



BEST OF  
**BRITISH**



James Body  
CEO



## Conventional history

In February 1987 Europe produced the first agreed GSM Technical Specification.

Ministers from the four big EU countries cemented their political support for GSM with the Bonn Declaration on Global Information Networks in May and the GSM MoU was tabled for signature in September.

The MoU drew in mobile operators from across Europe to pledge to invest in new GSM networks to an ambitious common date.

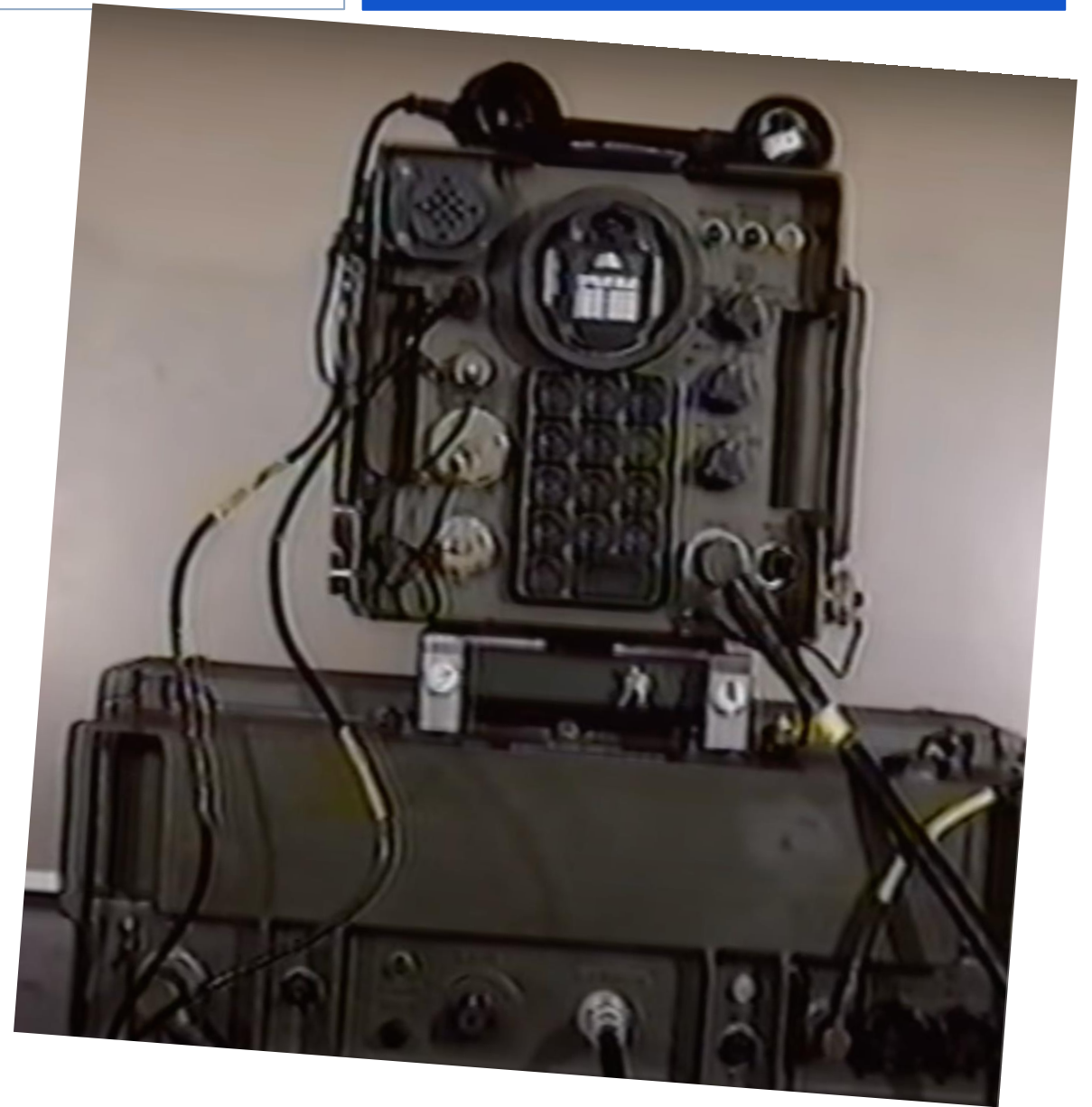
France and Germany signed a joint development agreement in 1984 and were joined by Italy and the UK in 1986.

