eSIM for IoT

eSIM GSM standards evolution

ST eSIM for IoT

ST eSIM portfolio and ecosystem

Introducing the SIM & eSIM concept

From the removable SIM to the soldered and interoperable eSIM

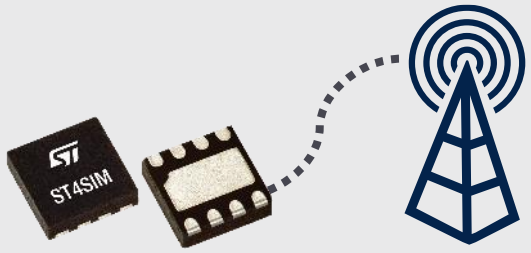
Classical SIM card
Removable

Traditional SIM concept inherited from mobile phone

1 SIM Card = 1 operator

Embedded SIM (eSIM)
Soldered

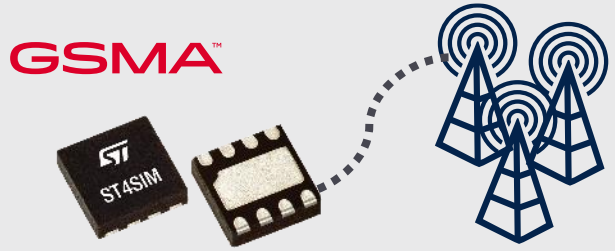
An optimized footprint and reliable package as soldered



1 eSIM = 1 operator

GSMA-certified eSIM
Removable or Soldered

Possibility to change remotely the operator without replacing the SIM



1 eSIM = more operators

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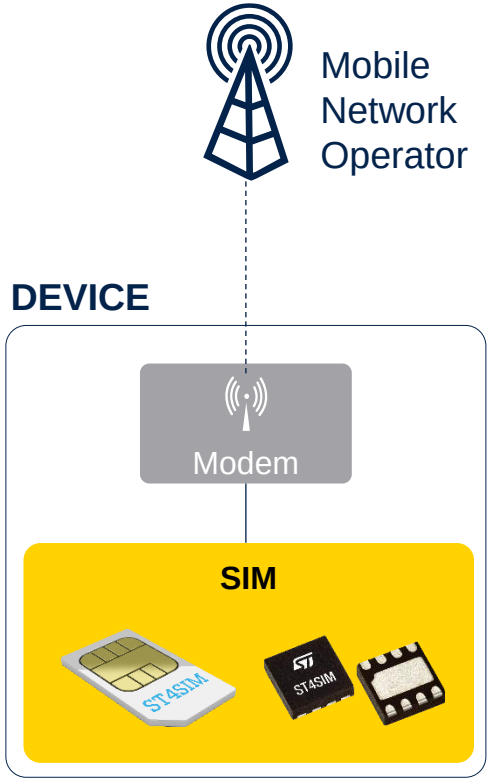
Introducing the SIM concept

A component always required to enable cellular connectivity



The **SIM** is

- Statically linked to a single operator
- Requires huge maintenance in case of operator swap
- Owned by operator
- Complex in term of logistic management

- Based on a secure microcontroller hardware
- Stores all information identifying the subscriber and the telecom operator (MNO/MVNO)
- Provides to the modem all features to access the cellular network
- Is available in multiple packages (removable or solderable)
- Is compliant with multiple segments requirements (IoT and Industrial)

New requirements coming from IoT

Need to ease the SIM / eSIM deployment

Future mainstream

Reprogrammable

Traditional SIM

Non-reprogrammable

> IoT-enabled product manufacturers would have the ability to build devices with “blank” SIMs that could be activated in the destination country.
>
> This functionality would make for easy equipment connectivity and allow manufacturers to offer new products in new market segments.
>
> **McKinsey & Company**

