

SMART GRID

FORUM LATIN AMERICA
2023

The Evolution Of Smart Metering Integrating New Services



SIEMENS



Chapter 1

Smart Metering

Global

Smart Meters World Outlook

% smart meters



Global ~45%



Smart Meters World Outlook

USA
80% of households

ESTONIA
99% of households

FINLAND
95% of households

CHINA
90% of households
>700MM

SPAIN
90% of households

SINGAPORE
90% of households

ITALY
80% of households

SWEDEN
90% of households

AUSTRALIA
70% of households

Smart Meters World Outlook Approach

United States

No national mandate for smart metering, but many states have implemented their own programs. Some states, such as California, have made smart metering a requirement for all utilities. Other states, such as Texas, have left the decision to deploy smart meters up to individual utilities

European Union

The European Union **has set a goal** for smart meters. Most EU countries have implemented smart metering programs, but there is a great deal of variation in the pace of deployment

China

World leader in smart metering deployment. The Chinese government has **mandated the deployment** of smart meters. As a result, China has installed over 700 million smart meters, more than any other country in the world.

India

India is another country that is rapidly deploying smart meters. The Indian **government has set a goal** of having 250 million smart meters by 2026. This is a challenging goal, but India is making good progress.

Smart Meters World Outlook

Innovative Tech

Wireless technologies

Wireless technologies, such as NB-IoT (Narrowband Internet of Things), Hybrid Communications, LTE-M, LoRaWAN, Sigfox, 5g, Zigbee, Wi-SUN, BLE.

AI and Machine learning

Artificial intelligence and machine learning can be used to analyze smart meter data and gain valuable insights into energy usage

Blockchain

Blockchain technology can be used to securely and transparently store smart meter data. This can help protect customer privacy and ensure data integrity

Smart Sensors

The use of smart sensor networks: Smart sensor networks can be used to monitor the status of the electrical grid. This can help grid operators identify and resolve problems before they cause power outages

Advanced visualization technologies

Advanced visualization technologies can be used to present smart meter data in a clear and intuitive way. This also help end customers understand their energy consumption and make informed decisions about how to save energy.

Smart Meters World Outlook

International Collaboration is needed

Sharing of knowledge and experience

Countries can learn from each other's experiences in deploying smart metering. This can help to avoid mistakes and to identify best practices

Pooling of resources

Countries can pool their resources to share the cost of deploying smart metering. This can make it more affordable for each country to participate

Developing common standards

Countries can work together to develop common standards for smart metering. This will make it easier for different countries to exchange data and to interoperate with each other's systems

Addressing common challenges

Countries can work together to address common challenges, such as the cost of deployment, the need to protect customer privacy, and the need to ensure the security of smart meter data



Chapter 2

Smart Metering

Local

Smart Meters World Outlook What About Latin America?



Smart Metering in Latin America Challenges

- > **Lack of funding** - The cost of deploying smart metering can be high, especially for countries with large rural areas.
- > **Resistance from customers** - Some customers may be reluctant to adopt new technologies, such as smart meters
- > **Interoperability** - There is a need to develop interoperable standards for smart metering so that data can be shared between different countries and utilities
- > **Security and privacy concerns** - There are concerns about the security and privacy of customer data collected by smart meters
- > **Need for skilled workforce**- There is a need to train a skilled workforce to install and maintain smart meters

Smart Metering in Latin America Opportunities

- > **Improved energy efficiency** - Smart metering can help to improve energy efficiency by providing customers with real-time information about their energy consumption
- > **Reduced power outages** - Smart meters can help to reduce power outages by providing early warning of potential problems
- > **New services and products** - Smart metering can enable new services and products, such as demand response and time-of-use pricing
- > **Increased grid reliability** - Smart metering can help to increase grid reliability by providing utilities with better data about the grid
- > **Economic development** - Smart metering can contribute to economic development by reducing energy costs and improving grid reliability

Smart Metering in Latin America Regulation

Smart metering

in Latin America
and the Caribbean

Regulatory recommendations to encourage
the deployment of smart metering appropriate
to the needs of individual countries



