eSIM Technology:
Future perspective and Further standardization initiatives

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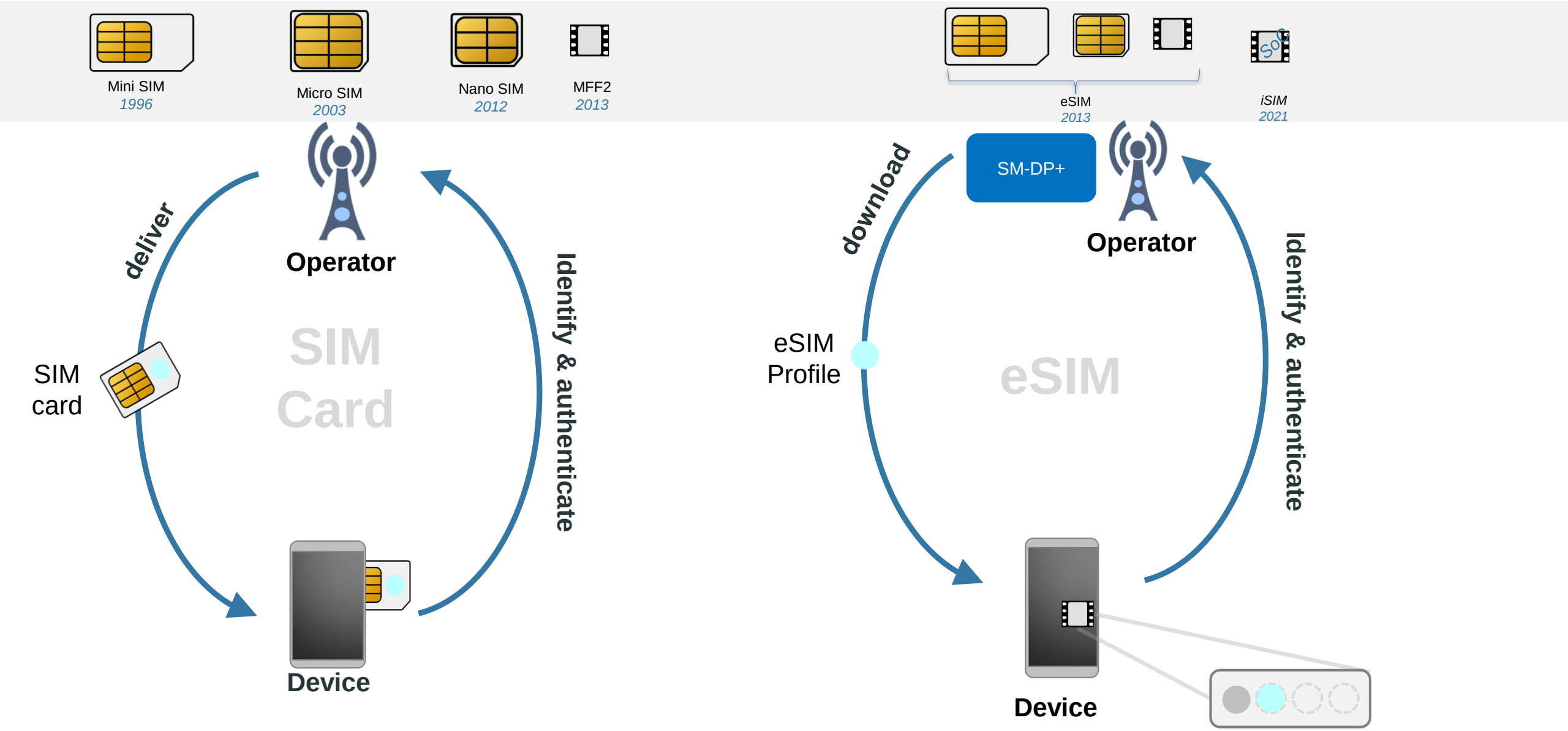
16 December 2021

What is eSIM

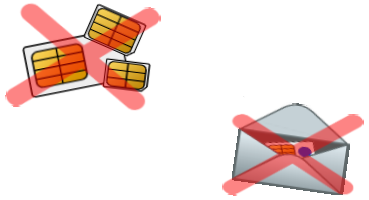
From SIM to eSIM

December 2021

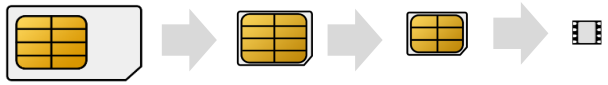
What is eSIM?


Mini SIM
1996
Micro SIM
2003
Nano SIM
2012
MFF2
2013
eSIM
2013
iSIM
2021
Operator
deliver
SIM
card
SIM
Card
Identify & authenticate
Device
SM-DP+
download
Operator
eSIM
Profile
eSIM
Identify & authenticate
Device

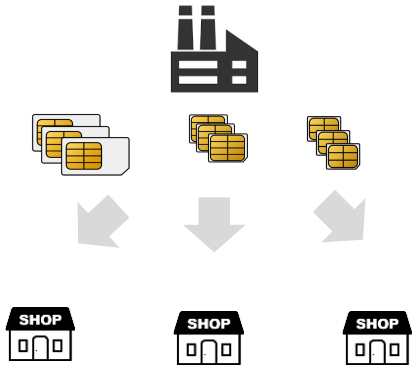
Benefits of the eSIM



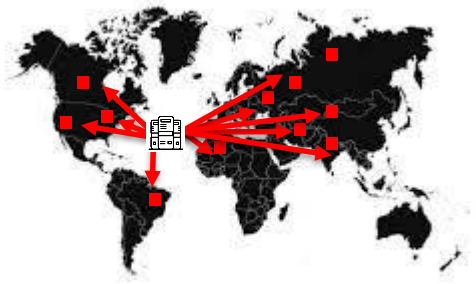
Enhance customer experience by reducing the time between sign-up and commencement of service



