Kigen's eSIM solution for Smart Metering

End-to-end IoT Security from device to cloud

Kigen

Did you know?

Smart metering is transforming energy distrubtion grids across electricity, water and gas into smart grids to be more sustainable and resillient.

IoT connected smart meters are becoming industry standard and securely connecting all distrubuted and evolving smart energy infrastructure is critical to the success of our energy grids.

Why Kigen?

As a global leader in eSIM management, we have enabled connected solutions with leading names in smart meters and energy assets worldwide. Our expert teams collaborate with industry leaders to develop standards and guidelines on eSIM and iSIM at GSMA Working Groups, Trusted Connectivity Association, Global Platform and ETSI for optimizing IoT solutions for the future of smart grid.

Our eSIM and iSIM portfolio is tuned to improve device performance even on the most memory-constrained devices, built to address challenges of metering manufacturing and expansion, and designed for scale with end-to-end security. Working together in our extensive ecosystem, Kigen provides a unique solution combining the choice of vendors and technologies you need to succeed regardless of your devices and customers.

Contents:

Considerations for a cellular IoT project

As grids evolve, more distributed and mobile assets need to be integrated along with supporting stringent security requirements. Cellular IoT brings considerable benefits in streamlining manufacturing and installation, causing a shift from unlicensed ISM bands and proprietary technologies which cannot scale. Connecting your widely distributed network of devices, remote sub-stations, and mobile applications is easier than ever via cellular networks. Further, by utilizing existing and new Low Power Wide Area Networks, smart grid operators can take advantage of Total Cost of Ownership benefits.
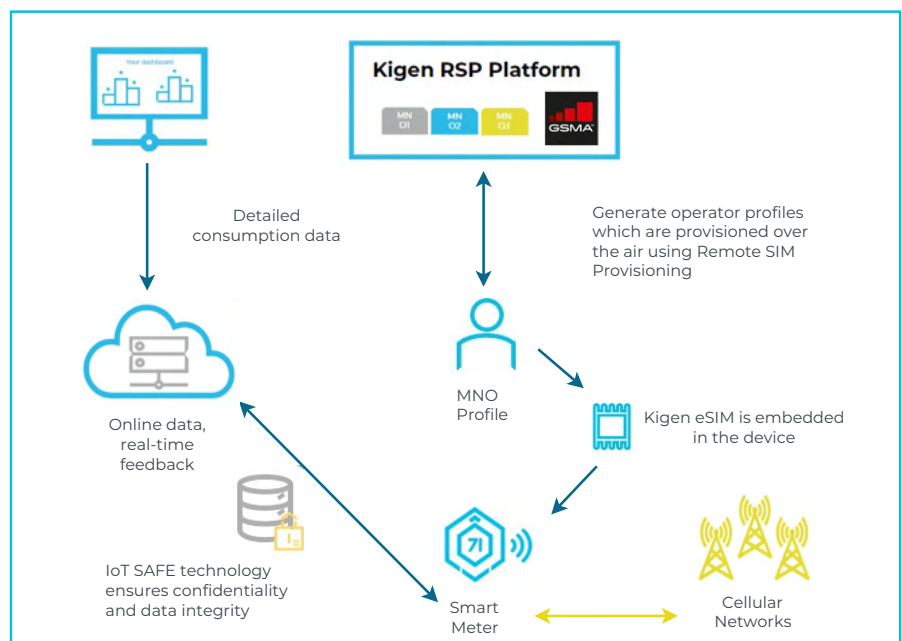
❮ **Smarter contracts :** Demand response and multiple rates enabled by a eSIM based cellular IoT with billing profiled on usage patterns can support millions of tons of CO2.

❮ **Decentralized sources :** eSIMs with end-to-end security solutions can enable connectivity integration with a growing number of renewable generators such as solar, wind or charging and power storing assets as the grid electrifies.

❮ **Future proof flexibility :** Standards based, ecosystem driven approach to support supplier flexibility in competitive markets, network management and ensure resilient and fallback connectivity options.
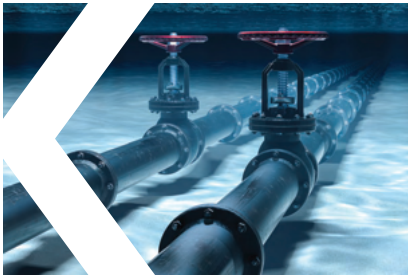
Simplifying metering challenges with Kigen's eSIM

❮ **Embedded and Integrated eSIMs :** Take advantage of better environmental protection, small footprints and eliminate physical manipulation with embedded and integrated eSIMs. Integrated SIM (iSIM) technology, pioneered by Kigen, is 98% smaller than MFF2 form factor eSIMs. Enable new, more compact, and tamper resistant assets for your metering infrastructure.