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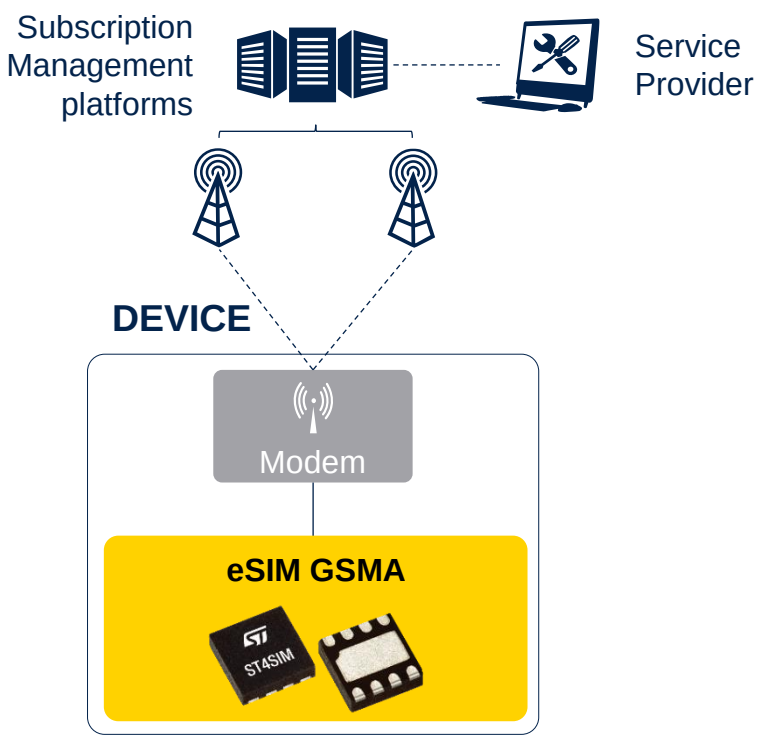
Introducing the eSIM concept

New standard product pushed by GSMA



GSMA™

The **eSIM**, also known as an embedded UICC (eUICC), is a SIM which:

- Allows to change operator without physical SIM swapping
- Hosts multiple operator profiles – only one at a time is enabled
- Is owned by an OEM
- Is available on different packages (removable or solderable)
- Is compliant with multiple segments (IoT and Industrial)
- Is compatible with LTE, 5G and LPWA(*) networks

(*) RSP not possible under NB-IoT with eUICC M2M (SGP.02) due to the SMS missing

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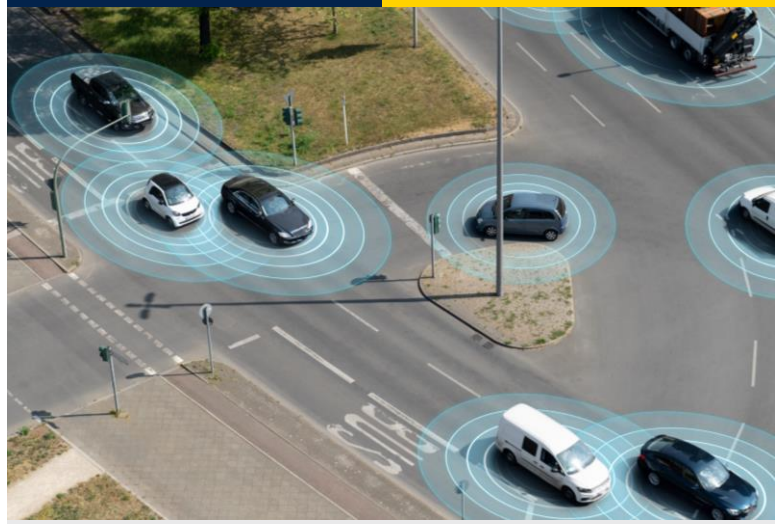
GSMA SGP specifications

