Itron



Grid Edge Intelligence

Transforming data into actionable intelligence and control

Overview Brochure



NEW GRID CONDITIONS REQUIRE A NEW OPERATIONAL MODEL

Electricity distribution networks across EMEA are undergoing significant transformation driven by increasing electrification, the rapid adoption of electric vehicles, the growing deployment of distributed energy resources (DER), and ambitious decarbonization and energy transition objectives. These trends are placing increasing demands on low-voltage (LV) networks, creating localized constraints, changing load profiles and increasing the complexity of network operations.

Many of these challenges are emerging at the edge of the grid, where electrification, distributed generation and evolving customer demand directly impact transformer loading, voltage performance and overall LV network operations. Traditional centralized operating models built primarily around meter-to-cash processes provide limited visibility into these increasingly dynamic conditions. Just as closed-caption TV transformed physical security through continuous monitoring and faster response to emerging events, modern grid operations require greater situational awareness and intelligence at the grid edge.

At the same time, utilities and DSOs are seeking to maximize the value of existing Advanced Metering Infrastructure (AMI) investments while preparing for the next generation of smart grid capabilities. Growing operational complexity, increasing expectations around reliability and resilience and pressure to optimize capital investments are driving the need for more intelligent and proactive network operations. Greater visibility into network behavior and emerging constraints is essential to improve asset utilization, defer unnecessary network reinforcement and support continued electrification and DER integration.

As a result, AMI is evolving beyond its traditional meter-to-cash role into a critical operational platform for managing increasingly distributed, electrified and data-driven networks. Utilities require greater operational awareness and intelligence across the low-voltage network to improve planning, enhance reliability and support more informed investment decisions.

In many cases, the immediate challenge is not a lack of infrastructure, but a lack of visibility into how existing infrastructure is being utilized.

GRID EDGE INTELLIGENCE: FROM METER-TO-CASH TO OPERATIONAL INTELLIGENCE

Grid Edge Intelligence (GEI) extends the role of AMI beyond traditional meter-to-cash operations, enabling utilities to improve operational visibility, responsiveness and control across increasingly distributed and dynamic low-voltage networks.

By combining distributed intelligence (DI) applications, edge analytics and intelligent orchestration, GEI enables distribution system operators (DSOs) to detect, analyze and respond to network conditions closer to where they occur.

Imagine an AMI system that can identify emerging transformer overload conditions and support proactive operational response before service is impacted. Or a system that can detect increasing adoption of EVs and rooftop solar on a feeder, assess the resulting network impact and provide actionable insights into asset health and emerging constraints.

GEI transforms AMI into an operational platform, delivering operational visibility into transformer loading, outage conditions, voltage performance and low-voltage network constraints. The result is faster decision-making, improved grid reliability and better preparedness for the energy transition.



GEI HELPS DISTRIBUTION SYSTEM OPERATORS:

- **Find capacity on the existing grid**
- **Improve reliability**
- **Ease DER integration**
- **Defer infrastructure cost**



Key operational outcomes enabled by GEI include the ability to:



Improve Low-Voltage Visibility and Transformer Awareness

As electrification, DERs, flexible loads and changing consumption patterns continue to reshape distribution networks, utilities require greater visibility into transformer loading and low-voltage network conditions. Grid Edge Intelligence helps identify emerging constraints earlier, enabling more informed operational and planning decisions while maximizing the utilization of existing infrastructure.



Improve Network Reliability and Accelerate Fault Detection & Restoration

As distribution networks become increasingly dynamic, utilities need faster awareness of outages, abnormal operating conditions and emerging network issues. By providing localized operational intelligence closer to where events occur, Grid Edge Intelligence supports faster response, improved network resilience, enhanced reliability and better customer outcomes.



Optimize Existing Infrastructure and Defer Network Reinforcement

As investment pressures increase and network modernization requirements grow, utilities need to maximize the value of existing assets before committing traditional network reinforcement. Greater visibility into network behavior, asset utilization and emerging constraints supports more targeted investment decisions, improves capital efficiency and helps prepare the network for continued electrification, DER integration and future flexibility services.