Recommendations to establish a smart metering regulatory framework

1. In connection with a Cost-Benefit Analysis (CBA)
2. In relation to national SM strategies
3. Regulatory mechanisms to encourage SM
4. Recommendations on regulatory innovation mechanisms

Smart Metering in Latin America Siemens and local regulation

Siemens is collaborating with local regulatory entities in Latin America to comply with requirements related to smart metering

Working with regulators to develop and implement smart metering regulations that are **tailored** to the needs of each country

Providing **training and workshops** for regulators, focusing on the benefits of smart metering and how to regulate this technology.

Collaborating with regulators in Latin America on **pilot projects** to test and demonstrate the benefits of smart metering

Siemens is **engaging with stakeholders**, such as energy companies, consumers, and civil society organizations, to ensure that the benefits of smart metering are shared by all

Committed to working with local regulatory entities in Latin America to ensure that smart metering is deployed in a way that is **compliant with regulations** and that meets the needs of all stakeholders

Smart Metering in Latin America



Overall, the deployment of smart metering in Latin America is still in its early stages.

However, there is a growing recognition of the potential benefits of this technology, and the region is expected to see significant growth in smart metering in the coming years.



Chapter 3

This is what we can do

As Siemens

Some of the challenges utilities face

How can I manage **fluctuating infeed** of renewable generation?

How can we use digitalization to **enhance operational performance**?

How can we future **proof our investments** in secondary equipment?

How can we ensure **compliance, resiliency and efficiency**?

How can we use **cutting-edge technologies** to gain competitive advantage?



How to deal with **high power charging requirements** of e-Cars economically?

How can we improve our **customer experience**?

How can we ensure **reliable power supply**?

How can we protect our network, data and IT assets against **cyber attacks**?

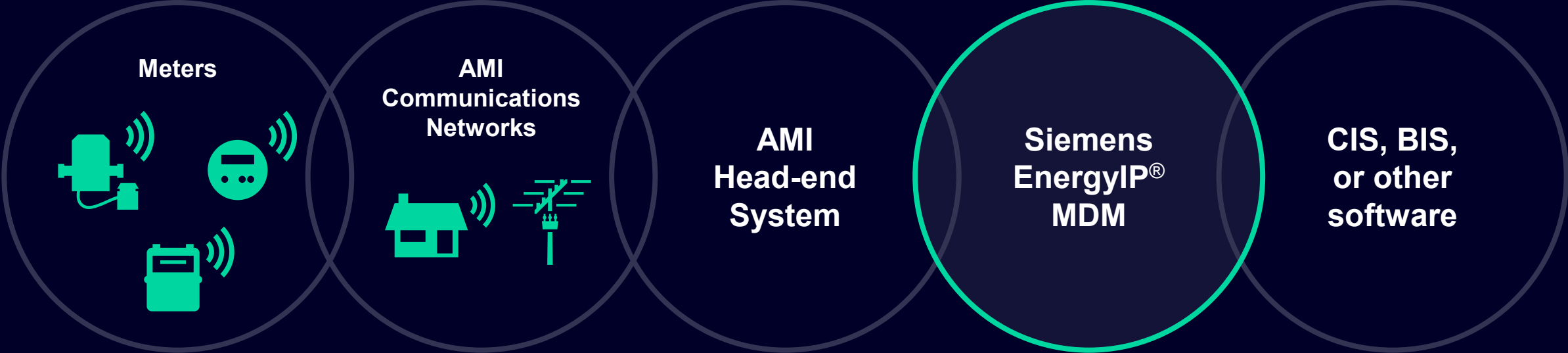
How can we **maximize performance** of our systems with the lowest investment?

How can we reduce our **equipment lifecycle costs**?