Substantial reduced volume to be adapted to increasing device variety



Streamline logistics costs to drive greater use of digital distribution channels



eSIM Market

From Smart Phone point of view…

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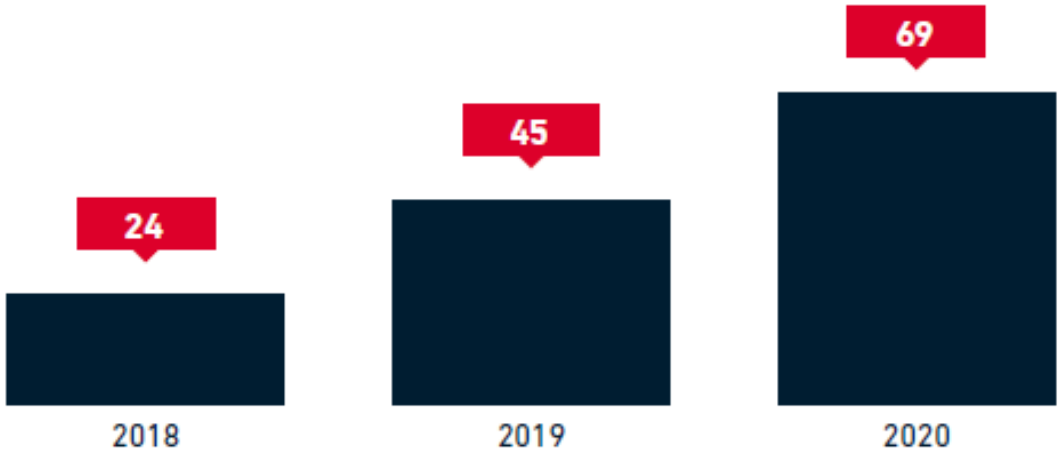
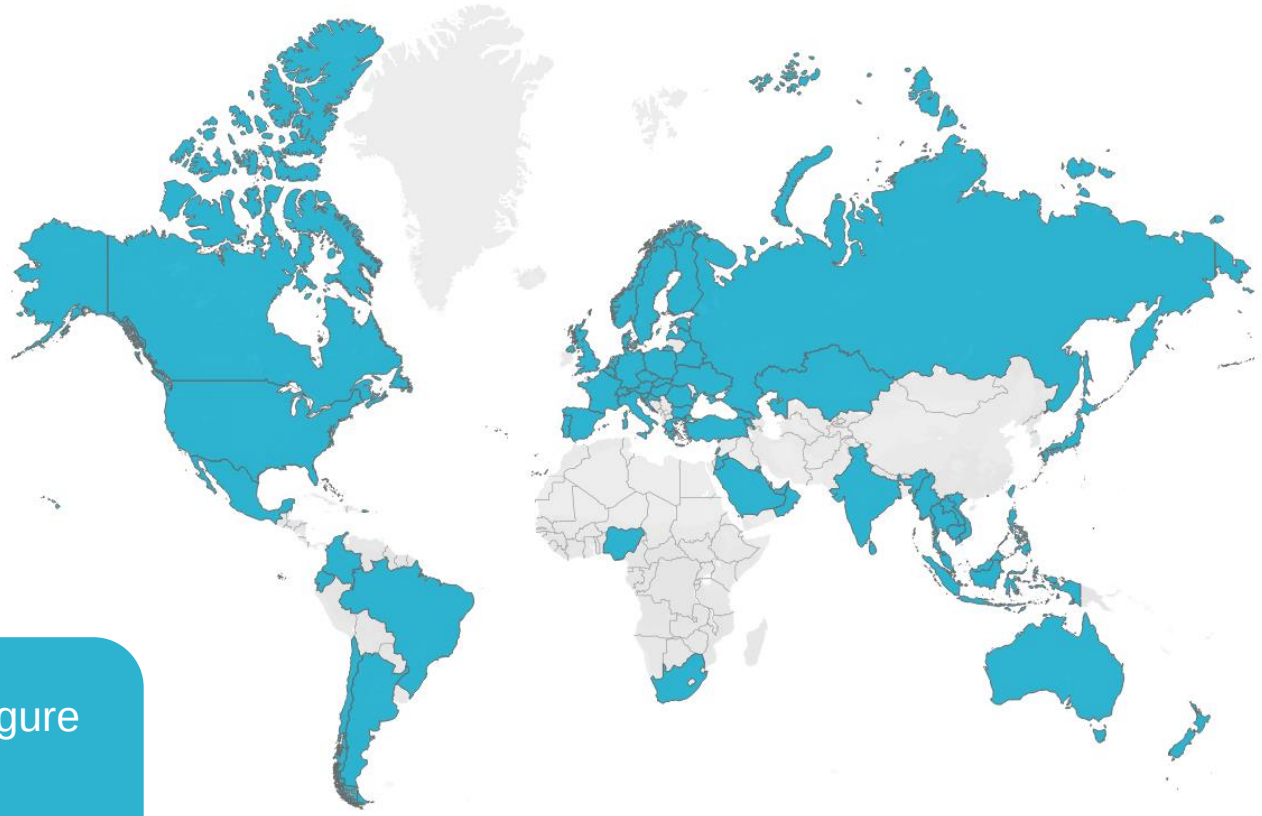
Commercial availability of eSIM service for smartphones