GSMA

eSIM for M2M — SGP.01/02



- Version 3.2 in volume production
- Version 4.2 available for 5G

GSMA

eSIM for Consumer — SGP.21/22

- Version 2.x in volume production
- Version 3.0 published

GSMA

eSIM for IoT — SGP.31/32

- Architecture spec SGP.31 v1.1
- Technical spec SGP.32 v1.x

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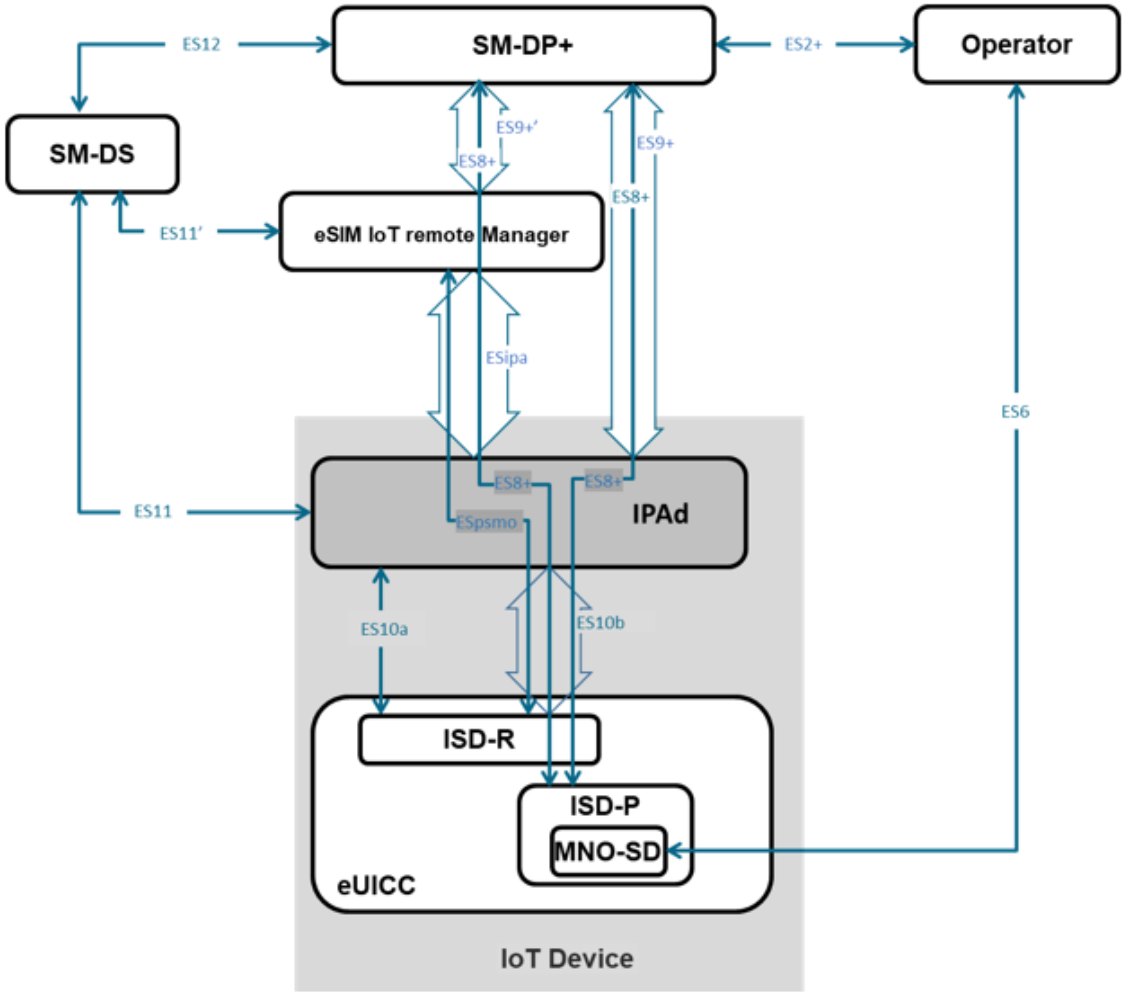
SGP32 - eSIM IoT Architecture



eSIM IoT functional architecture (IPA in the IoT device)

