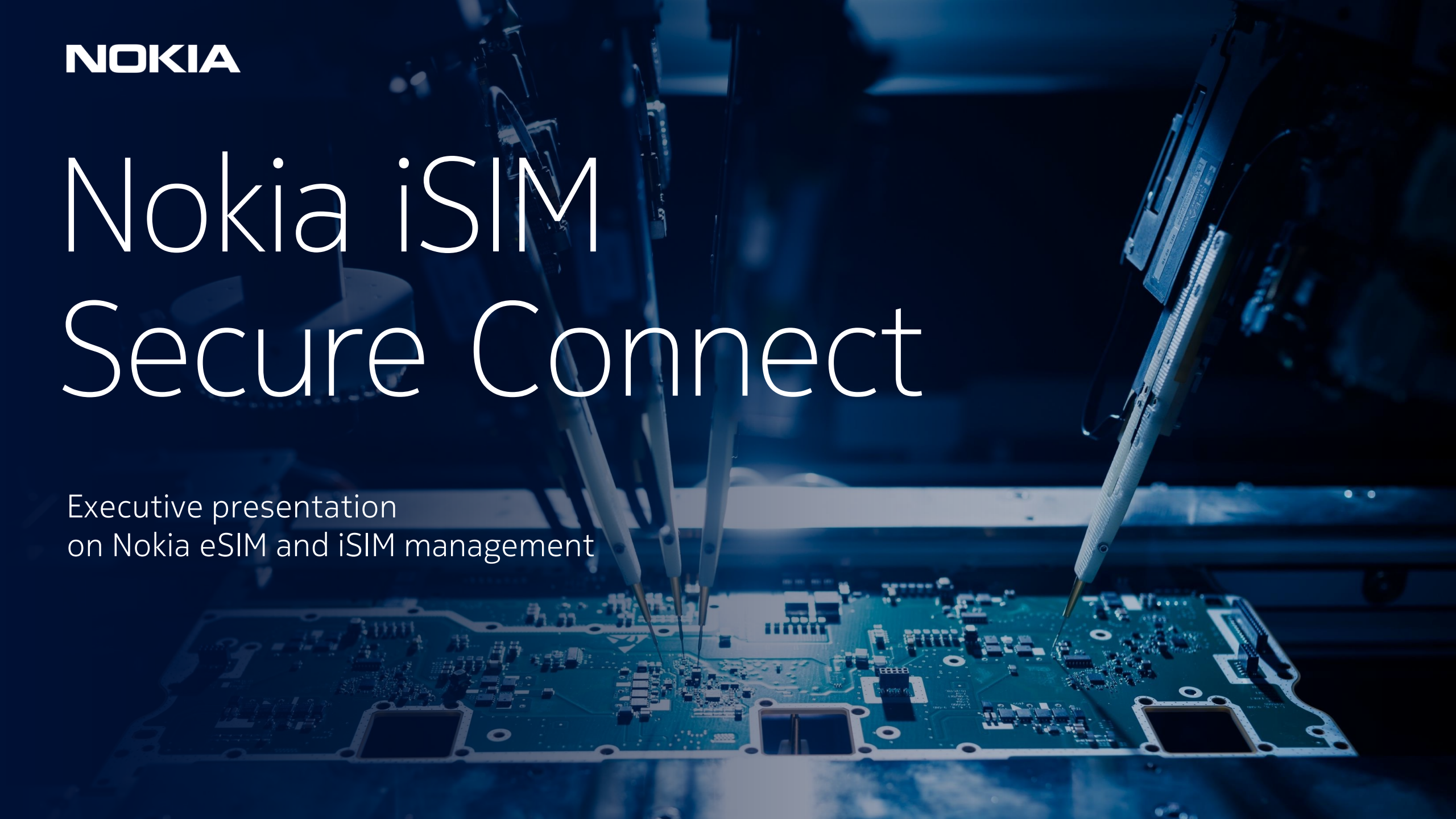
NOKIA

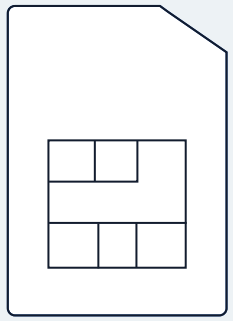
Nokia iSIM Secure Connect

Executive presentation
on Nokia eSIM and iSIM management

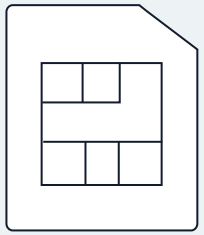


SIM card evolution

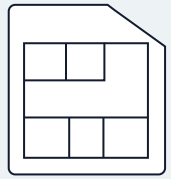
SIM | Embedded SIM | Integrated SIM | Secure Applications for Mobile (new GSMA spec)