"Demand for cellular M2M connectivity is on the rise. My team works with 2G, 3G, and 4G communication modules, and are evaluating LTE-M and NB-IoT. The latest selection is an IoT module that offers 4G (LTE Cat-1) connectivity with 2G fallback (GPRS, EDGE)."

 - Gregor Rodič, Innovation Manager for connectivity, Iskraemeco

Kigen eSIM for Smart Metering

Kigen RSP Platform

Detailed consumption data

Generate operator profiles which are provisioned over the air using Remote SIM Provisioning

Online data, real-time feedback

MNO Profile

Kigen eSIM is embedded in the device

IoT SAFE technology ensures confidentiality and data integrity

Smart Meter

Cellular Networks

❮ **Low power application designed for IoT :** A range of cellular connectivity options, including 4G LTE, Low-Power Wide Area (LPWAN) and 5G are available. LPWAN networks such as LTE-M are energy efficient for low-power, low-complexity devices that require extended coverage. Delivering improved power consumption and reduced battery wear for smart meters.

❮ **Streamlined logistics :** Kigen's offering can support non-steered multi-network SIMs, available as a profile on an eSIM to support single Stock Keeping Unit (SKU) for supply chain simplicity.

❮ **Lower TCO and device cost :** eSIMs reduce the total cost of ownership of smart metering devices by removing supply chain management costs compared to traditional SIM cards. It's far cheaper to change carrier profile over the air than physically changing the card.
Transforma Insights analysis suggests an 8-13% saving is to be made on lifetime connectivity spent by enterprises if they choose eSIM instead of removable SIM cards for their IoT deployment.
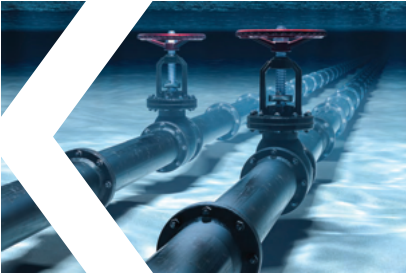
Regional and global connectivity solutions : Our extensive connectivity ecosystem also supports roaming and native connectivity across 180 countries with support for remote provisioning through our GSMA SAS-certified solution.

Just-In-Time eSIM Provisioning : Kigen offers innovative in-factory secure personalization solutions to meet just-in-time, scale, security and automation needs.

The eSIM can be securely personalized with any MNO connectivity of choice during production that provides true single SKU operations for meter makers and hugely simplifies logistics and deployment. This enables extensive meter testing at the factory and out-of-box connectivity for the meter's destination.

Furthermore, for in-field usage, Kigen's MNO-neutral remote SIM provisioning (RSP) service enables network operators to securely manage connectivity over-the-air. Switching to a preferred local network is straightforward using the RSP, where a local operator profile is provided over the air. Utilities benefit as they have greater control and flexibility over their deployments and can quickly change MNO profiles when integrating cellular technology for large-scale smart meter deployments.

Just-In-Time eSIM Provisioning
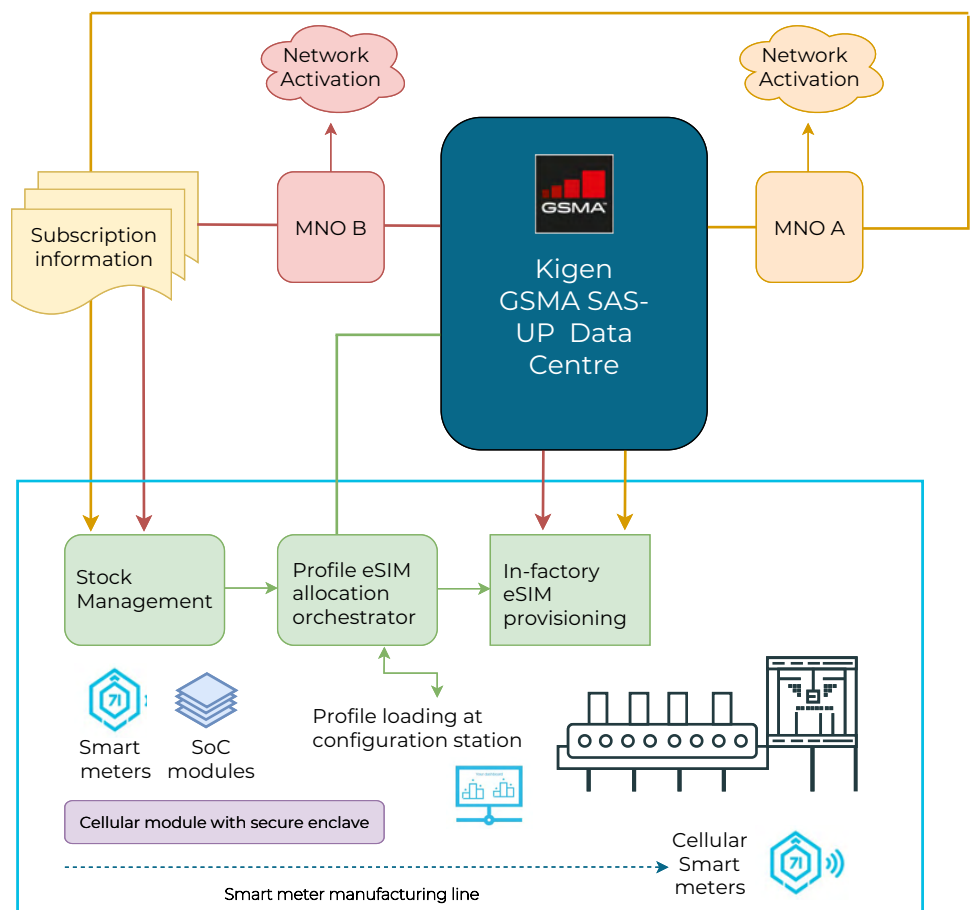
Pre-certifications with leading network operators