Commercial availability of eSIM service for smartphones

Number of countries*



Across at least 69 countries

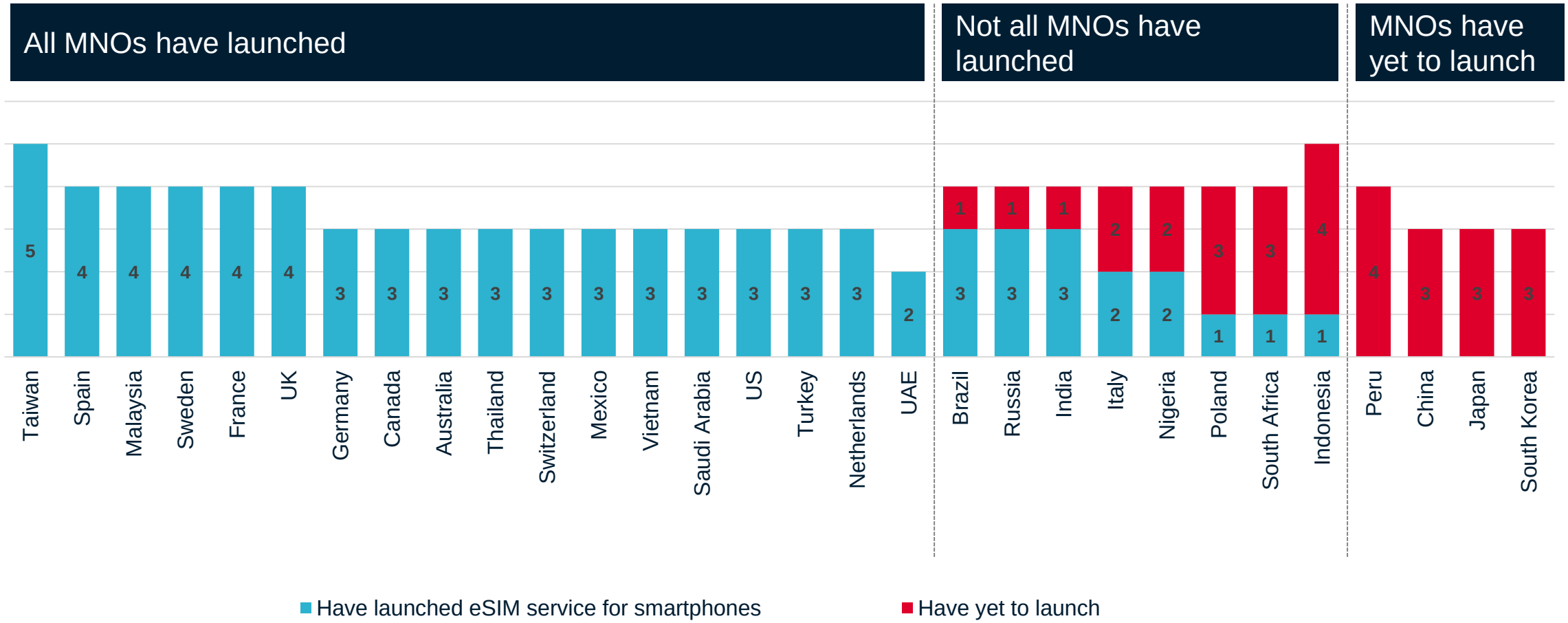


- Discussions with leading eSIM vendors indicate that this figure is even higher
- Most major markets are onboard.

Source: Minimum number of countries, based on the list provided by Apple, Huawei and Samsung (publicly available information) and GSMA Intelligence research of the top 30 markets.

Number of MNOs offering eSIM service for smartphones

MNOs with at least 5% share of smartphone connections in a given country

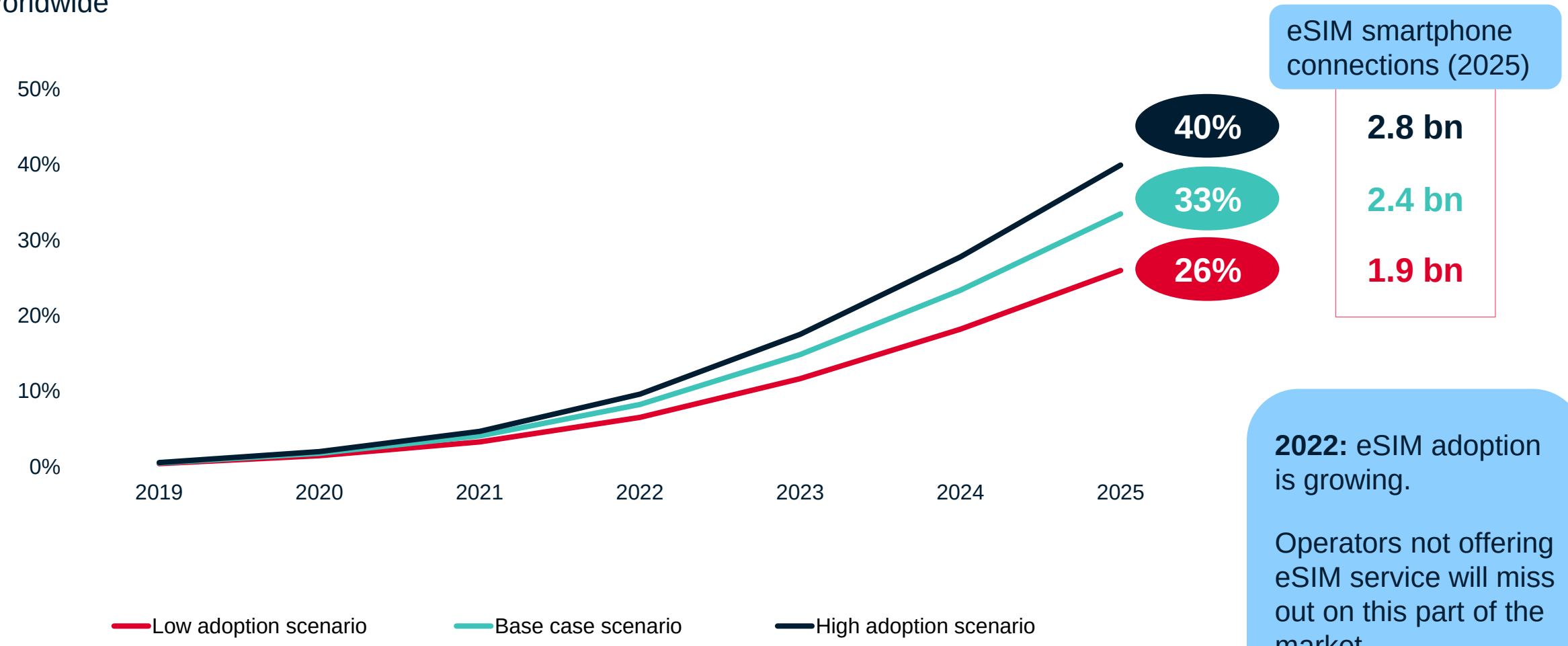


Source: GSMA Intelligence. Top 30 markets by mobile revenue. Rakuten has launched eSIM service for smartphones in Japan, but it is not included in the chart because it has 1% market share (as of Q4 2020).

eSIM market adoption: charting the next years

eSIM smartphone connections as % of total smartphone connections (installed base)

Worldwide



eSIM smartphone connections (2025)

40%	2.8 bn
33%	2.4 bn
26%	1.9 bn

2022: eSIM adoption is growing.

Operators not offering eSIM service will miss out on this part of the market

Source: GSMA Intelligence eSIM scenario analysis.

M2M and Consumer main different

From M2M to Consumer…

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M2M and Consumer main different