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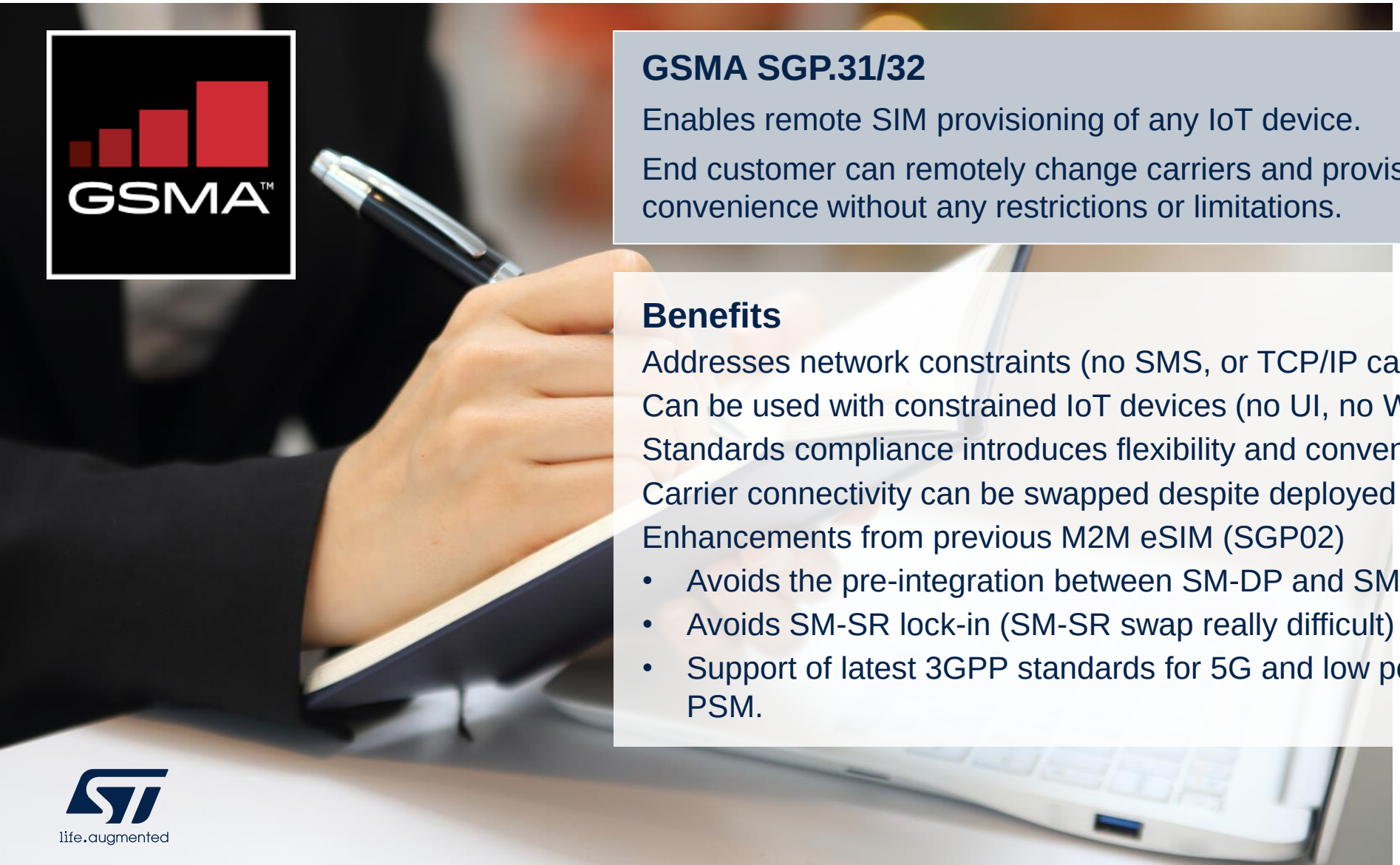
GSMA eSIM for IoT



GSMA SGP.31/32

Enables remote SIM provisioning of any IoT device.

End customer can remotely change carriers and provision the eSIM at their convenience without any restrictions or limitations.

