usage of network resources (through optimised communication with device)
Unleashing deployment of new services

The challenge for MNOs:

- Maximise monetisation of innovative IP services requiring secure access and delivery, e.g.:
  - Voice over IP
  - WiFi calling
  - Virtual reality
  - HD video

- Download large applications while meeting end user experience expectations

How the 5G SIM helps:

- SIM card updates optimised over 5G all IP network:
  - Large applications can be downloaded while end user experience expectations are met
  - Roaming agreement parameters
  - Reduced cost operations with better efficiency and higher security
The challenge for MNOs:

• How to deploy 5G network while optimising investment and offering good Quality of Experience to end user

• As network utilisation grows, underestimated network capacity may become congested

• Congestion can affect end user service

• Flexible prioritisation relative to revenue generated by subscriber/service segment

How the 5G SIM helps:

• Prioritisation / monetisation of multi-media services configured within the SIM

• Prioritisation depending on: MNO policies; deployment scenarios; subscriber profiles; and services

• This configuration can be updated over the lifecycle of the SIM card and the MNO policies evolution
Ensuring secure access to network

The challenge for MNOs:

- Smooth end user experience while protecting end user and MNO assets
- Mutualise access network method, not limited to cellular networks (e.g., WiFi)
- To offer, at minimum, the security level available in 3G or 4G
- Protect reputation of MNO as a trusted entity
- Protect network assets against attacks

How the 5G SIM helps:

- Enhanced end user experience: faster network reconnection upon device restart, includes non-cellular networks e.g., WiFi
- Stores the network access temporary keys within the vault that is a 5G SIM card
- Mutual authentication
- Protects against cloning
Conclusion

1. Only UICC is mandated by 3GPP R15 for securing 5G network access.

2. 5G SIM answers all MNO challenges:
   - Monitoring end user Quality of Experience
   - Subscriber privacy
   - Extended battery life
   - Delivery of all IP services
   - Network resource optimisation
   - Security

3. For more information, read ‘3GPP R15 5G SIM card: A definition’ on the SIMalliance website -
   www.simalliance.org/5g/educational-resources/