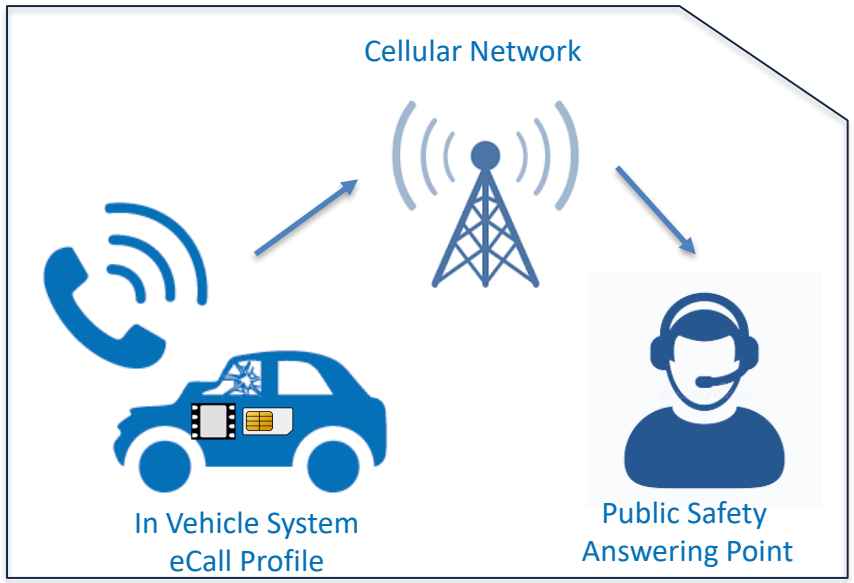
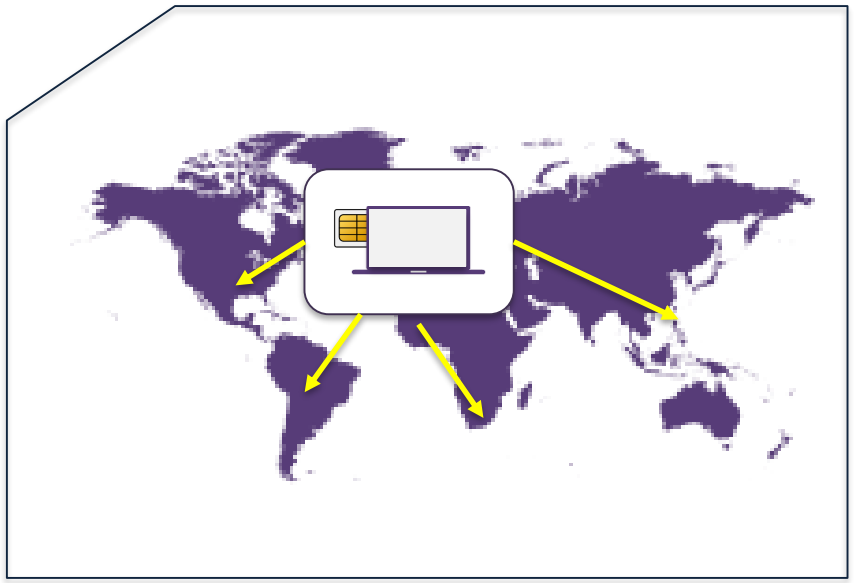
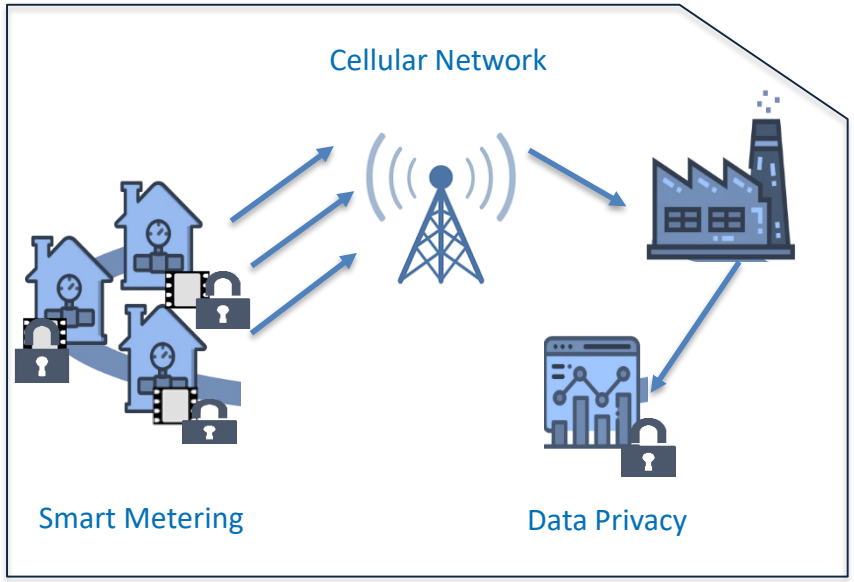
M2M

Backend Infrastructure

Consumer

Backend Infrastructure

M2M and Consumer Use cases

M2M		Consumer	
eCall			Activate connectivity anytime and anywhere
Smart Metering			Companion Device