Benefits

Addresses network constraints (no SMS, or TCP/IP capability)

Can be used with constrained IoT devices (no UI, no Wifi etc.)

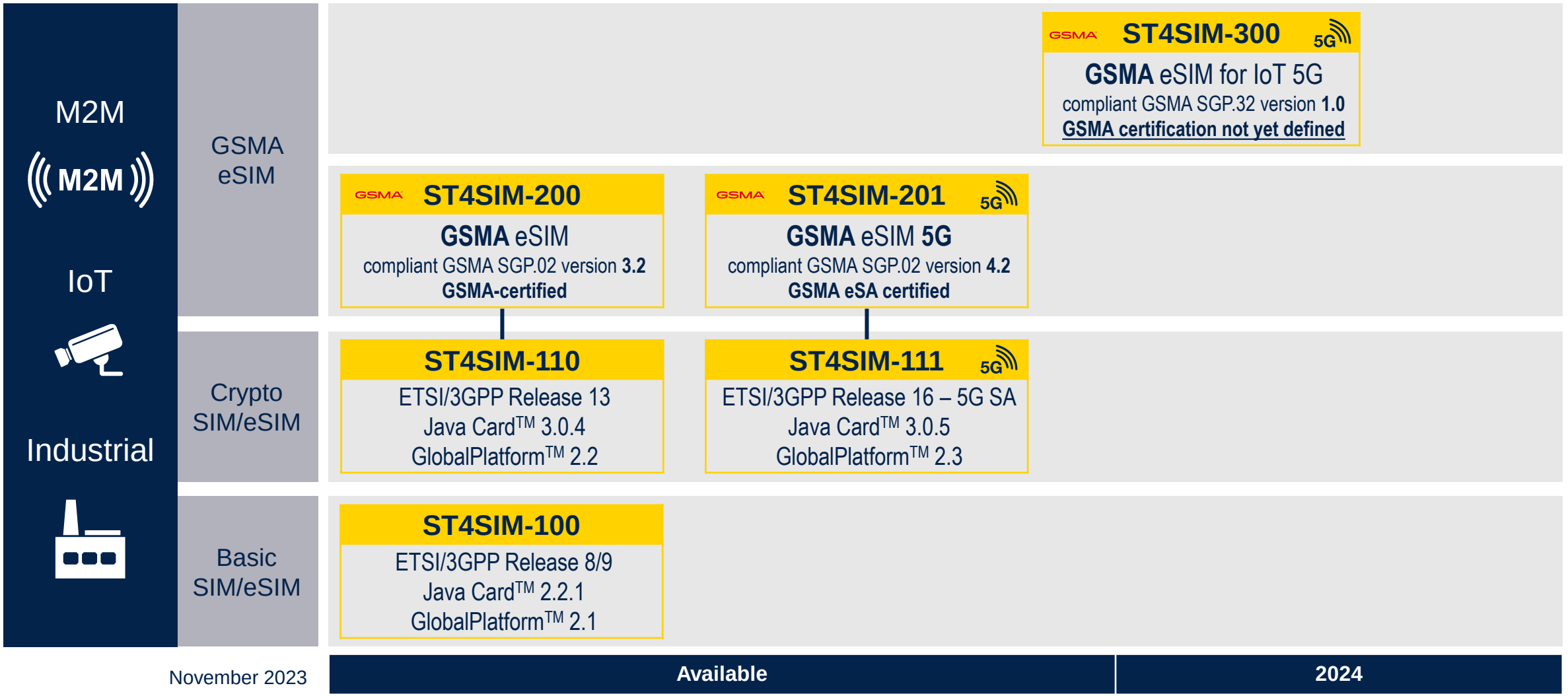
Standards compliance introduces flexibility and convenience of carrier choice.

Carrier connectivity can be swapped despite deployed in field

Enhancements from previous M2M eSIM (SGP02)

- Avoids the pre-integration between SM-DP and SM-SR (costly and telco barrier)
- Avoids SM-SR lock-in (SM-SR swap really difficult)
- Support of latest 3GPP standards for 5G and low power features like eDRx & PSM.

