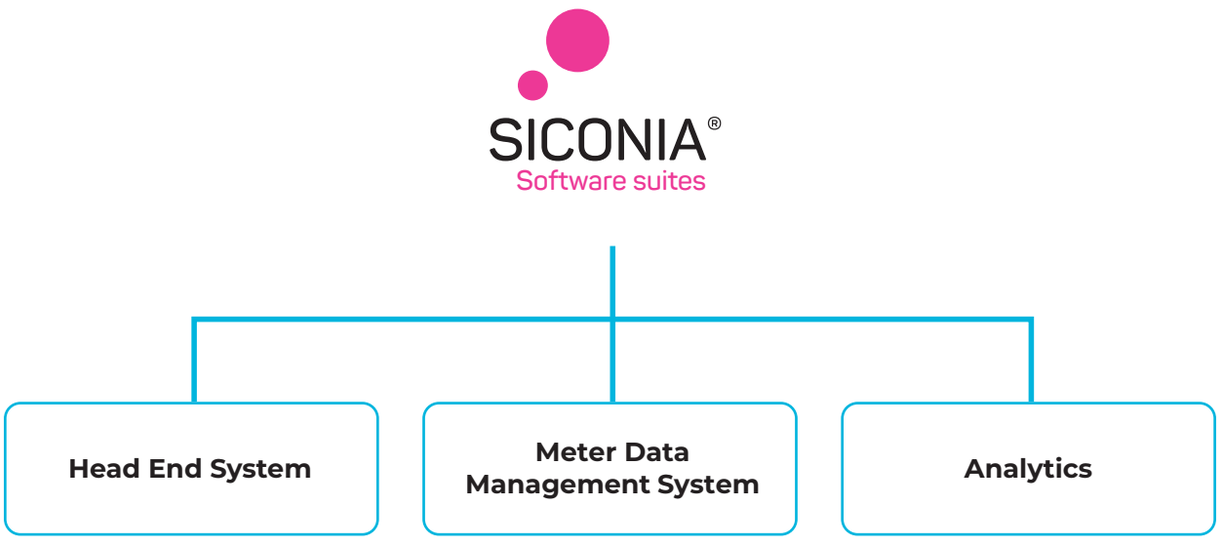

SICONIA®
Software suites
Efficiency Through Digitalization
Sagemcom

SICONIA® Efficiency Through Digitalization

A software suite built around 3 main activities for end-to-end smart metering and smart grid



Head End System :

Responsible for **secure communication** with IoT device (like smart meters), ensuring **near real-time** data collection and technical management. Ensures the compliance of end-to-end communication Key Performance Indicators for all smart metering services. It translate business orders into technical instructions.

Meter Data Management System :

Ensures **data integrity (Validation, Estimation, Edition)** and single source of truth. Responsible of the **long-term storage** for compliancy with regulations and **data export** to any system (ERP, Customer portal...)

Data Analytics :

Open data hub that leverages smart meters, IoT devices data and other **data sources** to enable **efficient daily operations** for utilities by deploying advanced algorithms (Digital Twin based on Artificial Intelligence / Machine Learning) covering topology, Non Revenue Water, Low Voltage network load balancing...

Devices

- Multi energy (water, electricity, gas)
- IoT objects (grid sensors, data logger...)
- Residential & Industrial smart meters

Main Features

- Multi Vendor (driver based, interoperability)
- Multi Communication Technologies
- Asset Management, Technical & Business
- Grid Management
- Cyber security & Embedded Key Management System

Experience

Sagemcom, leader in smart metering, developer, integrator and operator of its solutions, offers a mastered, secure and well proven turnkey solution.

Over 30 Million devices are managed by SICONIA® worldwide.

Sagemcom's SICONIA® Software Suite has been deployed at a wide range of utilities at scale, with the largest system managing over 8 Million meters in a single platform.

SICONIA® Software suite

Low Voltage Grid planification
(topology correction, load balancing, phase detection...)

Non-Revenue Water
(leakage detection, pressure management...)