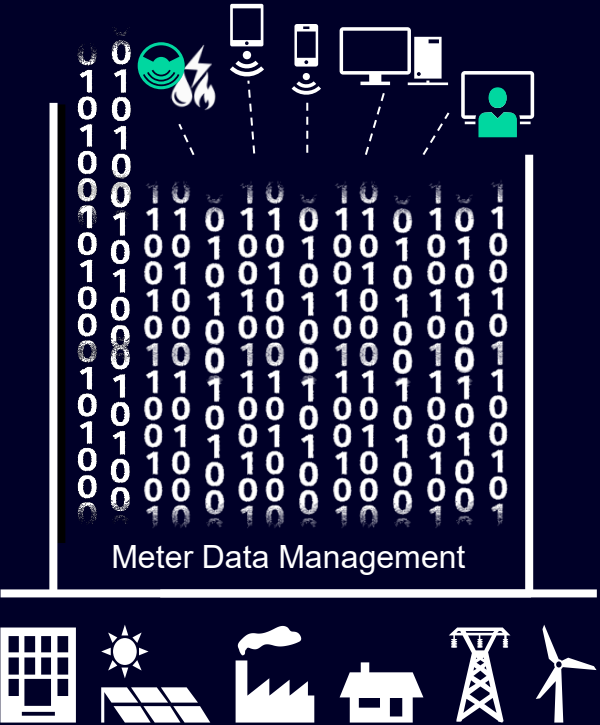
Siemens EnergyIP[®] MDM is a true meter data management

Global meter data management team solely **dedicated to meter data management** and focused on **best data quality, advanced use cases, and future development** for over 20 years



Meter data management is what we do

MDM solution is a MUST



Billing Efficiencies

This block highlights "Billing Efficiencies" with an icon of a document featuring a dollar sign and a lightning bolt, symbolizing accurate and timely billing.

Operational Efficiencies

This block highlights "Operational Efficiencies" with an icon of a gear inside a circular arrow, representing streamlined and efficient operations.

Beyond Meter-to-Cash

This block highlights "Beyond Meter-to-Cash" with an icon of a hand holding a coin, indicating revenue and value beyond the traditional meter-to-cash cycle.

Market Compliance

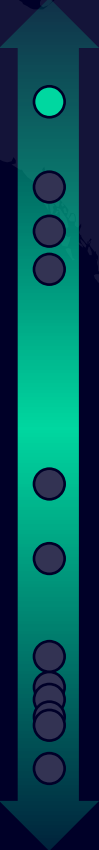
This block highlights "Market Compliance" with an icon of a classical building, representing regulatory and market requirements.

Non-Technical Losses

This block highlights "Non-Technical Losses" with an icon of a hand holding a dollar sign with a slash through it, representing financial losses not due to technical issues.

#1 Market Position: Siemens' EnergyIP® MDM continues to be the world leader since 2001

