

Simplifying Connectivity Activation for IoT Devices

Fedele Gallileo
THALES DIS AIS IoT

MILAN IOT THINGS
28 September 2021



Thales Business Units



Digital Identity & Security

- IoT Connectivity & Services
- Mobile identity & SIM
- Subscription Management
- Secure Identity
- Authentication
- Biometrics
- Physical & digital payment credentials
- Digital banking security
- Data Protection
- Cloud security



Aerospace

- Air traffic management
- Training and simulation
- Nose-to-tail aircraft
- connectivity
- In-flight services
- Aviation Networks



Transportation

- Signaling Solutions
- Railway Communications
- Fare collection
- Cybersecurity



Defense & Security

- State protection
- Infrastructures protection
- Critical information systems
- Command & control
- Mission & combat systems
- Surveillance & intelligence
- Electronic warfare
- Cyber defense
- Advanced sensor systems
- Simulation systems



Space

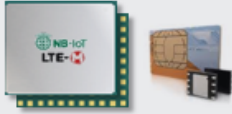
- Telecommunications
- Earth observation
- Space exploration
- Navigation
- Orbital infrastructure
- Space transport



Thales – Building a Future we can all trust

For 25 years, our customers - in a wide range of critical industries – trust our IoT solutions to seamlessly connect and secure their IoT devices

Cellular Modules & SIMs



Thales eSIM inside the cellular module

Security Management



Dedicated Trusted Key Management

Security Consulting & Assessments



Security Architecture
Standards Consulting
Penetration Testing

Device & Connectivity Management



IoT eSIM
Connectivity
Management
Device Management

Smart Grid



Security



E-Health



AMI



Smart City



Banking and Payment



Transport



Logistics



Automotive



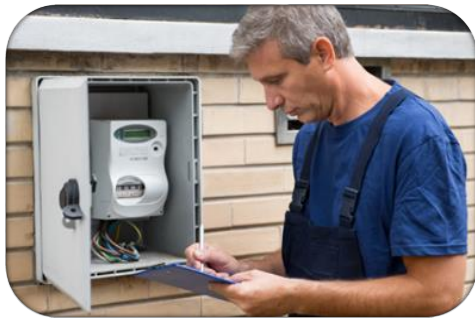
The IoT Connectivity Challenge



SKU explosion

Maintaining too many product variants increases production and logistic costs

Complex Manufacturing



Complex installation

Technicians need to test connectivity before deploying in the field

Complex and Lengthy Installation






Business continuity

Service providers need to ensure uninterrupted connectivity throughout the lifetime of the IoT device

Unreliable Connectivity

GSMA eSIM Specification. Two models: M2M (Push) vs. Consumer (Pull)

Both approaches can be applied to IoT, but both have limitations...

	GSMA M2M Model (SGP .02) Fleet Approach 	GSMA Consumer Model (SGP .22) Device Approach 
Pros	<ul style="list-style-type: none">• Capability to manage and control fleet remotely (without user interaction)	<ul style="list-style-type: none">• Significant simplifications in the overall setup• Eliminates the need for an SM-SR
Cons	<ul style="list-style-type: none">• Requires cellular bootstrap• Heavy and complex architecture• Requires MNO interconnection, project setup and multilateral agreements	<ul style="list-style-type: none">• Needs native connectivity (WiFi) or thru companion device (BT/USB)• Requires rich user interface• LPA has to be supported by the device
Best fit	<ul style="list-style-type: none">• Very large-scale IoT projects with pre-defined mobile carriers	<ul style="list-style-type: none">• Where device has alternative communication means (e.g.: Wifi)• Local device access at installation

Our vision



Thales provides a GSMA SGP.22 compliant remote subscription management service for Cinterion IoT Modules combining unique elements to provide a simple to implement and flexible off-the-shelf solution:

- Thales IoT eSIM
- Thales Cinterion IoT Modules
- Thales Cinterion IoT Suite: remote device management agent and service
- Thales global bootstrap connectivity

IoT Connectivity Activation by Thales



Connectivity Activation simplifies and optimizes connectivity subscription provisioning and selection both in factory and in the field

- **Connectivity provisioning** at IoT device manufacturing, personalization center
- **Smart connectivity provisioning** based on signal quality measurements at the site of installation
- **Fall-back to an alternative MNO** in case of connectivity loss
- **Switch MNO** during the lifetime of the IoT application to ensure business continuity, connection reliability, or for cost-efficiency