Grid observability
(digital twin based)

Data Analytics

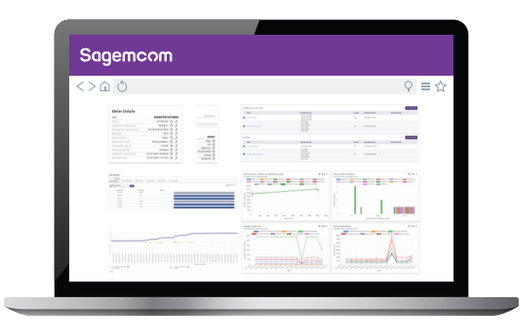
Water

- Proactive Pressure Management
- Enhanced Data Analytics
- Advanced Leak Detection
- Map-Based Device and Event Visualization

Electricity

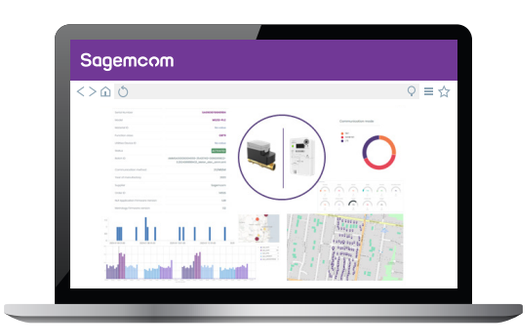
- Network Analysis
- Map-Based Device and Event Visualization
- Rebalancing
- Impact Assessment

Meter Data Management System



- Data storage
- Data management
- Business asset management
- Billing Management
- Integration with External Systems
- Monitoring, Reporting, and Alerting
- Event and Alarm Management
- Remote Operations

Head End System



- Technical Asset Management
- Key Management System
- Data Collection
- Events and Alarms Management
- KPI monitoring and reporting
- Remote Operation
- Firmware Update Management
- Network Management System

SICONIA® Technical Characteristics

Integration

SICONIA® is a **multi-protocol**, **multi-energy** & **multi-vendor** platform for water, gas, and electricity smart metering.

Southbound Integration

SICONIA® is based on a « **driver concept** », meaning that for each protocol or technology, a correspondent driver is provided without impacting the business logic above.
SICONIA® is managing the asset for all the devices independently of their communication technology/protocol.

It supports:

Network Technologies: LoRaWAN, Wize, NB-IoT, PLC, Wireless MBUS, Wisun…

Protocols: LoRaWAN, Wize, DLMS, LwM2M, MQTT, Wireless MBUS…

Model: COSEM, Wize, OMS…

Northbound Integration

SICONIA®'s APIs enable the **integration** with **external systems.** The integration is using **industry standards** such as MultiSpeak and the Common Information Model.

Supported integration methods include:

- File-based (XML, CSV, etc.)
- Messaging Brokers (Kafka, AMQ, etc.)
- Web Services (SOAP, REST)
- Others as needed

All the API are **customizable** and that can be discuss during the workshop phase.

IT

IT And Infrastructure:

- **Agnostic** to cloud providers, virtualization and hardware vendors.
- Highly **Available** and **Scalable** Architecture built around **proven** and **stable open-source** products.
- Deployed using **modern tools** and following **best practices**
- Built and operated using **high security standards**:
  SDLC and secure software factory
  CVE tracking and response
  Defense in depth (layered security, monitoring and analysis, least privileges…)
  PSIRT/CSIRT: member of the InterCERT (the first CSIRT community in France)

IT Team Expertise:

- Sagemcom has a **multidisciplinary** IT team that can act at **different levels** for cloud and on-premises *(Networking, Virtualization, Orchestration and Automation, Operating systems, Security, Databases and Brokers)*
- IT Team **services** can cover the full **lifecycle** *(Architecture and Design, Implementation, Operation, Support)*

Security

End to End Cybersecurity Solution: Global Protection for Devices, Systems, IT, Data, and Telecom.