Leaders



- Siemens
- Competitor 1
- Competitor 2

Placed highest for its ability to execute and completeness of vision



100,000,000+

Smart meters contracted



200+

Utilities using EnergyIP



50+

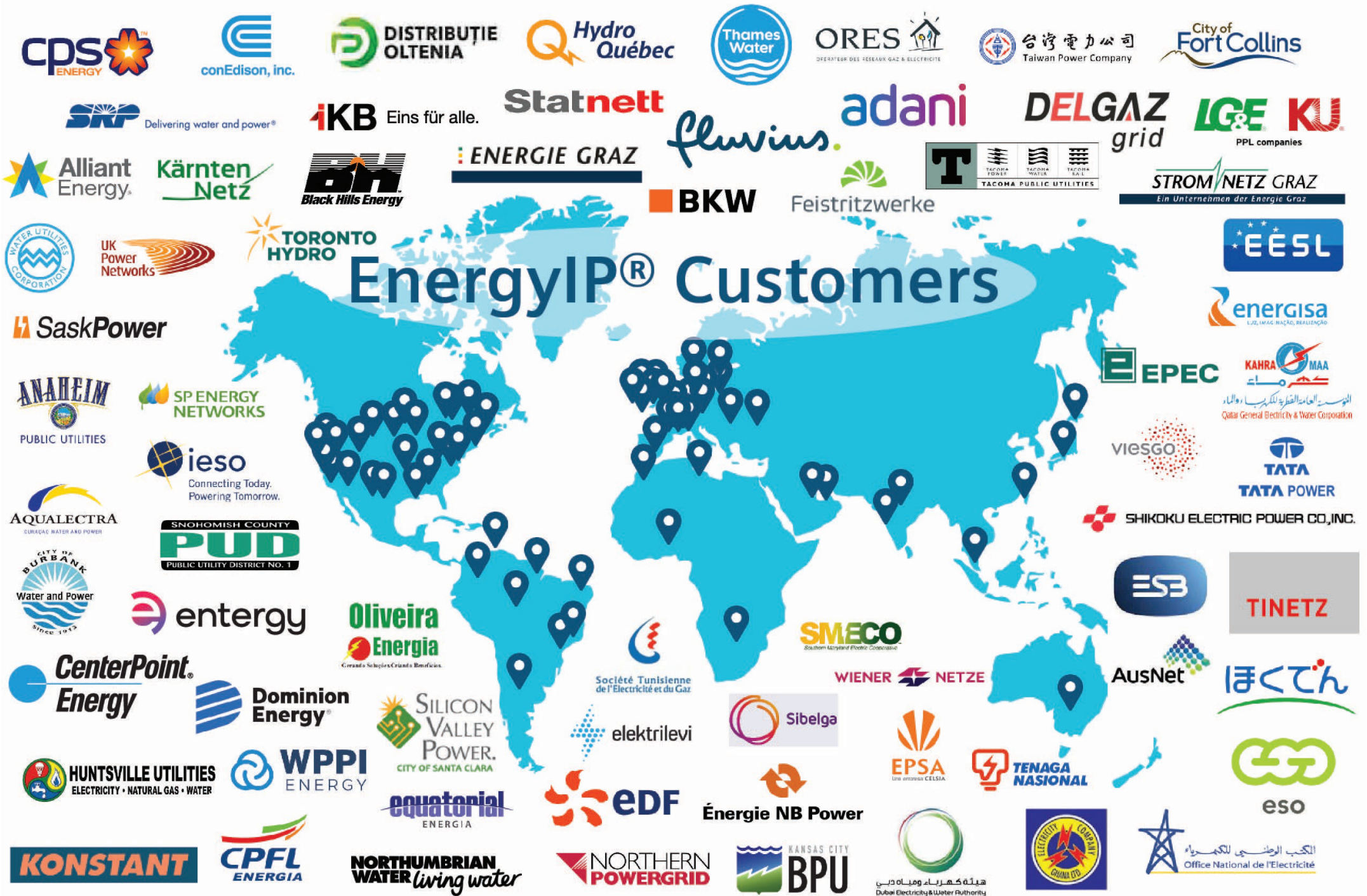
Multi-commodity utilities worldwide



5 Million meters at **60+**

Utilities in one multi-tenant system

Niche players



cps ENERGY

conEdison, inc.

DISTRIBUȚIE OLTENIA

Hydro Québec

Thames Water

ORES
OPERATEUR DES RESEAUX GAZ & ELECTRICITE

台湾電力公司
Taiwan Power Company

City of Fort Collins

SRP Delivering water and power®

KB Eins für alle.

Statnett

fluvius.

adani

DELGAZ grid

LGE & KU
PPL companies

Alliant Energy.

Kärnten Netz

BH
Black Hills Energy

ENERGIE GRAZ

BKW Feistritzwerke

TACOMA PUBLIC UTILITIES

STROM/NETZ GRAZ
Ein Unternehmen der Energie Graz

WATER UTILITIES CORPORATION

UK Power Networks

TORONTO HYDRO

EnergyIP® Customers

EESL

SaskPower

energisa
LJZ, IMAC, WAJAZ, BEALENGO

ANAHEIM
PUBLIC UTILITIES

SP ENERGY NETWORKS

EPEC

KAHRA MAA
الهيئة العامة للطاقة والكهرباء والماء
Qatar General Electricity & Water Corporation

ieso
Connecting Today. Powering Tomorrow.