eSIM Deployment Models

Examples for M2M and Consumer

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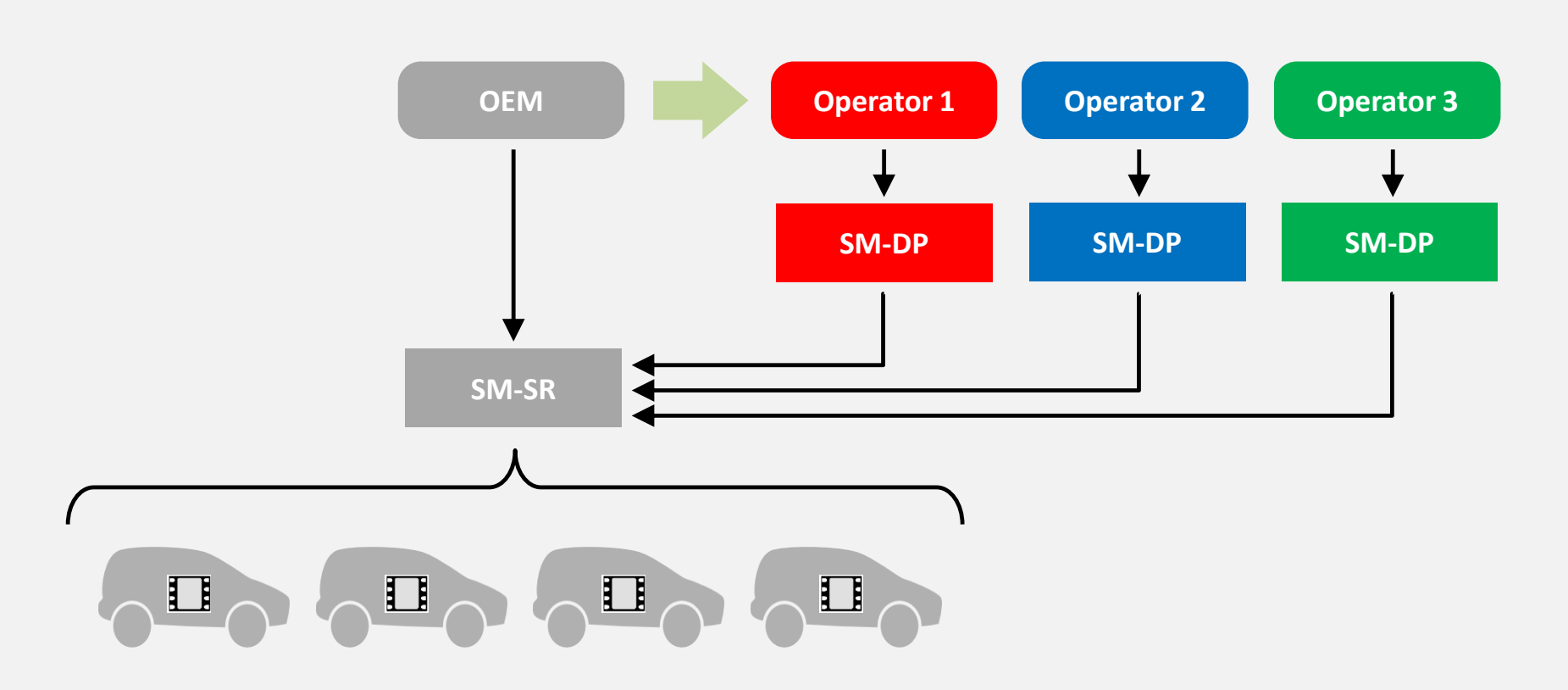
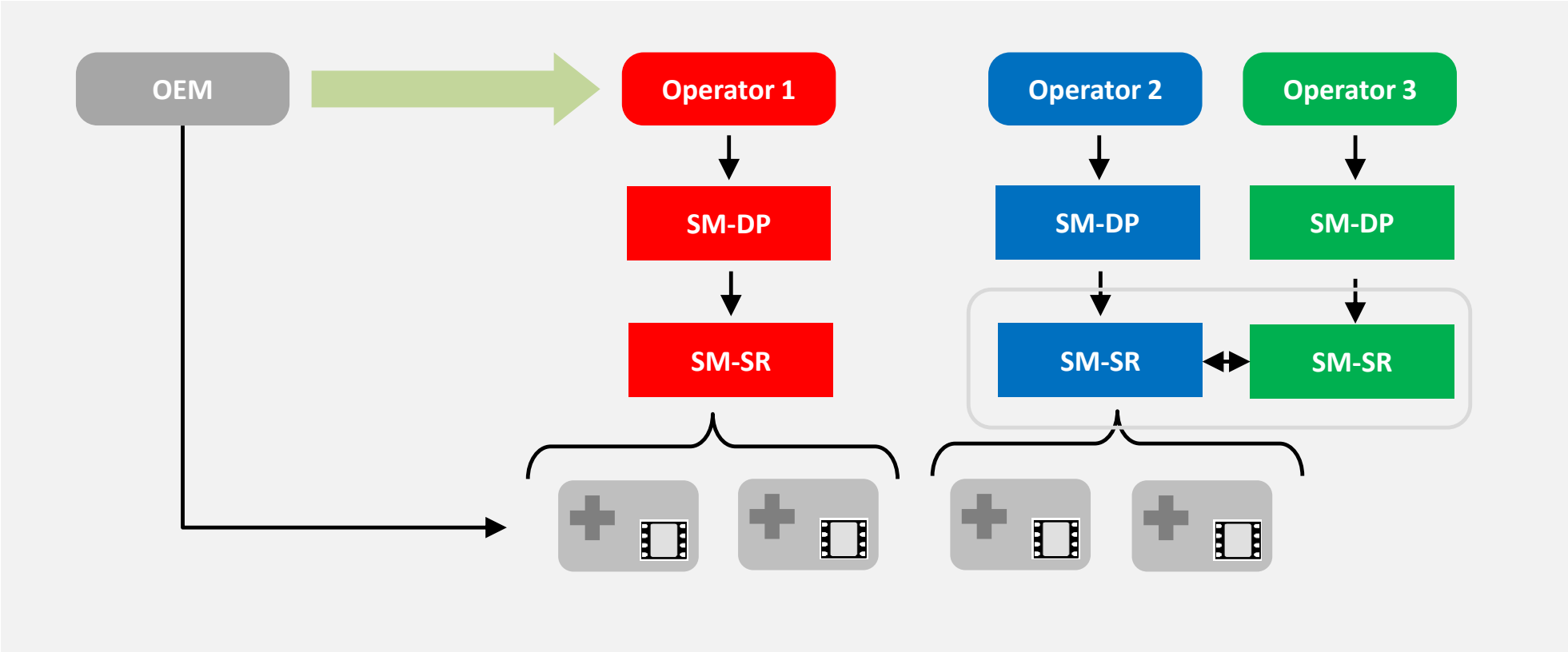
M2M: OEM managed SM-SR



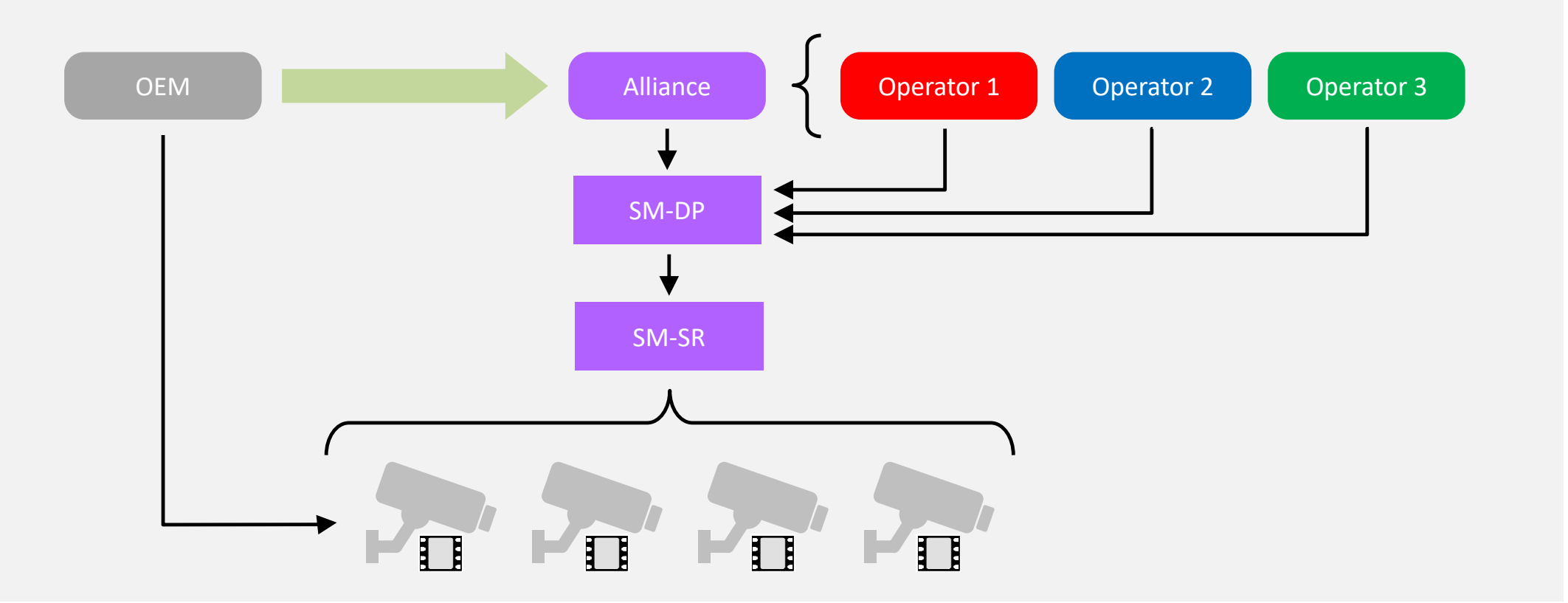
- ***ElectroCar*** is a global manufacturer of connected electric cars
- In order to have a tight control over connectivity, ***ElectroCar*** *wishes to manage its own SM-SR*
- This SM-SR manages the entire estate of ***ElectroCar's*** vehicles
- ***ElectroCar*** contracts with a number of mobile network operators, in order that they can achieve global coverage
- Each of these operators manages their own SM-DP, but they all link into ***ElectroCar's*** SM-SR
- ***ElectroCar*** also contracts with one of the Operators to provide a pre-installed Bootstrap Profile, allowing initial mobile connection