Compliance with cybersecurity standards	Cyber Security	Key Management System Security	IT Security	IoT devices end-to-end security
ISO 27001 certified Comply with customer specific local regulations	End-to-End Security based on standards Secured Passthrough Communication For critical commands Regular Cybersecurity audits	Secured Storage and Management of meter Key (HSM/SSM support). Public Key Infrastructure (PKI) & Certificates	VPN connections VPN Gateways Encrypted data *in transit / at rest* MicroSegmentation Intrusion prevention Observability tools Secure OS *antivirus, HIDS* Bastion system *(screen recording)* Role Based and Multi Factor Authentication & Access Control.	Security and protection is taken into account from manufacturing process until day-to-day management of the devices and their credentials

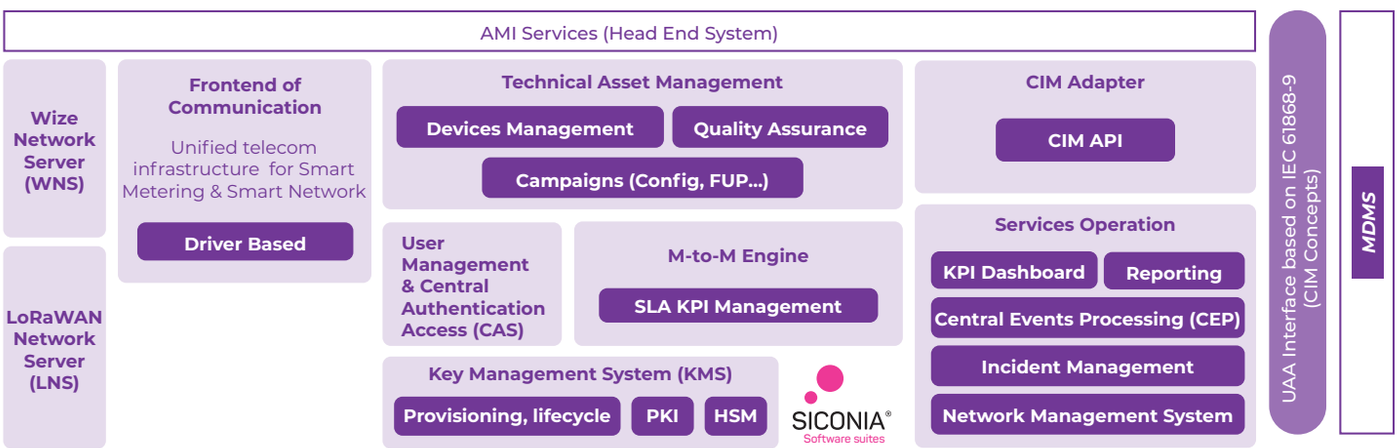
SICONIA® Head End System

In the smart metering ecosystem, SICONIA® HES has a central role as it is the system that is responsible for the secure end-to-end bi-directional communication with the on-field devices. It is a multi-energy and multi-protocol application designed for the operation of millions of devices by providing to the operators a user friendly and ergonomic interfaces for the day-to-day operation as well as extensive monitoring and reporting functionalities.

Architecture

SICONIA® HES is a **secure-by-design** solution that is **modular, interoperable**, enabling integration with other systems, **scalable** and highly **available**, hosting **multi-energy** meters (water, gas, electricity) and IoT devices, and offering a **unified web interface**.

SICONIA® HES connects southbound with field devices such as meters, data concentrators, gateways, and grid devices, supporting multiple protocols and technologies.
Its northbound interface follows the Common Information Model standard (IEC 61968-9) for seamless integration with Meter Data Management Systems (MDMS) for metering data delivery and Workforce Management Systems (WFM) for installation and maintenance operations.



Services

Technical Asset Management:
A module called ODM (Operational Device Management) ensures the provisioning and continuous configuration of meter devices and field equipments. It is designed to manage the lifecycle of smart meters, allowing the consultation of all the state modifications with the meters and control remotely the devices.

Key Management System:
The meters security keys and the certificates are stored and managed though the HSM / SSM.

Data Collection:
The HES enable to manage the strategy for the data collection though periodical or on demand collection. The management include scheduling, priorities and recovery mechanisms.

Events and Alarms Management:
The Central Event Processing (CEP) module manages events and alarms generated by meters and systems, configured through business rules. It also provides management capabilities via dashboards and notifications.

