

eSIM for IoT

CONTENTS

This course presents the eSIM technology for the Internet of Things and the GSMA Remote SIM Provisioning standards that enable it.

The course starts with the fundamentals and history of the SIM, USIM and UICC and the evolution to the eSIM/eUICC. It then explains the foundational M2M standard (SGP.02) and the consumer standard (SGP.22), before focusing in detail on the new IoT standards SGP.31 and SGP.32, including the eIM and IPA entities. The last part covers the benefits, commercial opportunities and real-world use cases of eSIM for IoT.

PREREQUISITES

Basic technical knowledge of mobile networks (GSM/UMTS/LTE/5G) and IoT connectivity is recommended.

Fundamentals and History

- SIM, USIM, UICC and ISIM: the basics
- Mobile Equipment, UICC and the air interface
- SIM form factors and the evolution to eSIM/eUICC
- The GSMA eSIM standards family: SGP.02, SGP.22, SGP.31 and SGP.32
- Why IoT needs a new Remote SIM Provisioning standard

SGP.02 and SGP.22: Foundations and Consumer Standard

- M2M eSIM architecture and roles (SGP.02): SM-DP, SM-SR and EUM
- Consumer eSIM architecture and roles (SGP.22): SM-DP+, SM-DS and the LPA
- M2M versus consumer eSIM: key differences
- SGP.02 profile lifecycle, interfaces (ES1-ES8) and profile structure
- SGP.22 interfaces (ES2+ to ES12) and the LPA architecture
- eUICC security domains and profile download signalling flows

SGP.31 and SGP.32: eSIM for IoT

- SGP.31 and SGP.32: overview, design goals and new entities
- IoT system architecture: the eIM, the IPA and the IoT eUICC
- The eIM (eSIM IoT Manager) and its interfaces (EIM1-EIM6)
- The IPA (IoT Profile Assistant): IPA-ME and IPA-eUICC variants
- SGP.32 profile download flow (Option A and Option B)
- SGP.32 profile lifecycle and state model
- Protocol stack for constrained devices: CoAP, DTLS and HTTPS

Benefits, Opportunities and Use Cases

- Operational benefits: zero-touch provisioning, remote operator switching and fleet management
- Business opportunities for MNOs, device makers and enterprise deployers
- Use case: smart metering and utilities
- Use case: connected vehicles and logistics
- Use case: industrial IoT and critical infrastructure
- Use case: healthcare and agriculture