VIESGO

TATA TATA POWER

AQUALECTRA
CURAÇAO WATER AND POWER

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

SHIKOKU ELECTRIC POWER CO., INC.

CITY OF BURBANK
Water and Power
Since 1913

entergy

Oliveira Energia
Grande São Paulo Energia

Société Tunisienne de l'Electricité et du Gaz

SMECO
Southern Maryland Electric Cooperative

ESB

TINETZ

CenterPoint Energy

Dominion Energy

SILICON VALLEY POWER
CITY OF SANTA CLARA

elektrilevi

Sibelga

WIENER NETZE

AusNet

ほくてん

HUNTSVILLE UTILITIES
ELECTRICITY • NATURAL GAS • WATER

WPPI ENERGY

equatorial ENERGIA

edf

Énergie NB Power

EPISA
LIFE ENERGY CELSIA

TENAGA NASIONAL

AusNet

eso

KONSTANT

CPFL ENERGIA

NORTHUMBRIAN WATER
living water

NORTHERN POWERGRID

KANSAS CITY BPU

هيئة كهرباء ومياه دبي
Dubai Electricity & Water Authority

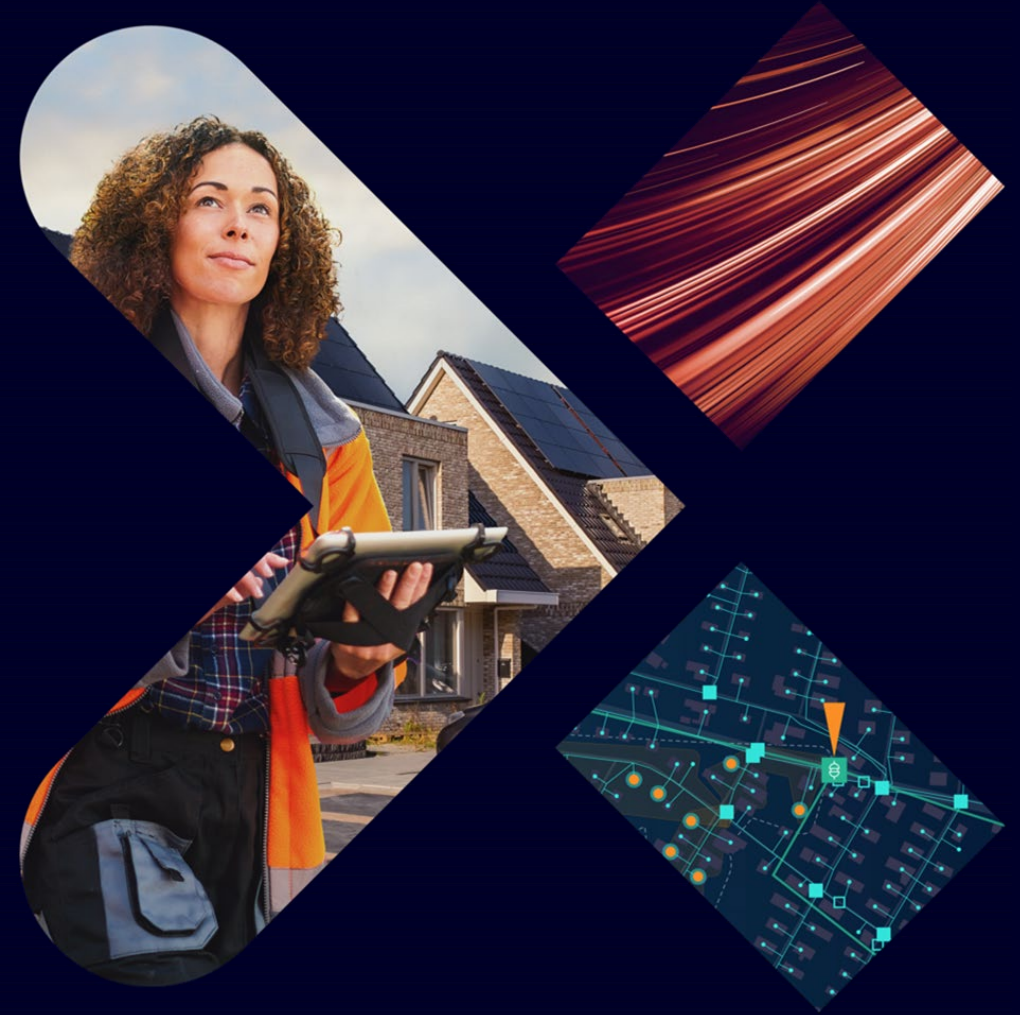
ELECTRICITY COMPANY GHANA LTD

المكتب الوطني للكهرباء
Office National de l'Electricité

Smart Metering in Latin America The Siemens Way

Meanwhile we did some “out of the box” thinking...

Get to know LV Insights[®] X



The future of energy speaks *prosumer*. Are you prepared for it?