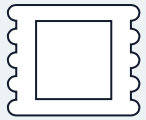
Mini SIM
25 x 15 mm



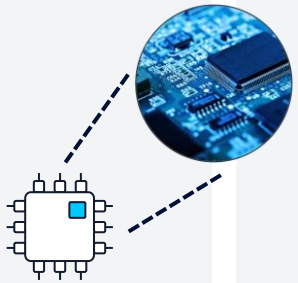
Micro SIM
15 x 12 mm



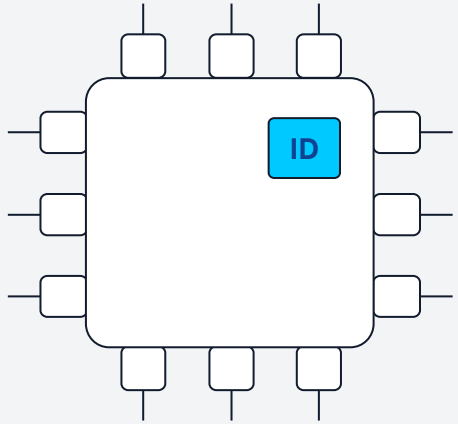
Nano SIM
12.3 x 8.8 mm



eSIM
6 x 5 mm
(soldered chip)



iSIM
Fraction of mm^2
(part of processor)



1996 | 2003 | 2012 | 2016 | 2022/2023 | 2023/2024

SIM OTA

Remote SIM provisioning

Secure data (digital ID) for applications with SIM as root of trust

© 2022 Nokia
NOKIA

The eSIM and iSIM market is forecasted to grow enormously

6Bn Cumulative eSIM-/ iSIM-capable device shipments to cross 6 billion by 2025

100% eSIM to permeate into nearly 100% of the cellular smartwatches and vehicles by 2025

"The next battleground for service providers isn't 5G, it's eSIMs."
– Charles Reed Anderson, technology industry innovator and thought leader

290% iSIM capable devices to chart remarkable growth over 2020-25

41% iSIM-based devices will account for 41% of total eSIM/iSIM capable shipments by 2025

~45% Smartphones to have ~45% share of eSIM/iSIM device shipments in 2025

Source: Counterpoint research

© 2021 Nokia

eSIM and iSIM are pushing the boundaries of **consumer** and **IoT** possibilities

Wearables

- **Smaller** devices or free space for larger batteries and more sensors
- GSMA: eSIM could generate **€6 billion in annual service revenue in 2025** if it accounted for 30% of the total smartwatch market

Smartphones

- GSMA: **2.5 billion eSIM smartphone connections** globally by 2025
- **Travelling** across borders → consumers can activate their local subscription when abroad

Laptops

- Reduce dependence on Wi-Fi and tethering while **simplifying** the **management** and **personalization** of enterprise device pools
- Multi-eSIM contracts (phone, car phone, laptop, smartwatch etc.)

Smart cars

- **5G connections in over 30 million vehicles by 2025** (Juniper Research)
- **Simplified logistics** of profile installation after delivery of large fleets
- eCall technology since 2018

Smart drones

- Expansion in areas of drone usage in **infrastructure**, **farming**, **security**
- Flight path tracking, remote identification etc.

