Valid

Utility Device Makers

THE SMART METERING eSIM PLAYBOOK

Key Questions Before Implementing SGP.32 eSIM for IoT

Smart metering deployments across electricity, gas and water are becoming more complex, requiring manufacturers to balance long lifecycles, efficiency and connectivity flexibility.
SGP.32 eSIM for IoT simplifies production, reduces operational complexity and enables long-term connectivity management without physical SIM replacement.

01 WHAT ARE THE BENEFITS OF IMPLEMENTING SGP.32 ESIM FOR IOT IN YOUR DEVICES?

As utility deployments expand globally, fleet managers require scalable device architectures capable of supporting multiple connectivity providers, regions and customer requirements.
SGP.32 eSIM technology helps simplify device manufacturing while enabling long-term connectivity flexibility.

Why does long-term reliability matter?

Smart meters are typically deployed for over 10–15 years in demanding environments where maintenance is costly and operational continuity is essential. Soldered eSIMs increase reliability by removing detachable SIM components that can fail over time.

Why do utilities require replaceable connectivity?

Utilities may need to change connectivity providers throughout the device lifecycle due to coverage, commercial or local regulatory requirements. SGP.32 enables remote subscription update without requiring physical SIM replacement.

How can manufacturing be simplified?

Managing different SIM cards across production lines increases complexity and manufacturing inefficiencies. Embedded eSIM technology helps standardize production across deployment scenarios allowing for single SKU product to be utilized for multiple customers.

Why it matters?

SGP.32 eSIM technology improves device reliability, simplifies production and reduces hardware complexity. This enables manufacturers to support long-term smart meter deployments more efficiently.

Key points

- Soldered eSIMs improve **long-term device reliability.**
- **Enables connectivity flexibility** without physical SIM replacement.
- A single hardware platform can support multiple connectivity providers and deployment regions.

02 WHAT ESIM INTEGRATION MODEL BEST FITS YOUR DEVICE STRATEGY?

Manufacturers must balance hardware reuse, design optimization and operational durability when integrating eSIM technology into smart metering devices. The right integration model depends on device architecture, deployment requirements and long-term maintenance strategies.

Will you reuse existing hardware designs?

Many smart meter manufacturers already use SIM tray architectures capable of supporting plug-in eSIMs, enabling migration toward SGP.32 without major hardware redesigns.

Are you developing a new generation of smart meters?

For new product designs, soldered eSIMs help optimize internal space, improve ingress protection, reduce cost and simplify long-term device reliability.

How important is power optimization?

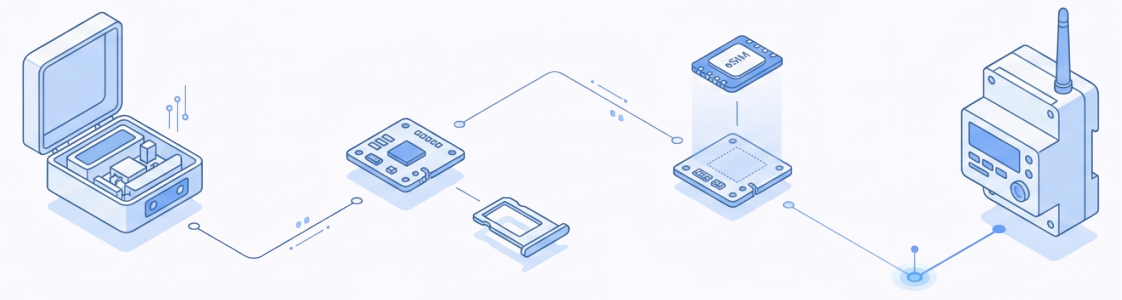
Battery-powered gas and water meters require highly efficient connectivity strategies to maximize operational lifespan and reduce maintenance interventions.

Why it matters?

The right eSIM integration strategy helps manufacturers **optimize device reliability, simplify manufacturing and support long-term operational efficiency.**

Key points

- Existing hardware can support **industrial plug-in eSIM migration** without redesign.
- Soldered eSIMs improve **design optimization and operational durability.**
- Power-efficient connectivity is critical for **battery-powered smart meters.**



03 HOW WILL CONNECTIVITY BE MANAGED THROUGHOUT THE DEVICE LIFECYCLE?

Device requirements extend beyond manufacturing and deployment. Manufacturers and fleet owners need lifecycle management capabilities that support long-term device operation, customer flexibility and efficient support throughout the product lifecycle.

Does the fleet owner require remote eSIM management capabilities?

Managing connectivity across an IoT eSIM or a fleet of devices throughout the product lifecycle requires an eIM (eSIM IoT Remote Management) solution that can be controlled by the device maker, the service provider/utility company or mobile operator, depending on the use case and commercial agreements.

Do utility systems require integration capabilities?

API-based integration capabilities help integrate with exisiting utility systems such as HES, MDM and device management services used throughout smart metering deployments.

Will deployed fleets require visibility and monitoring?

Manufacturers benefit from visibility into connectivity status, subscribers' usage and deployment performance to simplify troubleshooting, reduce support costs and improve operational control.