Today

LV grid treated as a black box because of predictable behavior

Uncontrolled DER rise causes unpredictable problems

Tomorrow

LV grid of tomorrow needs to be fully transparent and controllable



Production Centric System

Prosumer Centric System

Today's challenges in managing your LV grid



Monitoring your low voltage grid

- Lack of consistent grid state down to low voltage
- GIS does not contain operational data
- Systems are not integrated



Grid impact

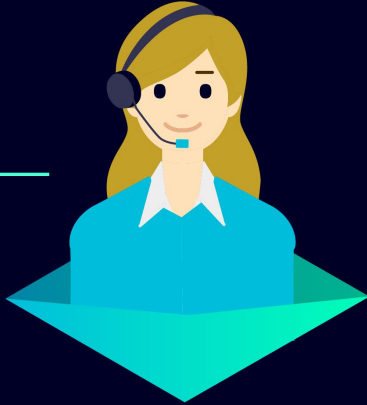
- Field data and insights are not accessible
- Information in different silos
- No matching of meter data and model



Digital representation of the grid

- Data is located in multiple silos
- Poor data quality and lack of consistency
- IT-driven modelling process

Customer
Care



Grid Operator



Field Engineer

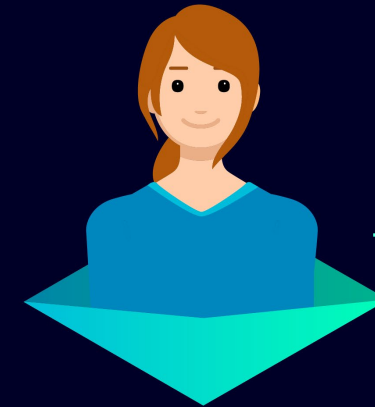


Grid Model
Engineer



This growing complexity & speed require a **holistic** LV grid management that involves a variety of departments.

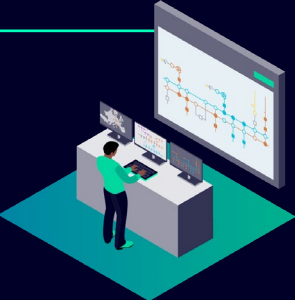
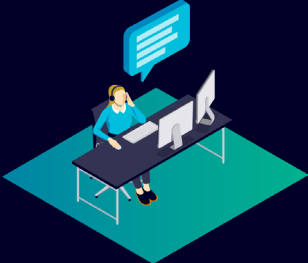
Grid Planner