Utilities

- GSMA survey: **eSIM** is **very important** for achieving success in IoT deployments (**41% of utilities**)
- ABI: **50 million eSIM smart meters by 2025** (7.7mn in 2020)

© 2021 Nokia
NOKIA

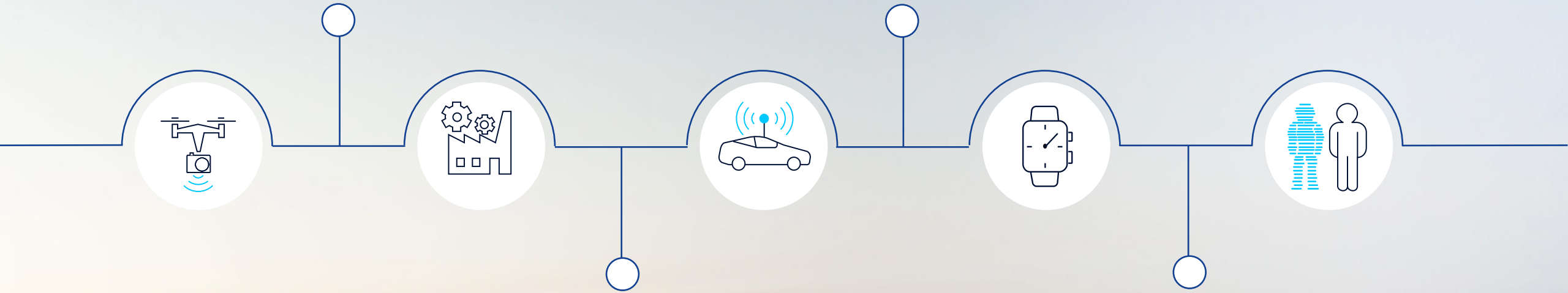
Current challenges with eSIM/iSIM operations

Efficiency and ROI

Need more efficient profile lifecycle management to reduce costs and achieve faster device onboarding

Time-to-market

Avoid delays due to device specification and customization in networks, eSIM/iSIM and IT



Future-proof

The existing operations are difficult to scale with limited automation; need for improved performance to support massive IoT