1992 - Deployment of the first 900 MHz GSM networks

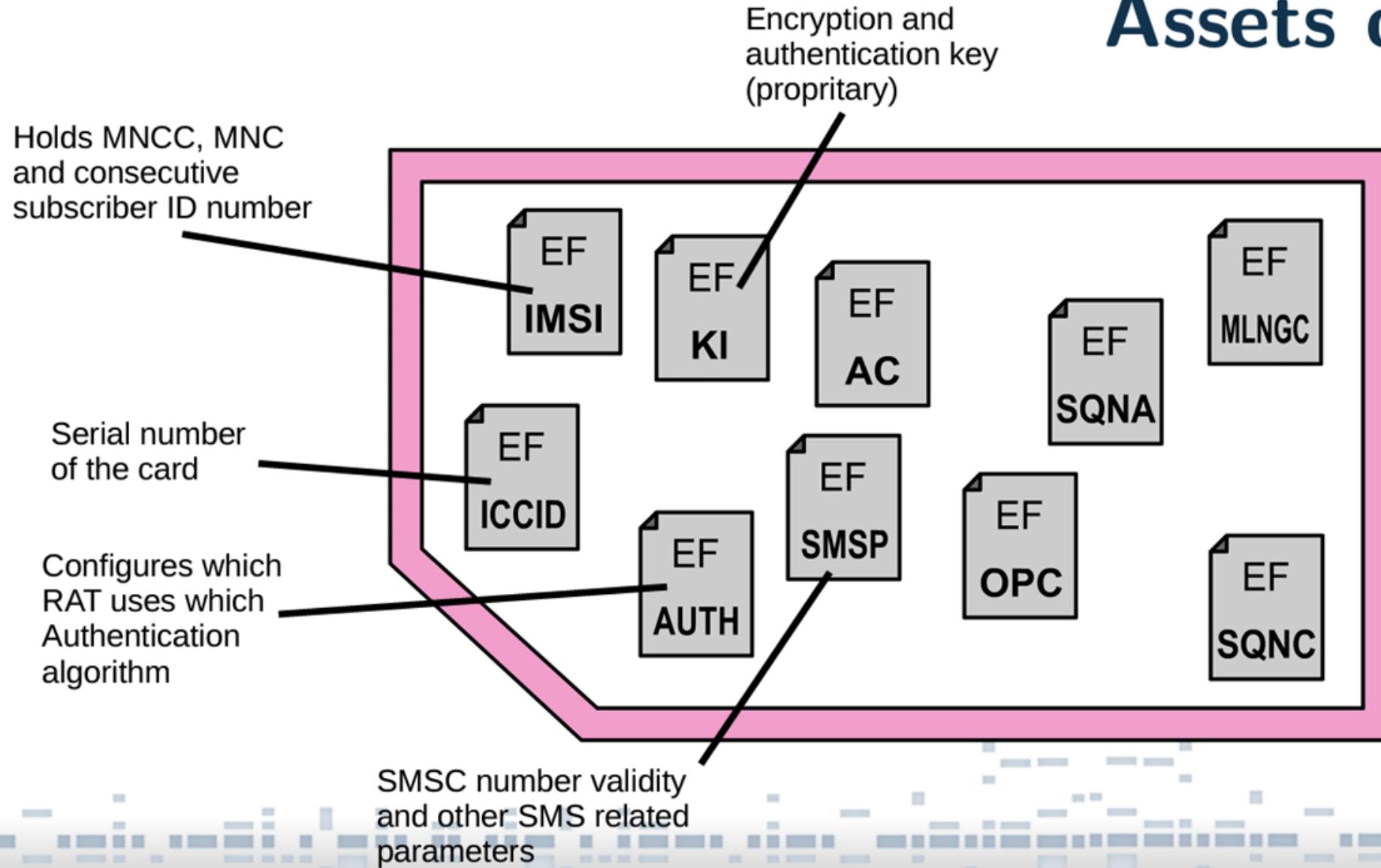
# 1980s



2022 Telet Research (N.I.) Ltd / cellXica Ltd



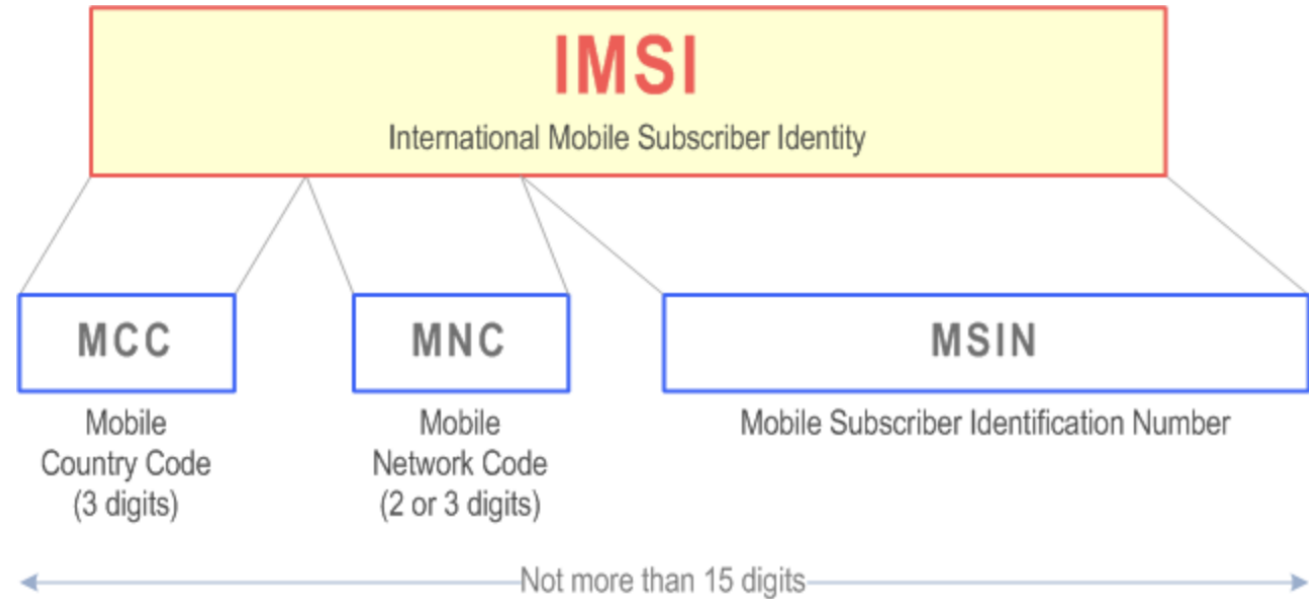
## Assets of a SIM



# Mobile Network Codes and IMSIs

IMSI Lookup to route signalling traffic to correct Network Core

Requires GSMA Operator Membership/IR.21



## Examples

- 001-01 Test IMSIs
- 999-99 Private Networks
- 234-88 UK - OFCOM Issued
- 901-01 International - ITU Issued

- **SAS for UICC Production (SAS-UP):** Aimed at companies who MANUFACTURE UICCs and eSIMs
- **SAS for Subscription Management (SAS-SM):** Aimed at organisations who provide Remote SIM Provisioning services