Simplify deployments with our out-of-the-box connectivity and scale-up your operation to suit customer needs. Take advantage of pre-certification with leading MNO networks, or leverage our ecosystem of connectivity providers for a tailored approach.

- Top MNOs across America and Canada have profiles available on Kigen RSP
- 16 leading players offer connectivity across the globe with a mix of top tier MNOs, MVNEs and MVNOs

Some of Network partners are featured below:

❮ **Leveraging the best of public and private LTE networks:** Utilities can run a hybrid approach by combining a private network and use 5G public network for example as back up. The evolution of NB-IoT and LTE-M will create a public/private hybrid option. The scalability and cost benefits of public technologies complement the private network benefits of a private and secure channel.

Evolving grids: Future proofing with a focus on energy efficiency

eSIM is considered a natural next step to ensure longevity, flexibility and guaranteed connectivity for smart energy management. Smart meters are dispersed and often hard to reach, so energy efficiency is a critical consideration. Switching between local roaming connections allows for more consistent use of power saving mode (PSM) and extended discontinuous reception (eDRX).

Sustainable Metering with Iskraemeco

Kigen's Remote SIM provisioning solution provides Utility customers with a choice of MNOs in the region, thus preventing network lock in and mitigating concerns over varying signal quality.

Iskraemeco's meter management software was integrated with our RSP server application programme interface (API). The result was a unified workflow which simplified adoption and increased their capacity for delivering real-time analytics to utilities.

Read the case study

End-to-end security for new digital revenues

Smart meters have a lifespan of up to 15 years and require software security updates in the field. Our eSIM technology addresses this need by securely managing and personalising over the air. The carrier connectivity profile and service updates can be downloaded onto the SIM anytime. In addition, the risk of security breaches is also reduced by remote security upgrades. Furthermore, the dedicated eSIM hardware is tamper resistant and forms a certificate-based security chain to protect sensitive assets during remote provisioning.

Renewable Energy powered by IoT

Energy Web has partnered with Kigen, pioneers in IoT security through eSIM and iSIM hardware and KORE Wireless, a leading MVNO, to implement an OPEN IoT SAFE-based solution. It's an open-source method for third parties to use Energy Web cryptocurrency to store their private encryption keys and sensitive credentials in the crypto-safe. It's the world's first open-source technology stack focused on energy efficiency.

Read about our Smart Grid Innovation with KORE and Energy Web

"Energy Web, KORE and Kigen have developed a successful POC. We'll collaborate with IoT device manufacturers to implement our energy efficiency solution to improve smart meter security. Any smart energy company seeking to tackle security challenges posed by the increasing number of IoT devices can build on this foundation."

- Ioannis Vlachos, PhD Commercial Director, EMEA

Contact Kigen

Future proof your deployments and accelerate your go to market timeline with Kigen's eSIM and flexible remote SIM provisioning solution.

Expand your customer base by capitalizing on eSIM interoperability with a wider OEM base to deliver trustworthy IoT information to third parties. For more information, please contact our expert team.

Follow our **#FutureofSIM** updates and news online at kigen.com or on social media, @Kigen_Ltd on Twitter and @Kigen on LinkedIn.