ST4SIM OS roadmap



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ST4SIM complete portfolio

A complete offer from regular M2M SIM to the eSIM for IoT

ST4SIM-100x

- Classic SIM compliant to ETSI/3GPP
- Telecom Operator partner:
  - **Vodafone** (*)

+ Available on card plug-in and MFF2
+ **IoT** and **Industrial**

ST4SIM-110x / 111x

- Classic SIM compliant to ETSI/3GPP/**5G**
- Telecom Operator partner:
  - **Vodafone** (*)
  - **Verizon Wireless**
  - **AT&T**
  - **Soracom**

+ Available on card plug-in, MFF2, WLCSP(**)
+ **IoT** and **Industrial**

GSMA

ST4SIM-200x / 201x

- eSIM compliant to **GSMA SGP.02 v3.2** **GSMA SGP.02 v4.2 - eSA certified**
- Telecom Operator partner:
  - **Verizon Wireless**
  - **1GLOBAL**
  - **Wireless Logic**

+ Available on card plug-in, MFF2, WLCSP(**)
+ **IoT** and **Industrial**

GSMA

Roadmap

ST4SIM-300x

- eSIM compliant to GSMA SGP.32 v1.x
- Telecom Operator partner:
  - **Flexible bootstrap operator & eIM selection**
  - **IPA reference design**

+ Available on card plug-in, MFF2, WLCSP(**)
+ **IoT** and **Industrial**

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(*) Availability subject to pre-agreemment with Vodafone

