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eSIM Architecture for AMI deployments in Lithuania

A Real-World Use Case by Thales DIS - Analytics & IoT Solutions

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Connectivity challenges faced by Smart Meter Vendors today

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
DSOs need to ensure uninterrupted connectivity throughout the lifetime of the IoT device

Unreliable Connectivity

Long Term Insurance
DSO needs to keep the control versus technology sunset and MNO contract termination

Unpredictability

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Imagine if…

The Meter Vendor could…

> Manufacture using a generic 'blank SIM'

> Inject customer's MNO profiles as needed during production

> Test connectivity at production

The Installer could…

> Simplify installation process

> Forget manual SIM card handling

> Automate network selection at power-up

The DSO could…

> Guarantee connectivity over the meter lifetime

> Dynamically adapt to commercial contracts

> Adapt to changes in network coverage

> Manage connectivity SLA's

100% Connectivity – Up to 50% Reduction in TCO
Efficient Manufacturing

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GSMA SGP.22 is best suited to serve Smart Energy deployments

GSMA SGP.22 Benefits for AMI

> Large existing eSIM M(V)NO ecosystem (SM-DP+)
  - **All Lithuanian MNOs have SM-DP+ today!**

> Architecture with no central element

> No need for server-to-server integration

> If using a bootstrap profile, no need for Wi-Fi or BT tethering

> Remote management allowed (as of SGP.22 v2.3)

> Does not rely on SMS

> Works with any IoT RAT, including NB-IoT

> Allows device to take control of provisioning process

> Enables new use cases (installation, resilience)

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Thales Connectivity Activation

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
IoT eSIM

Relies on
GSMA eSIM
SGP .22 spec

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A solution co-developed with smart meter maker Aidon

Press Release – Nov 2020

NEWS 10.11.2020

Aidon chosen as the partner for Elenia's AMM renewal

Aidon

Aidon Ltd., Piippukatu 11, 40100 Jyväskylä, Finland

A   7534 kWh

Elenia has selected Aidon as the supplier of its next generation AMM solution. The solution consists of measuring devices, a communication solution and a reading service with interfaces. Voimatel Oy is responsible for meter installations. Preparatory work for the implementation of the project will begin during the end of this year and the main focus of the project is scheduled for years 2021-2024.

This is a great closure for over one year's innovation project of Elenia in which we utilised new technologies to develop all parts of the AMM solution, with the aim of creating significant business process benefits for Elenia. This development work also creates a strong foundation for Finland's next-generation AMM infrastructure," says **Petteri Heinänen**, Aidon's Business unit director for Finland.

The increasing share of renewable electricity production and electrification of traffic will change the entire energy system, which will also require the development of electricity grid services. Elenia is preparing for these changes by modernising the electricity grid, its technology and the measurement of electricity consumption through its development work.
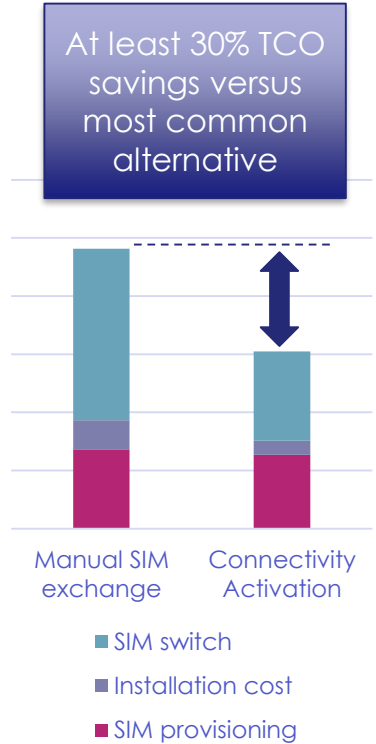
Quotes from Aidon

" *The biggest problem is missing or poor connectivity.*
In typical rollouts there are problems with connectivity, especially in the rural areas. This requires a physical visit from the installers, normally changing the sim card and trying again. "

" *Solving the connectivity problem means changing the full device at the customer which is why we decided to go with the IoT eSIM. That's a platform we can operate easily.* "