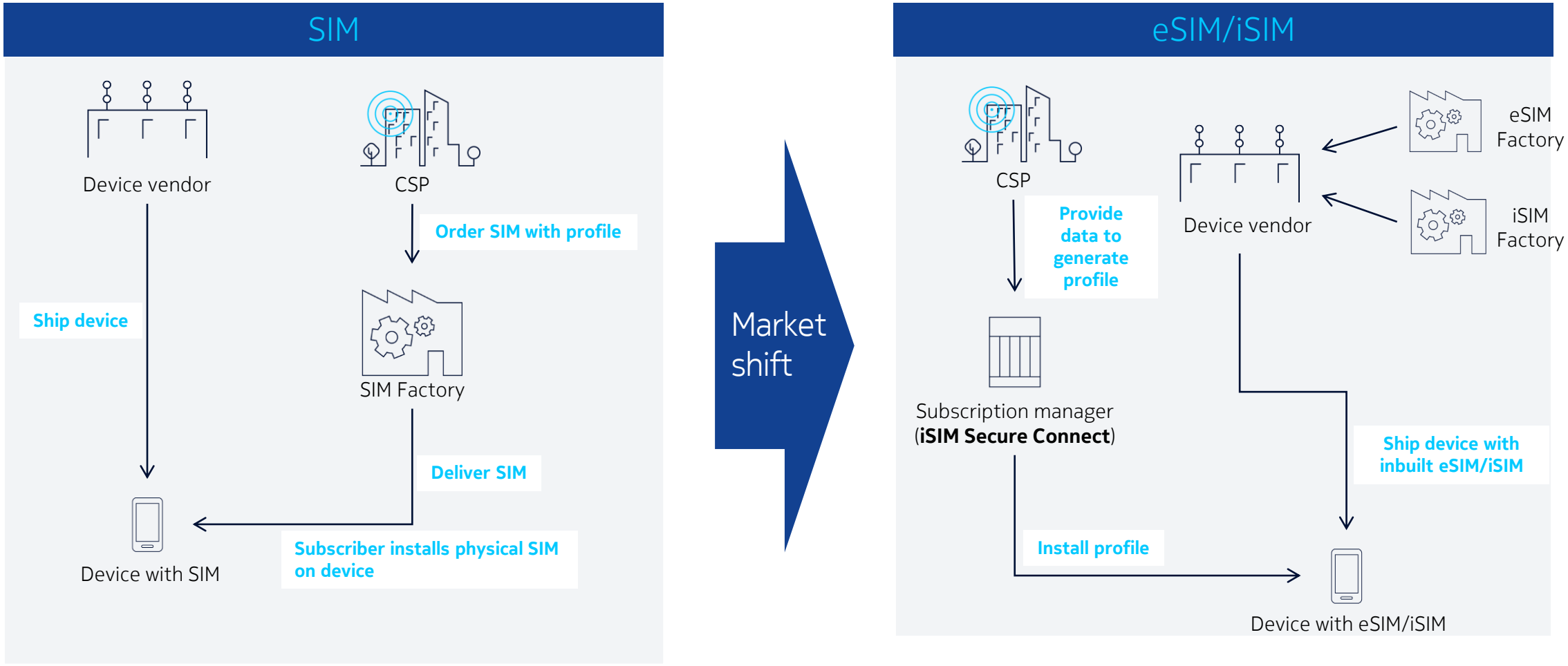
Complexity

More eSIM/iSIM standardization to reduce interoperability test efforts; different architecture for consumer and M2M

© 2021 Nokia

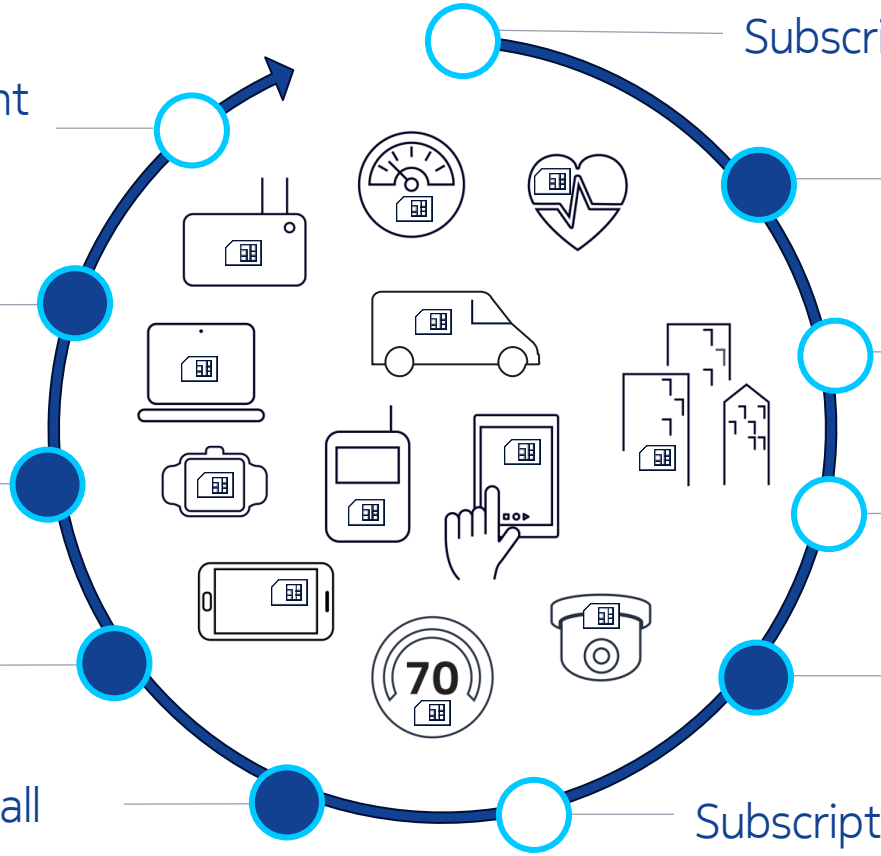
From SIM to eSIM/iSIM with Nokia iSIM Secure Connect

Simplified logistics, reduced costs and faster go-to-market



© 2021 Nokia
Confidential

iSIM Secure Connect is evolving to manage the entire eSIM/iSIM lifecycle



Subscription profile creation and lab testing

Subscription profile ordering

Field interoperability testing

Back-office provisioning

Profile inventory management

Subscription plan purchase

Profile download and install

Profile activation/deactivation

Diagnostic and troubleshooting

Profile lifecycle management

Identity and service management (future)

Current scope

© 2021 Nokia

NOKIA

The road to simplified, digitalized and automated eSIM/iSIM management

	Today – Manual	Future – Automated
Ownership	**Manually orders profiles** • Takes time and cost to order • Must estimate the market needs	**Close-loop monitoring and management** • Simplify subscription management • Digitize subscription with intelligent management
Interoperability	**Manual interoperability test** • Manual subscriptions validated in the lab • No E2E validation with the eSIM/iSIM devices	**Interoperability automation** • Automate interop test environment • E2E cellular device validation service
Automation	**Limited validation** • Limited validation with backend • Error found after subscription profiles are deployed	**Auto-verify to eliminate errors proactively** • Data validation with backend Integrate • Post “information” update on the device