M2M: Each operator managed their own SM-SR



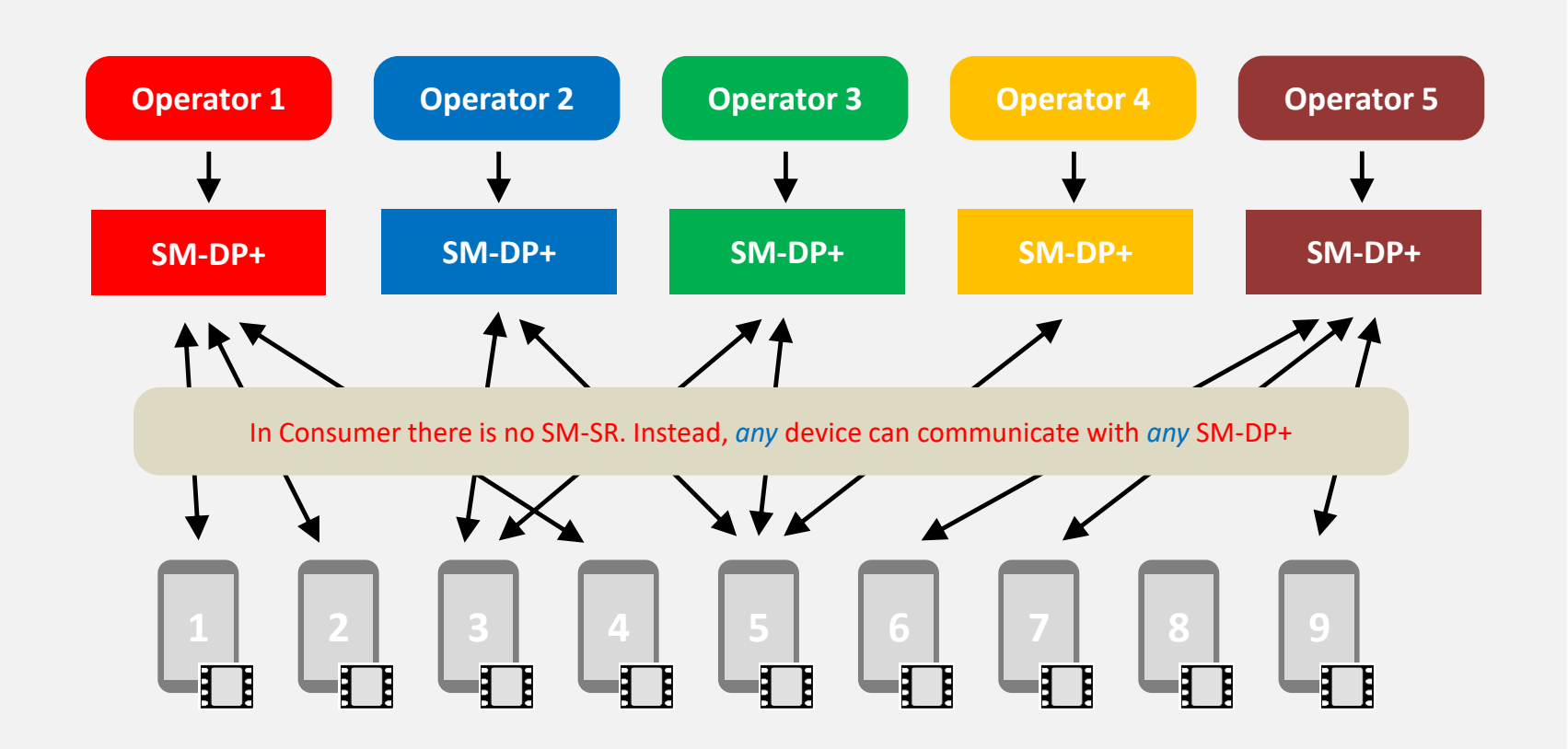
- ***MediLink*** is an OEM of the medical equipment for worldwide use
- As it is not their core expertise, ***MediLink*** contracts with Operator 1 to provide device connectivity on a specific country
- In turn, they contract with Operator 2 in order to provide that global coverage
- Each operator manages their own SM-DP, but also their own SM-SR
- After a period of time, the OEM decide to change the contract from Operator 2 to Operator 3, and the Operators swap their own SM-SR
- These SM-SRs manage the entire estate of ***Medilink's*** products