KPI monitoring and reporting:
This module enables users to track key project KPIs (data collection, device control transactions, remote configurations, alarm delivery, etc.) through customizable or built-in dashboards and reports. It helps to analyze the connectivity status, telecom network quality, ongoing operations on meters and their statuses, as well as message exchanges between different systems.

Remote Operations:
The ability to initiate operations on devices through the platform, manage device control transactions (such as push frequencies, user ports, etc.), perform remote configurations, and more.

Firmware Update Management:
Enables the deployment, updating, and remote configuration of firmware to ensure device efficiency and security. Includes firmware upgrade campaign creation, configuration, and real-time monitoring.

Network Management System:
Provides map views for easy device location and filtering during troubleshooting. Designed for user-friendly daily operations, with support for both ad hoc and scheduled reports.

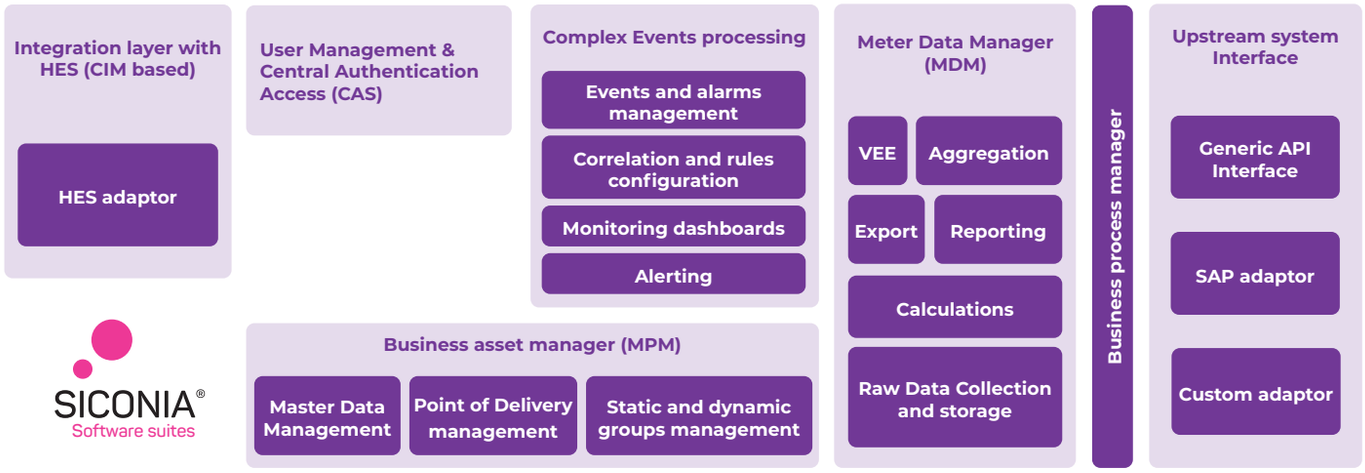
SICONIA® Meter Data Management System

In the smart metering ecosystem, SICONIA® MDMS has a central role as it is the system that centralizes and stores for long term the metering data and integrates with the utility IT systems
Its key functions include data storage, delivering reliable billing determinants, providing load profile data to various systems, managing the link between delivery points and meters, and enabling advanced smart use cases through data aggregation and calculations.

Architecture

SICONIA® MDMS is a **secure-by-design** solution that is **modular**, **interoperable**, enabling integration with other systems, **scalable** and highly **available**, hosting **multi-energy** meters (water, gas, electricity), and offering a **unified web interface**.

In the state-of-the-art smart metering architecture, the MDMS is integrated with one more several Head-end system(s) for the acquisition of metering data as well as for sending commands and requests and is also integrated with the utility legacy systems to manage several use cases.
SICONIA® MDMS provides advanced integration capabilities for the integration with the HES via a CIM based interface (IEC 61968-9) as well as interfaces for the integration with the utility system such as "SAP MDUS interface" or generic APIs.



Services

Data storage:
Stores measurement data, events, and alarms from multiple sources, with visualization, versioning, and status management.