Degree of human involvement

© 2021 Nokia

Key components of iSIM Secure Connect: Consumer & M2M RSP solution

Latest GSMA Consumer & M2M Specification

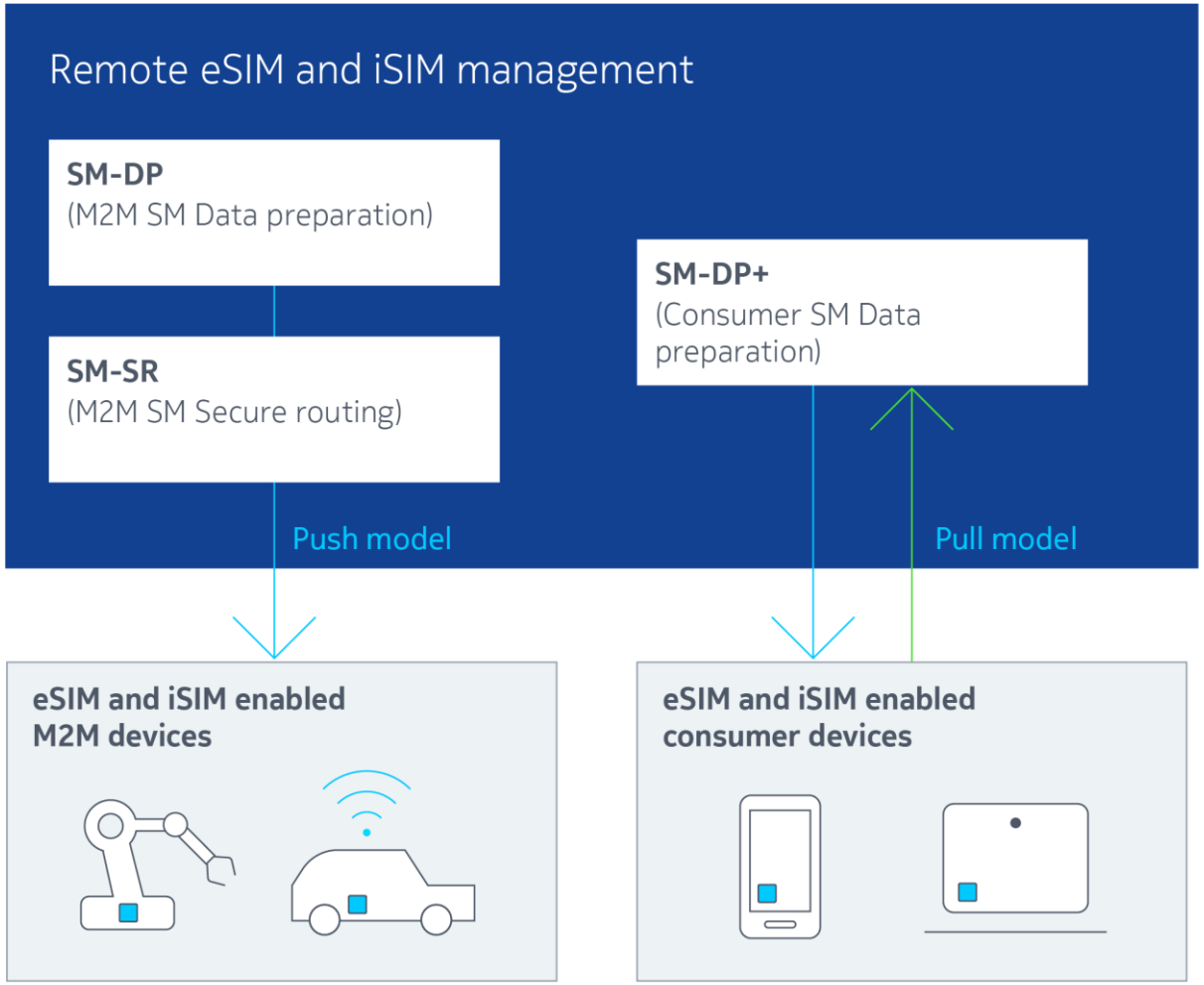
Microservices

Scalability

Multi-tenancy Portal

GSMA SAS-SM Certified

Vendor-neutral



Open APIs

Cloud-ready

High-availability

Hosted SaaS

Audit Trails

Subscription Lifecycle Management

© 2021 Nokia
Confidential
NOKIA

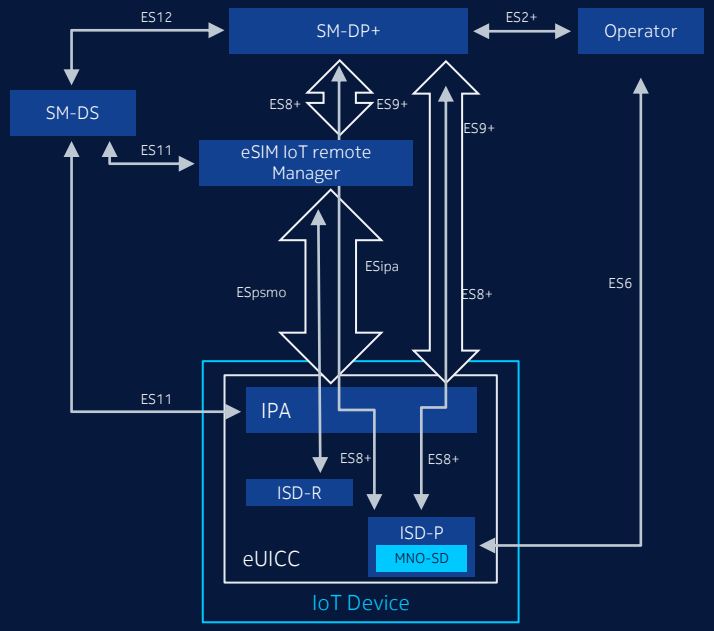
The future of SIM