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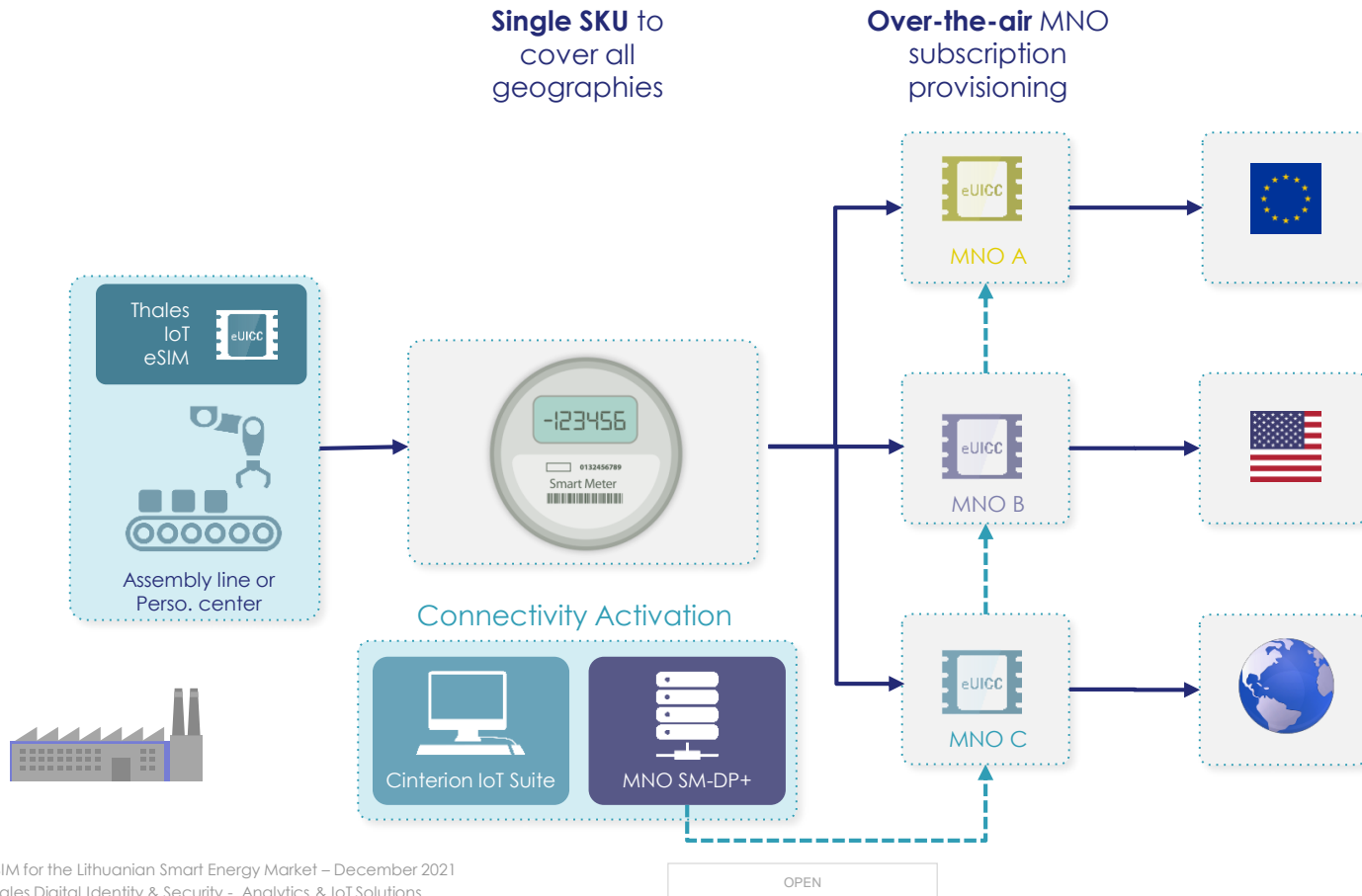**THALES**

Connectivity Management along the Smart Meter Lifecycle

At least 30% TCO savings versus most common alternative

OPERATIONAL SUBSCRIPTION

OPERATIONAL   FALLBACK

MNO A   MNO B

Manual SIM exchange   Connectivity Activation

■ SIM switch
■ Installation cost
■ SIM provisioning

Operations during lifecycle

Manually insert plastic SIM into IoT device during manufacturing

2% of devices fail at installation site, manual SIM exchange is needed

3 years later, contract with new MNO signed, need to physically change SIMs already in the field