(**) WLCSP perso process subject to specific qualification

ST4SIM-300 ecosystem

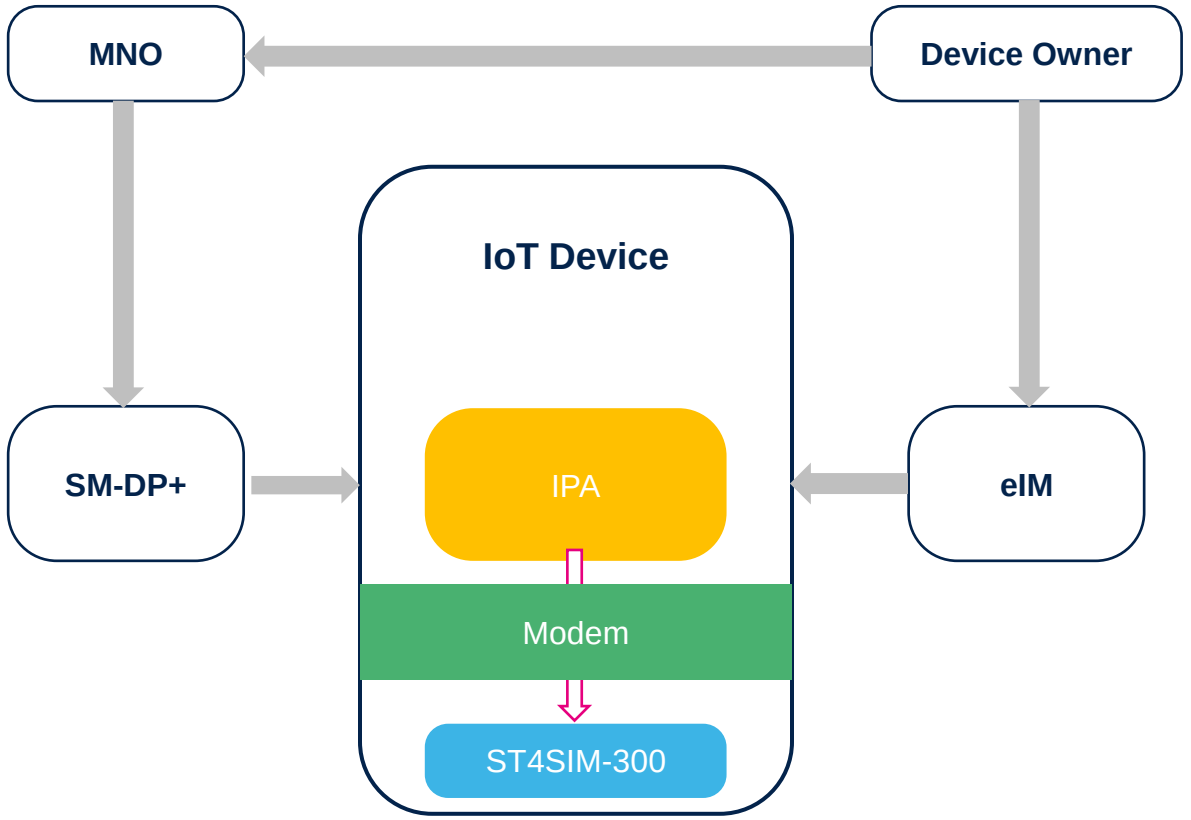
ST4SIM-300 component

- IoT and Industrial-grade HW
- Multiple form factor
- GSMA SGP.31/SGP.32 compliant
- Targeting GSMA eSA certification

ST4SIM-300 related services

- Bootstrap options
  - Default bootstrap by ST(*)
  - No default bootstrap
  - Customized bootstrap operator
- Configurable eIM
  - Default service by ST
  - Custom configuration according customer request
- IPA_d reference design
  - Java based version (*)
  - C version compatible with STM32 (*)

(*) in partnership with third parties



direct & indirect profile download from SM-DP+

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ST4SIM current portfolio

	Internet of Things	Industrial
		
	ST4SIM-S	**ST4SIM-M**
Basic SIM & eSIM ST4SIM-100x	Optimized and cost effective	
	ST4SIM-100S	**ST4SIM-100M**
Crypto 5G SIM & eSIM ST4SIM-110x / -111x	Advanced secure communication	
	ST4SIM-110S / ST4SIM-111S	**ST4SIM-110M / ST4SIM-111M**
GSMA eSIM ST4SIM-200x	Scalable & interoperable solution	
	ST4SIM-200S	**ST4SIM-200M**
GSMA 5G eSIM ST4SIM-201x	5G, Scalable & interoperable solution	
	ST4SIM-201S	**ST4SIM-201M**

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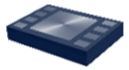
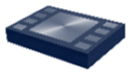
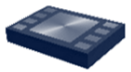
Package offer

Industrial	ST4SIM-100	ST4SIM-110/111		ST4SIM-200/201			ST4SIM-300	
								
Package	**D19** (4FF / 6 contacts)	**D16** (4FF / 6 contacts)	**DFN8** 5x6 MFF2 (Not Wettable Flank)	**D16** (4FF / 6 contacts)	**DFN8** 5x6 MFF2 (Wettable Flank)	**WLCSP (0.395mm max thickness)**	**DFN MFF2**	**WLCSP (0.330mm max thickness)**
Availability	Available	Available	Available	Available	Available	Available (*)	4q23 ES 1H24 MP	1H24 (*)

(*) Availability upon request and based on requested profile

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ST4SIM ecosystem

ST4SIM component

- IoT and Industrial-grade HW
- Multiple form factor
- SIM / eSIM SoC configuration
- GSMA eSIM certified and interoperable

✚ Pre-loaded connectivity from partners

Telecom Operators
MNO / MVNO

✚ Pre-loaded test profile

User

Application

Connectivity management

Connectivity platforms

Telecom Operators
MNO / MVNO

Complete ecosystem with

- **SM-SR:**
  Subscription Manager Secure Routing
- **SM-DP:**
  Subscription Manager Data Preparation

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ST4SIM-200M available at e-distribution

ST4SIM component

GSMA eSIM M2M with
MVNO connectivity

Activation procedure here

Distribution

Available
at all ST distributors

Scan me or click here

User

application

Connectivity management

Connectivity platform

MVNO

Subscription
Management Platform

Access here

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