Thales eSIM
inside the
cellular
module



Standards
compliant:
GSMA eSIM
SGP .22 spec

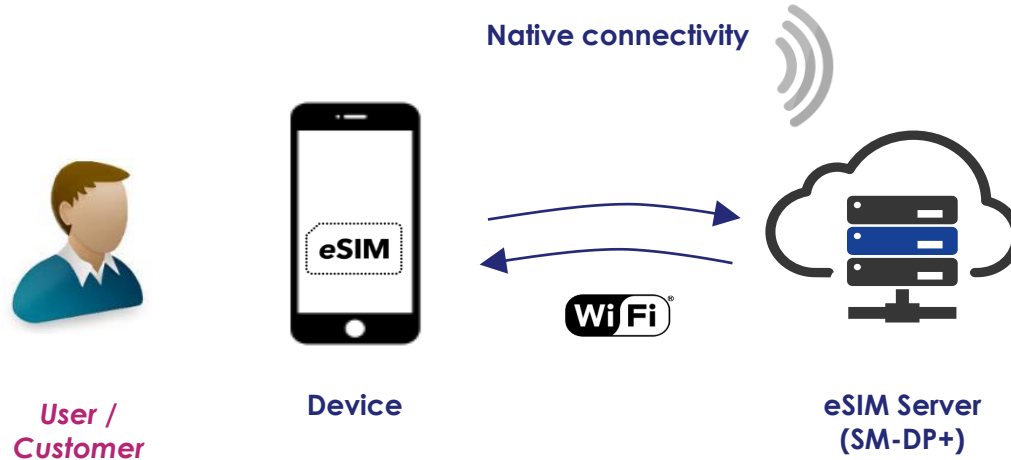
THALES
Building a future we can all trust

How does it work?

Applying the device model (GSMA SGP .22) to industrial IoT

GSMA SGP .22 eSIM for smartphone-like device

Consumer devices such as smartphones have a rich user interface and the ability to reach the eSIM Server without initial cellular connectivity (e.g. WiFi)



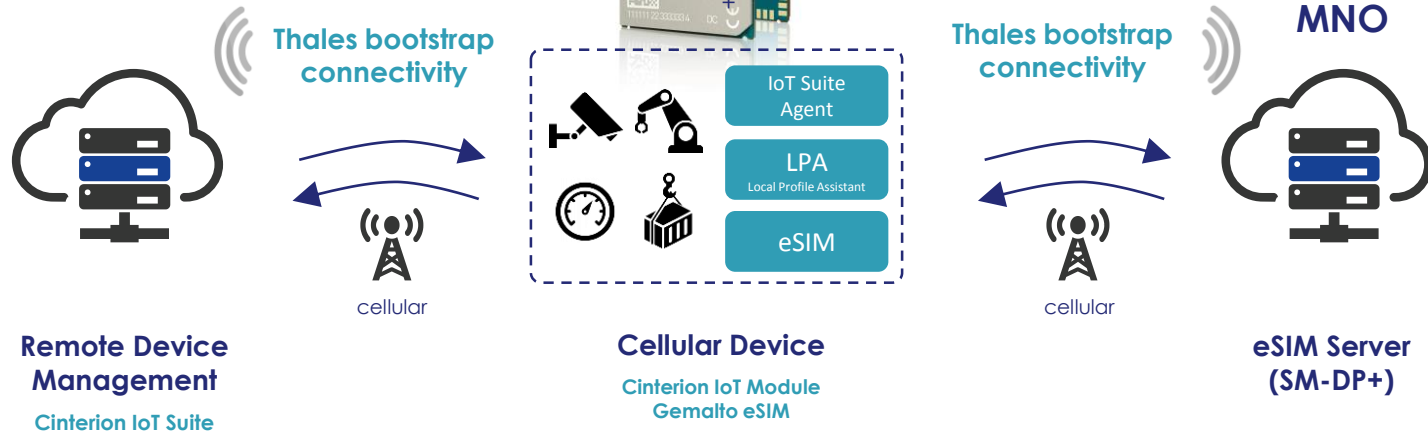
Thales Connectivity Activation builds on top of GSMA SGP .22