Unlock value right from the start – with LV Insights® X



Grid Operator
Monitor your low voltage grid



Grid Model Engineer
Build your digital representation of the grid



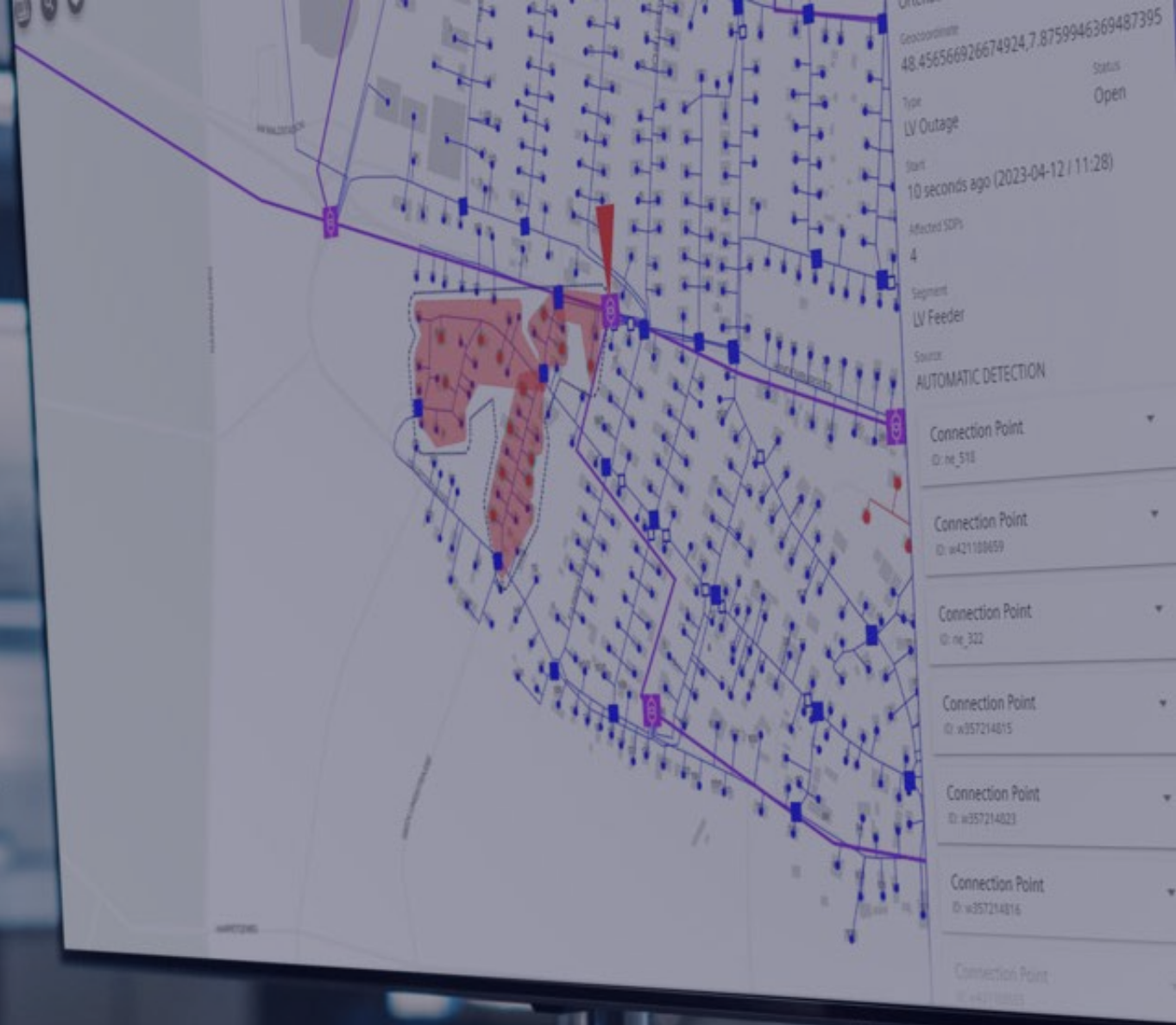
Grid Planner
Analyze the grid impact of DERs



LV Insights® X is your dedicated SaaS for adaptable and scalable LV grid management.

Leveraging existing data, you create a digital model of your LV grid to...

- ... monitor its status,
- ... optimize outage management,
- ... identify critical grid segments and
- ... share relevant insights across departments.





The pace of change has never been this fast, yet it will never again be this slow.

Contact

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