MANUFACTURING

DEPLOYMENT

LIFECYCLE

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Benefits of GSMA SGP.22 for Smart Meter Deployments: Manufacturing

Single SKU to cover all geographies

Over-the-air MNO subscription provisioning

Thales IoT eSIM

Assembly line or Perso. center

-123456
0132456789
Smart Meter

MNO A

MNO B

MNO C

Connectivity Activation

Cinterion IoT Suite

MNO SM-DP+

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At installation, the IoT device can perform a network site survey, so that the most suitable cellular network provider is chosen for every location

Connectivity Activation

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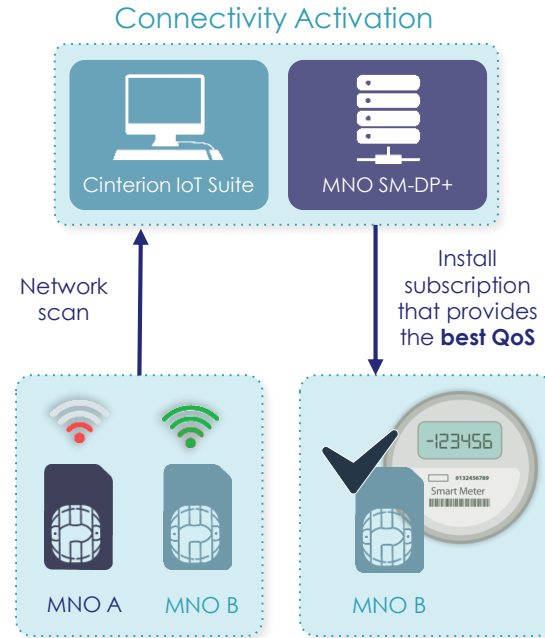
Benefits of GSMA SGP.22 for Smart Meter Deployments: In-field Operation

▌**Define a back-up MNO subscription to be used if the operational MNO cannot provide coverage in a specific area**

▌**After the Smart Meter detects a cellular network outage or loss of coverage, it activates a bootstrap connectivity profile**

▌**An alternative subscription is installed for a quick recovery of connectivity**

▌**No need to send technicians on-site to fix the issue!**

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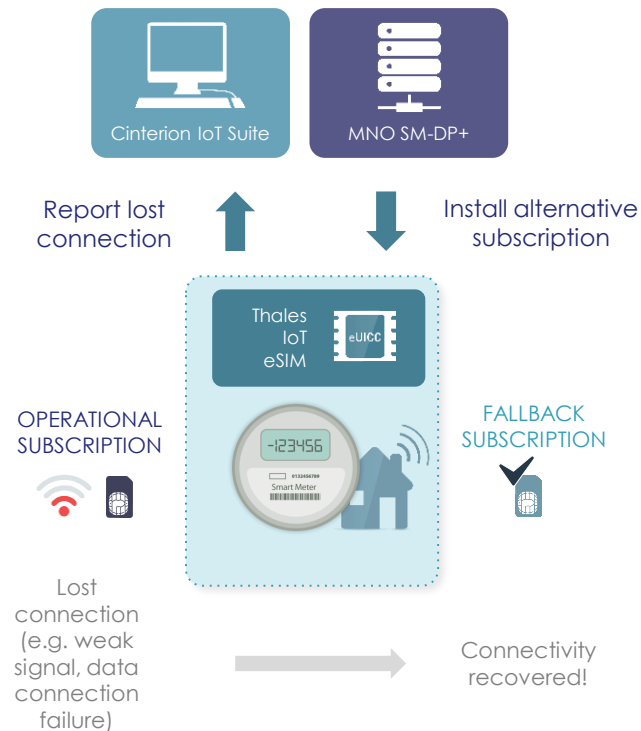
Takeaways

▌**DSOs and AMI vendors can benefit from eSIM technology from manufacturing all the way throughout the Smart Meter lifecycle**

▌**eSIM technology can help achieve faster smart meter installation and resilience of connectivity thru network changes and temporary outages**

▌**Thales Connectivity Activation and IoT eSIM co-developed with AMI vendor Aidon for DSO Elenia in Finland addresses these issues already today**

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Questions ?

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