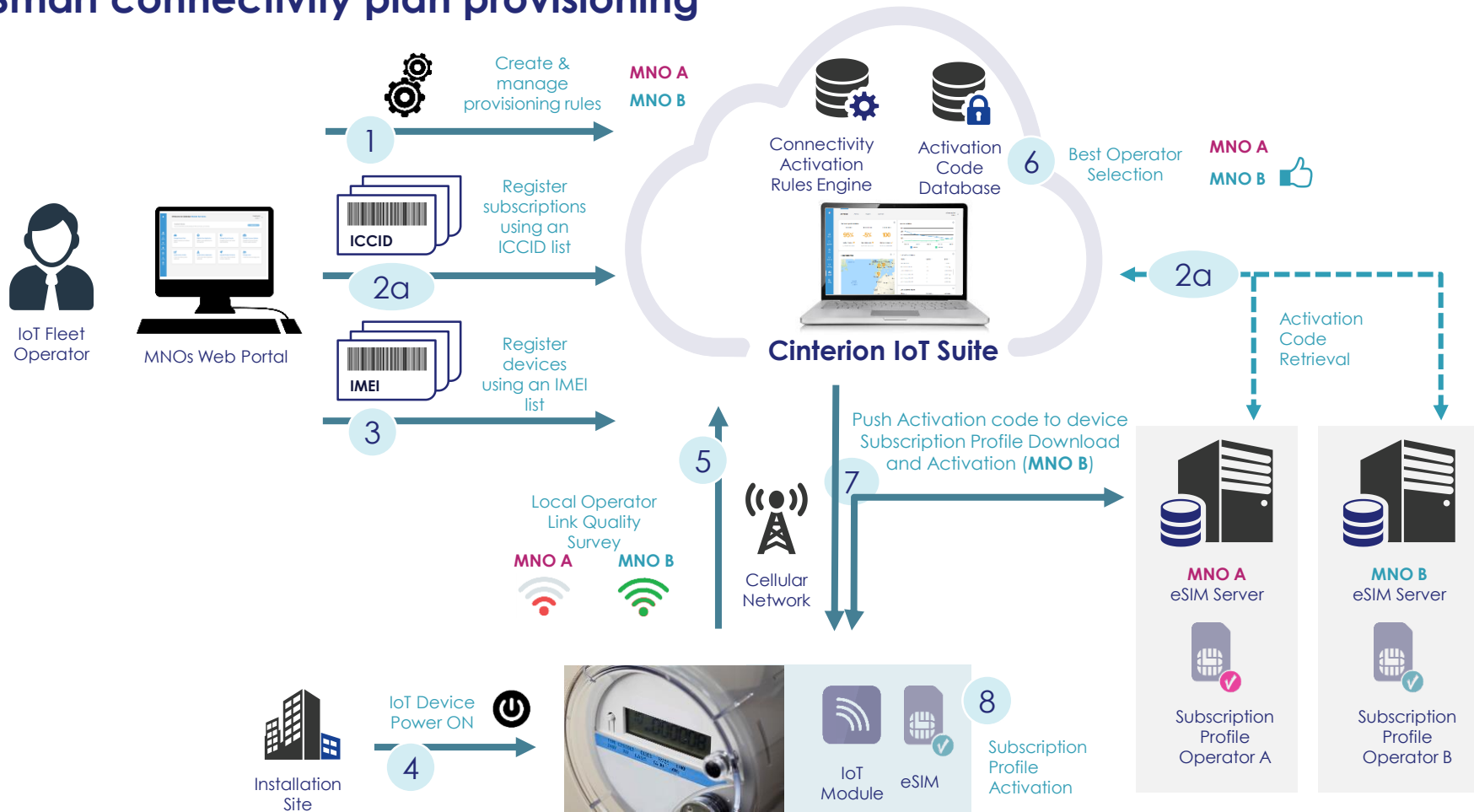
GSMA SGP .22 eSIM for IoT device without user interface

Thales Modules incorporates an eSIM,
the LPA and the agent to interact
with the Cinterion IoT Suite platform

Most IoT devices lack a rich
user interface. User is
“substituted” by a remote
device management system

Thales Bootstrap Connectivity
eliminates the need of an
auxiliary WiFi connectivity to
provision the first connectivity





IoT Connectivity Activation Benefits

- eSIM technology for IoT that simplifies connectivity plan provisioning and management
- MNO selection, prices and contracts completely under IoT service provider control
- Leverages existing eSIM Subscription Management servers already in place at MNOs

Usage Scenarios



Remote MNO provisioning:
provisioned over-the-air at first device activation



Smart MNO provisioning:
dynamically selected based on user-defined provisioning rules



Back-up MNO connectivity:
deployed on-demand in case of technology sunset or network failure



Benefits

- Lower logistic costs;
Single SKU IoT device
- Faster device installation
- Best network selection to achieve SLA targets
- No service trips
- Business continuity

Thales Connectivity Activation Beats Traditional Approaches

Traditional Approaches



Manual Card Switch:

Resource Heavy
Complex Logistics



Global Roaming SIM:

Roaming Partners limited
by M(V)NO. Permanent
roaming restrictions



Multiple Operator Subscriptions:

Higher TCO per device

Thales Connectivity Activation

- Based on GSMA Standards



- Service Provider in full control of connectivity service provider



- Most appropriate M(V)NO connectivity service dynamically provisioned





THANK YOU