Data management:
It applies validation, estimation, and editing rules, enables configurable calculations and exports, and supports multi-energy data management.

Business asset management:
It manage and synchronizes master and reference data, including the link between Point of Delivery ID and Meter ID, as well as static and dynamic groups.

Billing Management:
It calculates billing determinants and applies differentiated billing rules based on meter type and Point of Delivery attributes.

Integration with External Systems:
It provides generic APIs for integration with various HES using CIM standard and integration with customer systems like CC&B and SAP.

Monitoring, Reporting, and Alerting:
It offers pre-configured reports, operational dashboards, and alerting based on customizable rules.

Event and Alarm Management:
It receives, formats, and stores events and alarms, ensuring correlation, rule configuration, monitoring, and alerting.

Remote Operations:
It enables remote meter commands, configuration changes, and tracking of execution status and errors.

SICONIA® Data Analytics

With SICONIA® Data Analytics, utilities can efficiently manage their infrastructure while reducing operational costs and improving service reliability.

Evolving analytics: Business Intelligence and Machine learning are used to analyze trends to predict potential issues, such as leaks or pressure anomalies. The platform is offered embedding on the shelf analytics with the flexibility to deploy new ones seamlessly.

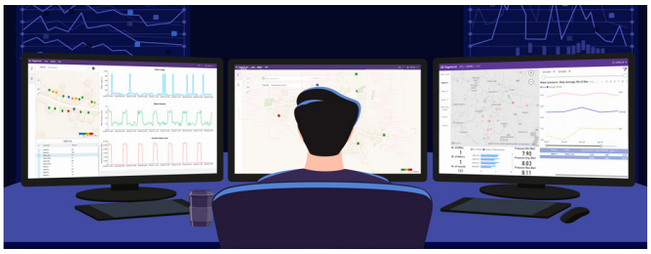
Actionable Insights: User friendly and customizable dashboards with intelligent alerts for fast and informed decision-making.

Proactive Network Management: Monitoring and historical data analysis support predictive maintenance and resource conservation.

Scalable by design: Leveraging scalable architecture with cloud technologies, it allows to store and process large amounts of data.

Seamless integration: Supporting multiple standard interfaces and formats, with the flexibility to easily incorporate new ones. This ensures smooth system-to- system connectivity and future-proof compatibility.

SICONIA® Data Analytics platform is a cloud agnostic, open data hub that leverages smart meters, IoT devices and other data sources to enable efficient daily operations for utilities.



Electricity Network

1 Network Analysis

Delivers the architecture of the network and the association between a meter, its feeder, its phase and the transformer.

- Analyze the load distribution among all the feeders of the substation.
- Analyze the voltage distribution among the phases for all the feeders.

2 Rebalancing

The objective is to optimize allocation of load to phases.

- To best utilize capacity in the low-voltage grid
- Reduce voltage excursions
- Defer expansion capex
- Extend component lifespan by reducing stress from imbalances.

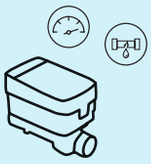
3 Impact Assessment

Simulation tool with precise estimations of the impact of any change in production / consumption on their LV network.

- Assess available capacity for PV panel installation at each metering point.
- Evaluate the impact of adding PV power on grid balance and hosting capacity.
- Identify effets on other metering points and overall grid stability.

Water Network

Leverage high-density meters with acoustic & pressure sensors for new services.



- Reducing Non-Revenue Water
- Advanced Leak Detection
- Proactive Pressure Management

Detects leaks through vibrations in the pipeline

- Capturing data 24/7 to identify leaks in pipes.
- Alarms are triggered when anomalies are detected, enabling rapid and precise interventions.
- Acoustic signals are processed to filter out false positives.

Monitors real-time pressure variations in the network.

- Decreases energy consumption and associated CO2 emissions
- Extends infrastructure longevity and reduces maintenance costs.