Security Accreditation  
Scheme



Accredited  
Supplier

# GSMA - SAS-UP Accredited sites

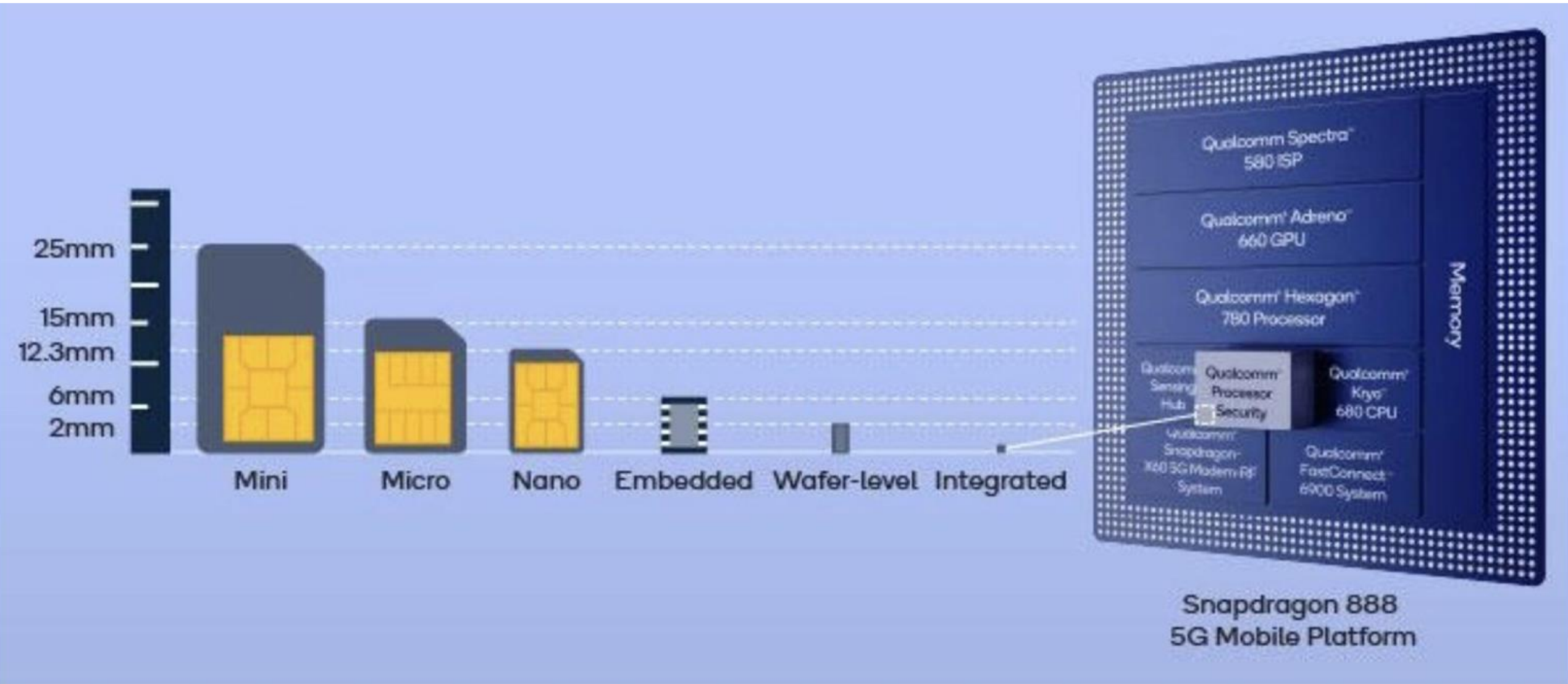
| Supplier   | Site                  | Certification Scope                    |                 |                                |                                | Valid to: | Cert.   |
|--|-----------------------|--|-----------------|--------------------------------|--------------------------------|-----------|---|
|  |                       | Generation of data for personalisation | Personalisation | Management of PKI certificates | Post personalisation packaging |           |   |
| E-Kart [3]   | Istanbul, Turkey      | UICC, eUICC <sup>P</sup>               | C               | ✓                              | -                              | Dec 2023  |    |
| G & D Mobile Security [2][3]                         | Barcelona, Spain      | UICC, eUICC                            | C E             | ✓                              | C                              | Apr 2023  |    |
| Gemalto Southern Africa (Pty) Ltd [3]                | Gauteng, South Africa | -                                      | C               | -                              | -                              | Sep 2023  |    |
| Giesecke+Devrient (China) Technologies Co., Ltd. [3] | Nanchang, China       | UICC, eUICC                            | W C E           | ✓                              | C                              | Dec 2023  |    |
| Giesecke+Devrient Mobile Security America, Inc.      | Markham, Canada       | UICC, eUICC                            | -               | ✓                              | -                              | Jul 2024  |  |
| Giesecke & Devrient MS India Private Limited [3]     | Chennai, India        | UICC, eUICC                            | -               | ✓                              | -                              | Feb 2024  |  |