Why it matters?

Flexible connectivity management helps manufacturers and utilities **maintain operational control while reducing long-term deployment complexity.**

Key points

- eIM service enables remote lifecycle connectivity management.
- API-ready solutions simplify integration with utility systems.
- Fleet visibility improves troubleshooting and operational efficiency.

04 DOES YOUR DEVICE STRATEGY REQUIRE BOOTSTRAP CONNECTIVITY?

Bootstrap connectivity provides the initial connectivity needed for devices to connect securely and become operational. Manufacturers should consider bootstrap requirements early in the device design process.

Will connectivity be required during manufacturing or in the field?

Bootstrap connectivity enables manufacturers to test devices during production and helps simplify deployment by allowing devices to become operational automatically once installed. Devices can continue to use bootstrap connectivity for operation or utilize it to remotely download a local connectivity to the device.

Do devices require immediate connectivity after installation?

Immediate connectivity allows devices to connect securely to the network and begin operating automatically after deployment, reducing installation complexity and avoiding manual intervention.

Will your devices support multiple customers or connectivity providers?

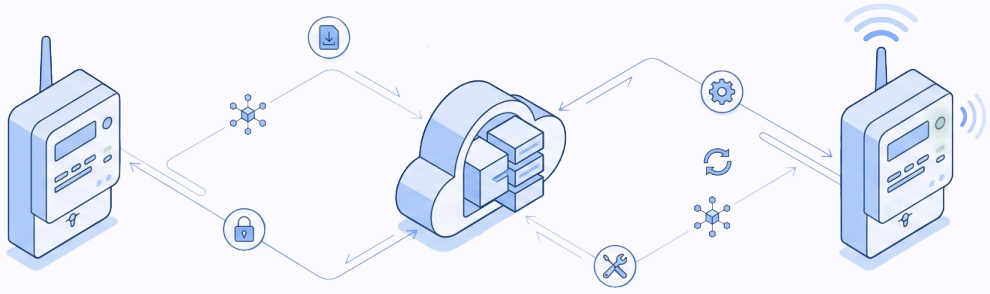
A bootstrap-enabled architecture allows a single hardware SKU to support multiple utilities, deployment regions and connectivity providers without requiring hardware changes.

Why it matters?

Bootstrap connectivity not only simplifies manufacturing and deployment but also **enables OEMs to offer additional lifecycle capabilities** that can increase the value of their devices and support new commercial opportunities.

Key points

- Bootstrap connectivity enables **secure remote connectivity provisioning.**
- Single SKU devices can **support multiple connectivity providers** and customer deployment models.
- Immediate connectivity **simplifies large-scale deployments.**



05 HOW SHOULD COMMUNICATION REQUIREMENTS INFLUENCE DEVICE DESIGN?

Smart metering applications generate different communication patterns depending on utility requirements, operational events and device functionality. Manufacturers must balance connectivity performance, power efficiency and long-term operational sustainability.

Will communication be periodic or event-driven?

Some devices transmit scheduled readings while others generate communications based on alarms, outages, tamper detection or operational events.

Will devices support OTA firmware updates?

OTA updates help maintain device security, regulatory compliance and long-term functionality throughout extended deployment lifecycles.

How will connectivity impact power consumption?

Communication frequency, network (NB-IoT, Cat1, LTE-M) and subscribers management strategies directly affect battery autonomy and long-term operational efficiency.

Why it matters?

Understanding communication behavior early helps manufacturers **optimize device autonomy, scalability and long-term operational performance.**

Key points

- Communication models affect **connectivity, bandwidth and power consumption.**
- OTA updates require **reliable lifecycle connectivity management.**
- Connectivity strategies directly impact **long-term battery autonomy.**

CONCLUSION

Building Future-Ready Smart Meter Devices

As Smart metering deployments continue to grow in scale and complexity, connectivity becomes a strategic asset rather than a technical component. **A future-proof connectivity strategy built on lifecycle orchestration, operational flexibility and operator independence** enables manufacturers to maintain long-term deployment resilience while reducing operational risk and preserving control over their connected device fletes.

SGP.32-READY CONNECTIVITY FOR LONG-TERM SMART METERING DEPLOYMENTS

Valid offers a future-ready eSIM architecture designed to support long-term smart metering deployments with remote lifecycle control, global interoperability and operational resilience.

SGP.32 introduces a connectivity architecture that supports remote profile management, operator flexibility and long-term interoperability without requiring physical access to devices. In smart metering environments, where devices are expected to operate autonomously for 15 to 20 years, this approach helps ensure connectivity control, operational flexibility and resilience throughout the device lifecycle.

By combining bootstrap connectivity, eIM orchestration and remote profile management, SGP.32 enables efficient large-scale deployments while supporting optimized data transmission and power consumption.

Through global connectivity services, bootstrap capabilities and lifecycle management tools, Valid helps manufacturers and utilities streamline deployment, maintain connectivity provider flexibility and reduce operational complexity. The result is a resilient, future-ready connectivity foundation that supports smart metering deployments throughout their entire operational lifecycle.