Streamlining the digital experience and customer interactions while keeping **digital identities** secure

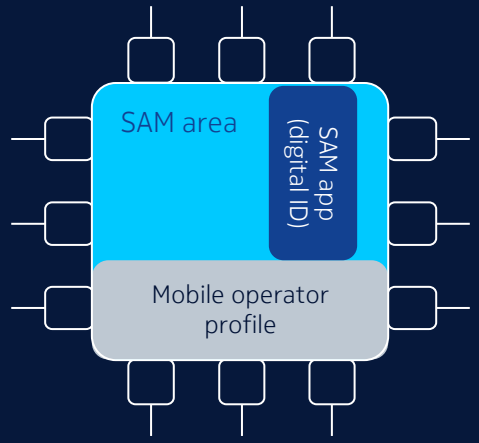
© 2021 Nokia
Nokia internal use

Driving the next wave of change: New standards

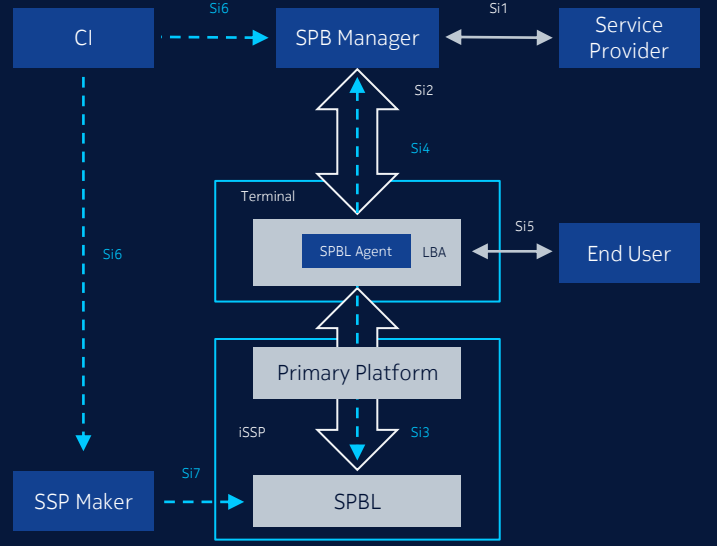
Direct/assisted profile download for IoT devices	Secure data management via SIM applets	Contextual profile awareness and update (Pull)



IPA in eUICC



Secure Applications for Mobile (SAM)



ETSI iSSP

 © Nokia 2022

NOKIA

NOKIA