# GSMA - SAS-SM Accredited sites

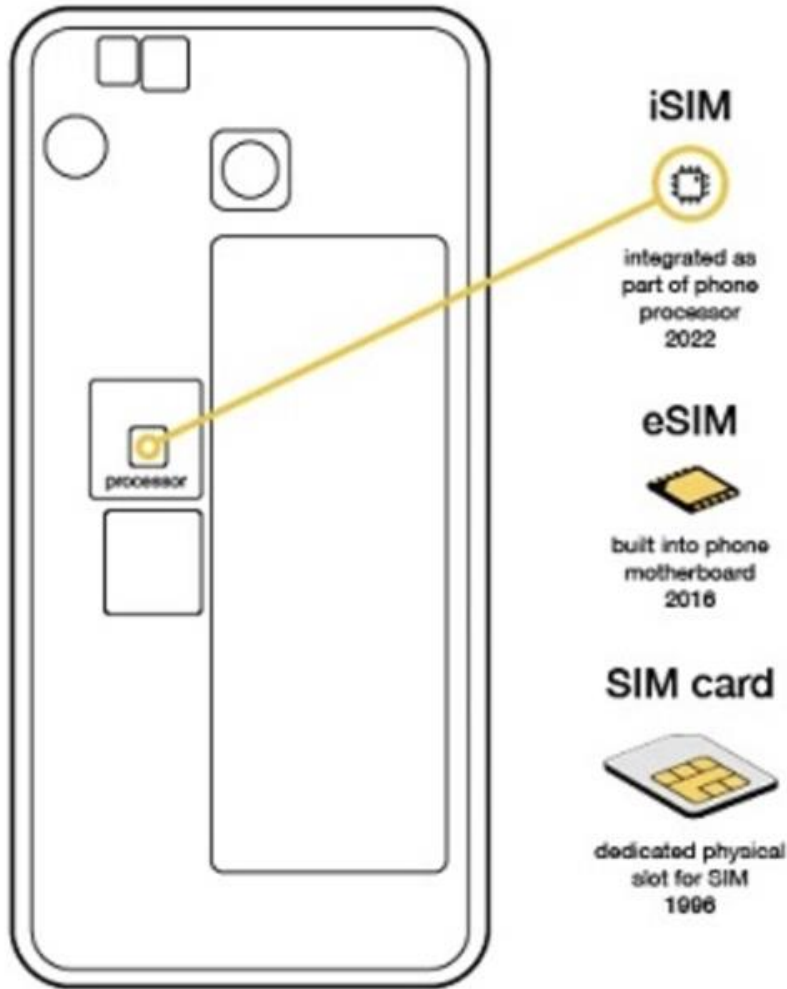
| Supplier                             | Site                       | Scope of Certification   |   |  |  |  | Valid to: | Cert.   |
|--------------------------------------|----------------------------|--|---|--|--|--|-----------|---|
|                                      |                            | Secure Routing   | Data Preparation  | Data Preparation+ (ref. SGP.22)  | Data Centre Operations & Management  | Discovery Service  |           |   |
| 1oT                                  | Tallinn, Estonia           |    |    | -  |   | -  | Jul 2023  |    |
| Thales DIS USA, Inc. [3]             | Dallas, USA                |    |    | <br> | <br> | <br> | Sep 2023  |    |
| Truphone Limited                     | London, United Kingdom     |    |    |   |   |   | Dec 2023  |    |
| Truphone Limited                     | Amsterdam, The Netherlands |  |  |   |   |   | Dec 2023  |  |
| VALID SOLUCIONES TECNOLÓGICAS S.A.U. | Madrid, Spain              |  |  |   |   | -  | Mar 2024  |  |



# Different Form Factors



- UICCs come in different specifications for different scenarios
- Standard MNO UICCs have been comparatively simple devices
- Driving factor being COST
- UICC Designer needs to specify:
  - SIM Processor
  - Memory type/Size
  - Min/Max Operating Temperature Ranges
  - Minimum Read/Write cycles before failure
  - Processor duty cycle/Heat dissipation
  - Security features



# Introducing the integrated SIM (iSIM)

iSIM technology is a significant evolution on existing eSIM solutions (which require a separate processor) and delivers whole-sale benefits to both consumers and telecommunication operators by integrating SIM services into the device's main processor.