M2M: Alliance managed SM-DP and SM-SR



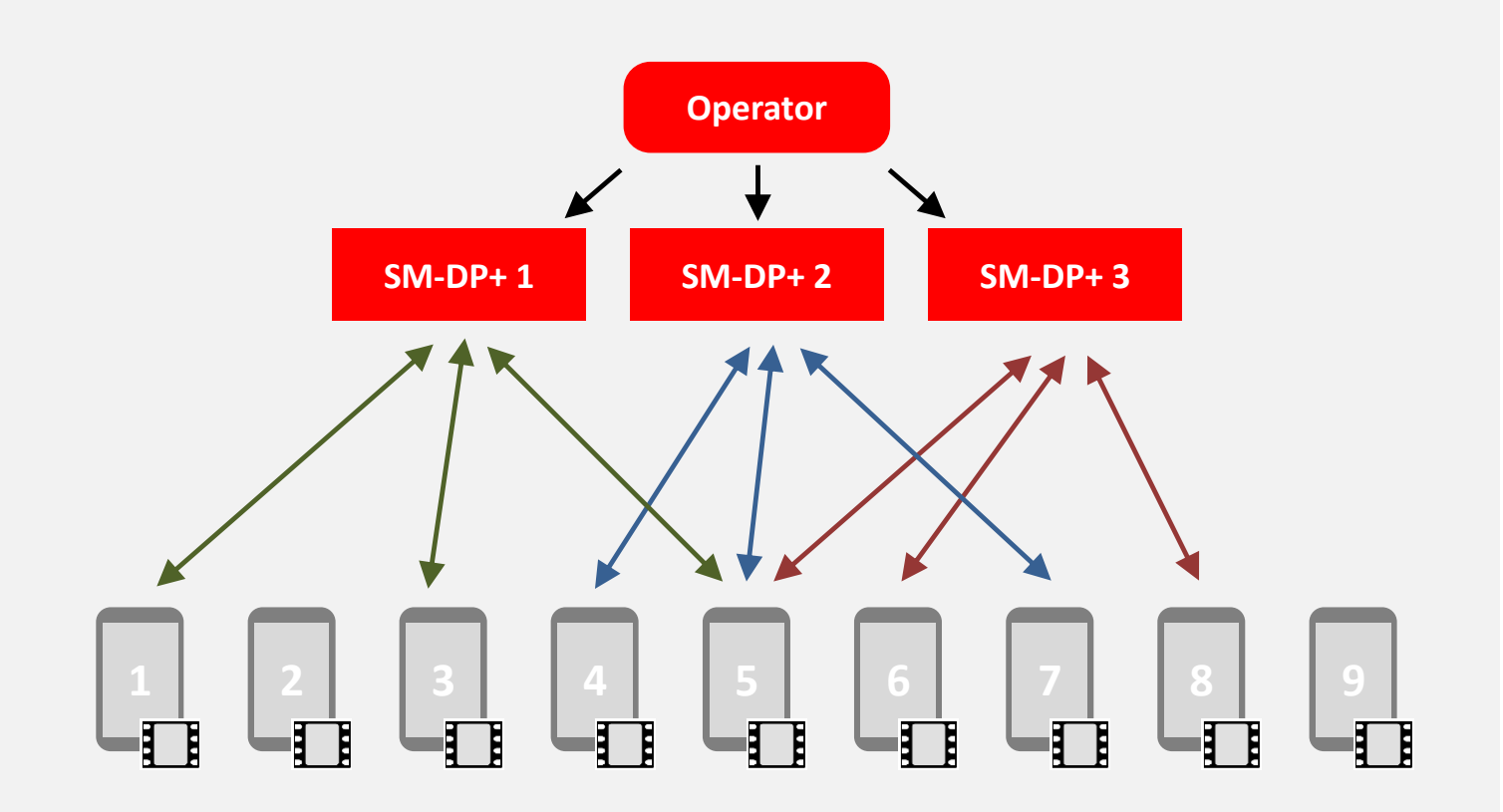
- ***EverWatch*** is an OEM of Artificial Intelligence monitored security cameras as part of a global service offering
- For world-wide connectivity, ***EverWatch*** contracts with one of the M2M alliances
- This alliance manages their own SM-DP and SM-SR, and contracts with all the operators in the alliance to provide subscription credentials directly to the Alliance SM-DP, which in turn, creates suitable Profiles on demand
- The Alliance also provides a pre-installed Bootstrap Profile, to allow initial mobile connection for new devices
- The Alliance SM-SR manages the global estate of ***EverWatch's*** security cameras

Consumer: Each operator manages their own SM-DP+



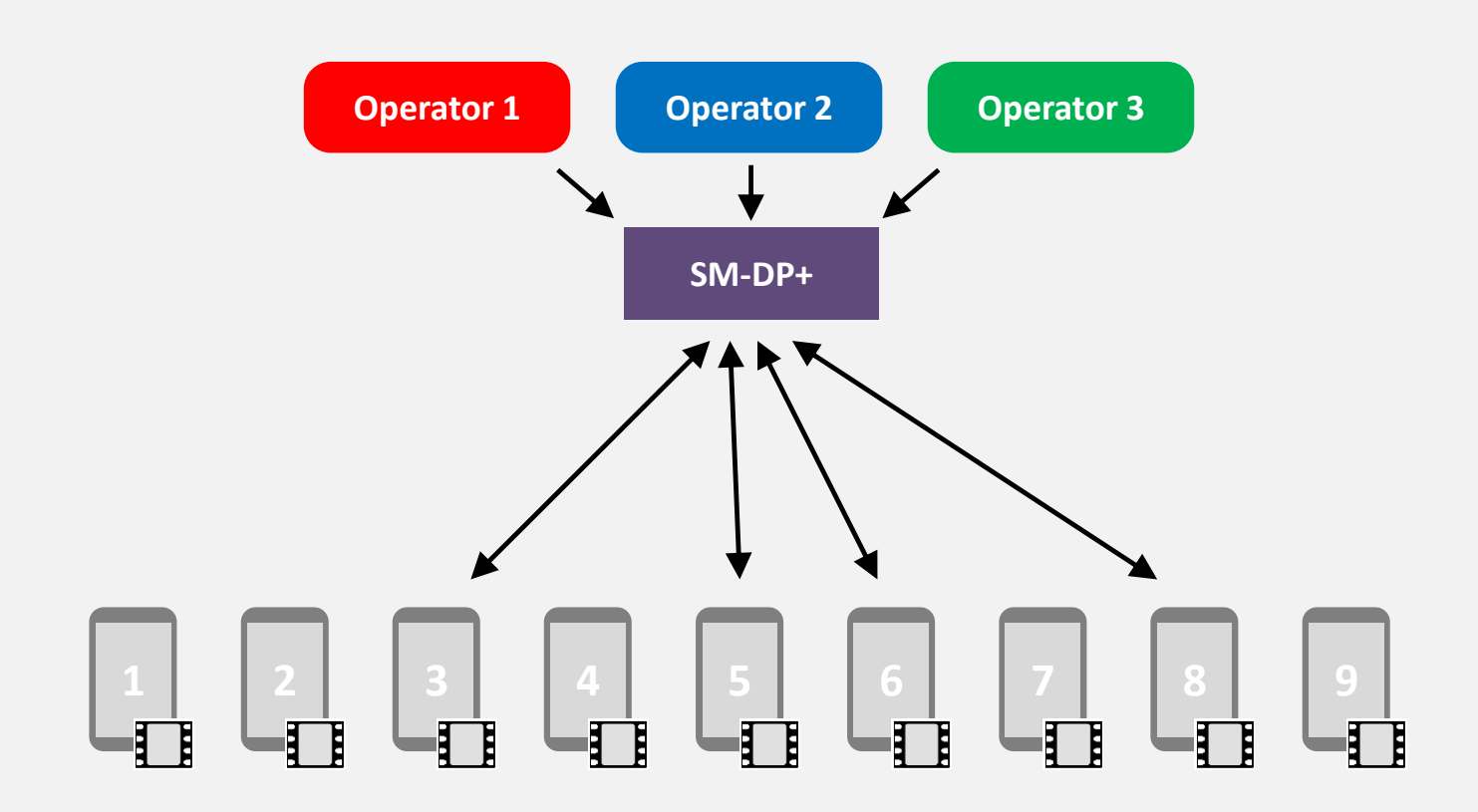
- Each operator manages their own SM-DP+ entity, which can create and distribute profiles on behalf of that operator
- This SM-DP+ may physical infrastructure located within the data center of operator's country of operation
- Alternatively, the SM-DP+ may be a "managed service" provided by a third party hosting infrastructure in the same country as the operator, or a different country