SICONIA® Operation Management

Technical and Business Services

Sagemcom's approach is to be flexible and propose a tailor-made solution for each customer based on its strategy, context, priorities, staff skills, etc. The managed services approach of Sagemcom consists of a granular set of services that we can synthesis as following:

Sagemcom is an **editor** and **integrator** of the SICONIA® software suite

Sagemcom is also providing different types of services on top of generic activities

Technical operations of the Solution

Provide maintenance & support during business hours

May include 24/7 incident management for Level 2 & 3.

Technical and Business operations of the Solution

Monitoring SLA and KPI for business use cases and handling the processing of ad-hoc business operations.

Business models

Sagemcom is able to provide different business model like:

On-Premise: The utility hosts and manages the IoT platform. Sagemcom supplies the software and limited support.

SaaS: Sagemcom hosts (cloud), maintains, and updates the SICONIA® platform. Utility accesses and maintains day to day operations.

DaaS: Sagemcom collects, processes, and delivers data. The utility consumes data without managing infrastructure.

MaaS: Sagemcom handles metering end-to-end (with local suppliers for installation). The utility relies on the supplier.

In case of Cloud based delivery model, Sagemcom will operate SICONIA® solution on Public Cloud (Azure, AWS, OVH...) fulfilling cybersecurity requirements and local regulation.

	Classical On Premise	SICONIA® as a Service SaaS	Data as a Service DaaS	Metering as a Service MaaS
IT hosting and infrastructure management	Utility	Sagemcom	Sagemcom	Sagemcom
System day to day operation	Utility	Utility	Sagemcom	Sagemcom
On-field installation and troubleshooting	Utility	Utility	Utility	Sagemcom
Support and maintenance - Business hours	Sagemcom	Sagemcom	Sagemcom	Sagemcom
24/7 availability and support (optional)	Sagemcom	Sagemcom	Sagemcom	Sagemcom

SICONIA® Project Implementation

Project Key Phases

Sagemcom is the developer and integrator of the SICONIA® software suite. Over the past decade, Sagemcom has successfully deployed different turn-key solutions covering all the proposed components of the system (HES / MDMS / Analytic) in very large-scale deployments.
During the project implementation Sagemcom acts as the technical leader for the delivery of its scope. The target is to define all business processes and interaction with the utility IS or IoT Devices to ensure KPI / SLA.

The project is divided into different phases / releases and for each of them, we would like to propose 4 mains phases:

1 - The Design Phase

Workshops collaboration with the Utility and Sagemcom to define processes, map technical and business requirements, and set SLAs/KPIs.

At the end of this phase, Sagemcom delivers full documentation of the new processes.

2 - The Build Phase

Sagemcom develops the solution, ensuring compliance with the design and validating end-to-end functionality before deployment.

3 - The Test Phase

IT architecture is implemented and validated, supplier deploys the solution

A series of tests are performed with test environments of the utility's IT system to validate all business use cases end-to-end.

4 - The Hypercare Phase

Once GO Live is signed off, the Hypercare period will permit to monitor deeply the Solution End-to-end and apply any change if required to reach the targeted KPI.

Project Governance

Establishing a governance team and holding regular meetings is crucial for the success of a smart metering project, from rollout to service delivery. These structures ensure effective coordination, clear communication, and swift decision-making, while aligning with strategic and contractual goals. A well-organized governance framework helps manage risks, streamline processes, and maintain service quality.

Strategic Group Level 4 (Quarterly Meetings)

High-level governance with business leaders to align vision, strategy, and future development while addressing key risks and major strategic decisions.

Commercial Level 3 (Bi-Monthly Meetings)

Includes Program Managers and Commercial teams to review pricing, manage contract amendments, renegotiations, and oversee annual cost revisions.

Service Steering Group Level 2 (Monthly Meetings)

Involves Program Managers and key business representatives of all parties to review escalations, track service performance, optimize processes, and ensure subcontractor alignment.

Operational Level 1 (Weekly Meetings)

Responsible for the carrying out of the project according to its different phases.
Oversees deployment progress, manages minor updates, ensures daily operational coordination, facilitates issue resolution, and drives continuous process improvement.

Project Initialization | **Deployment & Go-Live** | **Maintenance & Support**

Link to our website

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