## iSIM benefits

**Additional space**

**Multiple accounts**

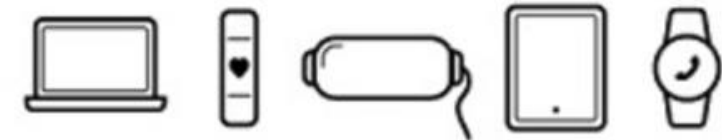
**Enhanced security**

**Longer life**

**Further use cases**

## iSIM integration

The integration of iSIM directly into the chipset will also pave the way for mobile services to be integrated into devices beyond the mobile phone where space is a premium, taking the mobile experience to laptops, tablets, virtual reality platforms, IoT devices, wearables and more.





## eSIM Only iPhone has been coming...

2017



Google launches Pixel 2 with eSIM support as part of "Project Fi"

2018



Apple launches first iPhone with eSIM: iPhone XS series

2019



Moto Razr became the first "eSIM-only Smartphone"

2021



Apple launches iPhone 13, the World's first "Dual eSIM" smartphone

2022



Apple launches iPhone 14, the first eSIM-only iPhone in the US

Late 2022/Early 2023



World's first Smartphone with iSIM expected.

- **UICCs** - Configuration controlled by MNO, physical device OWNED by MNO
- **eSIM** - Initial build and system keys controlled by OEM, e.g. Apple / Samsung
- **iSIM** - Initial build controlled by chipset manufacturer

Are the MNOs happy about this?

Not a lot of choice.....

Example Apple iPhone 5 - Sept 2012

# Private Radio Access Networks

Where can I get SIMs for my  
Private RAN?

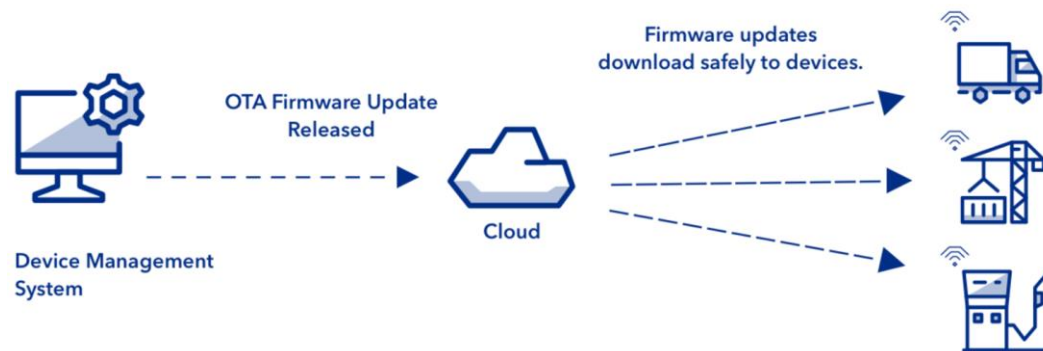
Where can I get the  
specifications for my SIMs?

How do I manage SIMs before  
and after deployment?

- SIM manufacturers minimum order volume is circa 10k units
- Detailed specification required for both hardware and software configurations
- Initial build and testing (BAP SIMs)
- If interaction with public networks required:
  - Accredited MNO interconnects
  - Commercial settlement services
  - Security Policy
  - IMS Profiles (with MSISDNs)
- Remote SIM Provisioning (OTA)

- Production of SIM in ‘Shipping’ configuration
- Initial SIM activation with initial user configuration
- Management/updates of deployed SIMs
- Deactivation

- First OTA systems used SMS transport
- Later added packet data transport (using private APN)
- Both SMS/Private APN transports require SIM to be attached to network
- Use of SIM signalling channel as additional transport to achieve initial attachment







**Any more  
Questions?**