Consumer: A single operator manages multiple SM-DP+



- ***Transatlantic Mobile*** is an operator who manages three separate SM-DP+ entities
- The first entity is used exclusively for the download of profiles to any device
- The second entity is used exclusively for the processing of Remote Profile Management (RPM) commands
- The third entity is used exclusively for enterprise (both profile download and RPM)

Consumer: Shared SM-DP+ between Operators



- ***Global Mobile*** *is a large operator having operations in several countries. Rather than each operator within the group managing their own SM-DP+,* ***Global Mobile*** has a managed service provided by a third party, which services all the operators in the group

OR

- ***Antarctica Mobile***, ***Hawaii Telecom*** and ***Tele Scotland*** are three relatively small operators who share between them a single SM-DP+ in order to reduce operating costs

GSMA eSIM Roadmap

From M2M to Consumer…

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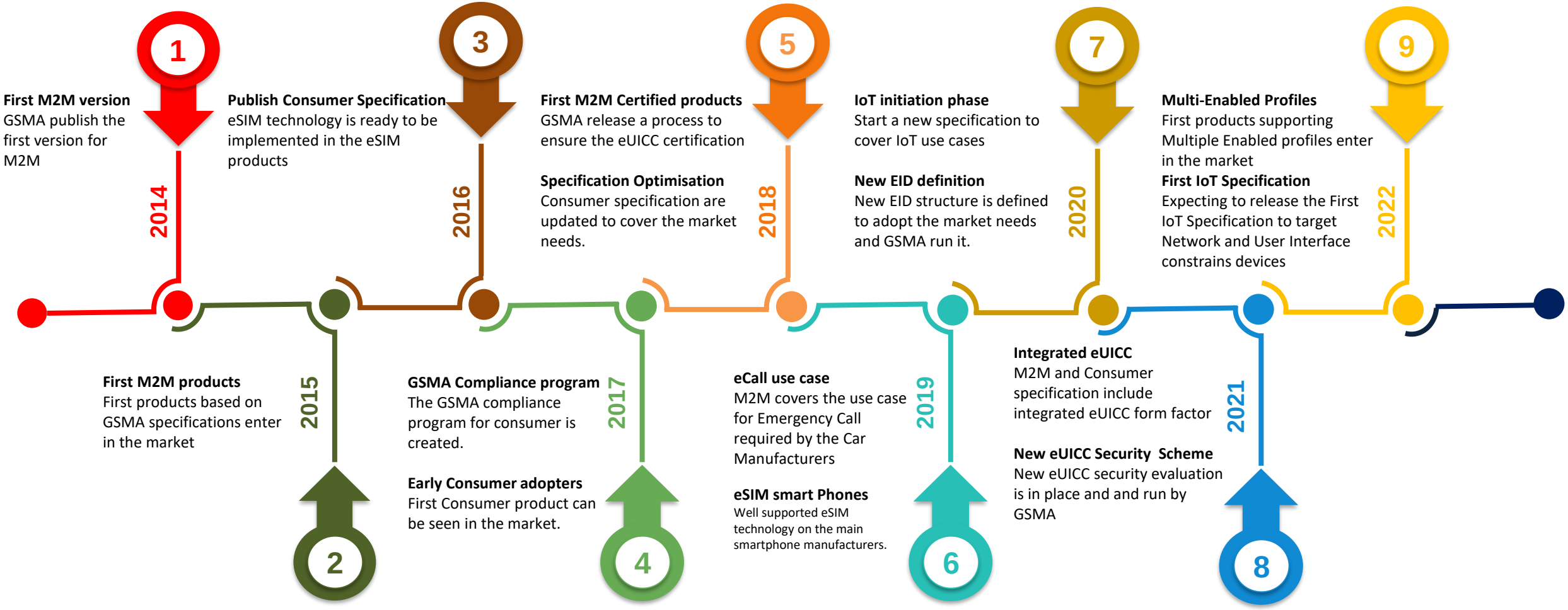
eSIM Roadmap



What Next…?

Connecting everything with eSIM…

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What is Next? Connecting everything with eSIM

Connectivity

Enable Connectivity to everything with high security

Private Networks
Network Performance
Data Control
Security

IoT Devices
Constrains IoT devices
Low battery consumption
Easier Integration

Digital Identity

Enable Security Digital Identity at scale

Passports
Authentication Mechanism
eSIM as a secure ID token
Easy accessibility

Digital Driver License
trusted digital identity.
Interoperable between different verifying authorities
Integrity of the data

Automotive

Add Value Services that require trust and security

Digital car keys
Secure store
Seamless car access
Authentication Mechanism

User account federation
Allow provision Connectivity
Provision automotive services
Unified login

Payment

Host Payment app Outside of Operator Profiles

eSIM as single SE
Free up space
Single standard solution
Reduce integration cost

High Security
Certified Chip
Isolation Service
End to End Encrypted

GSMA eSIM More information

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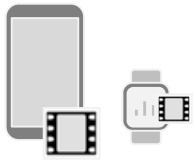
More eSIM information (important links…)

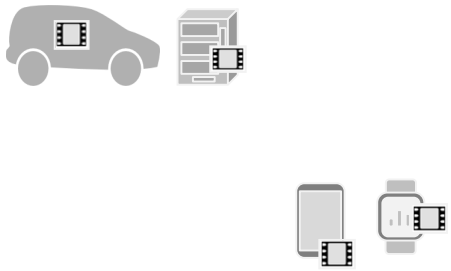
M2M important links

GSMA M2M Main Page
M2M Specifications
M2M Compliance



Consumer important links

GSMA Consumer Main Page
Consumer Specification
Consumer Compliance



Common important links

eSA Step by Step Guide
GSMA Security Accreditation Scheme
GSMA Certificate Issuer

Thank you