Unlike traditional AMI environments that rely heavily on centralized collection and retrospective analysis, GEI enables localized operational awareness directly at the grid edge, helping utilities improve operational response, enhance grid reliability, optimize existing infrastructure and proactively manage increasingly dynamic low-voltage networks.

Importantly, GEI delivers operational value progressively from the first deployed meter, enabling DSOs to identify emerging network conditions earlier, respond more effectively and unlock additional capabilities as deployments scale over time.

THE FOUNDATION FOR GRID EDGE INTELLIGENCE: FUTURE-READY AMI WITHOUT RISK OR COMPLEXITY

Itron's AMI platform provides a secure, scalable, future-ready foundation for Grid Edge Intelligence. Built on the Itron Riva® meter, Gen6 communications network (including both Itron RF Mesh and Cellular), and UtilityIQ® application suite, the platform enables utilities to modernize AMI today while preparing for tomorrow's operational needs.

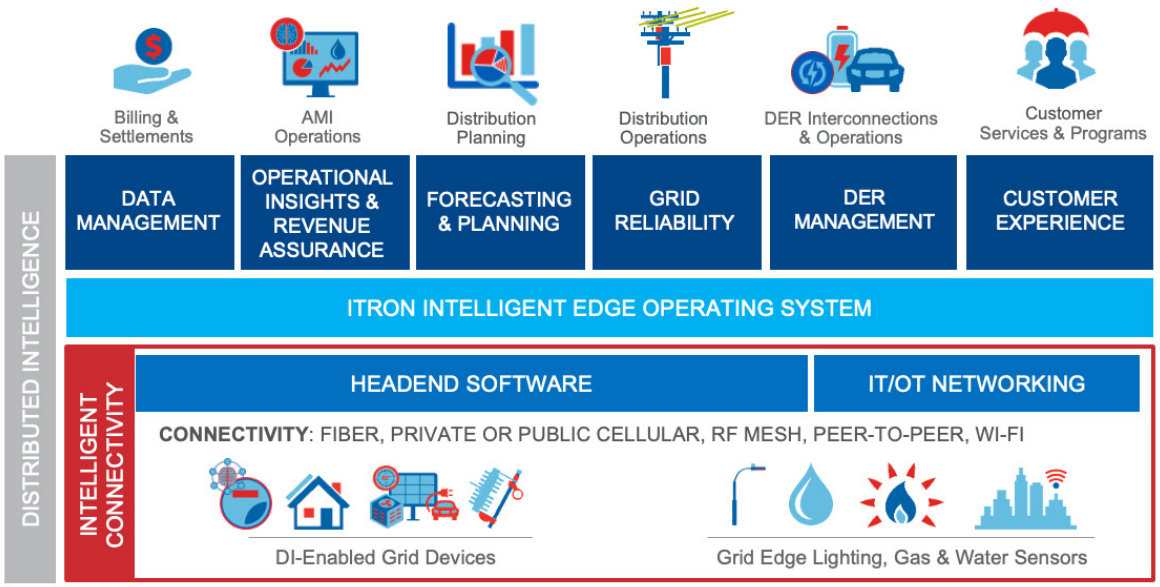
As grid conditions become more dynamic and meter fleets age, utilities need more than traditional meter-to-cash capabilities. Itron's platform also delivers greater visibility into low-voltage networks, supports edge analytics and distributed intelligence applications and helps utilities make more informed operational and investment decisions.

Utilities can deploy a complete AMI solution today and activate Grid Edge Intelligence capabilities over time as priorities, budgets and business requirements evolve—without replacing existing infrastructure or disrupting operations.



COST-EFFECTIVE MODERNIZATION

UtilityIQ and Gen6 communications enable utilities to modernize AMI at their own pace while protecting existing investments. Flexible deployment options support phased adoption of Grid Edge Intelligence capabilities without the cost and disruption of a full system replacement.



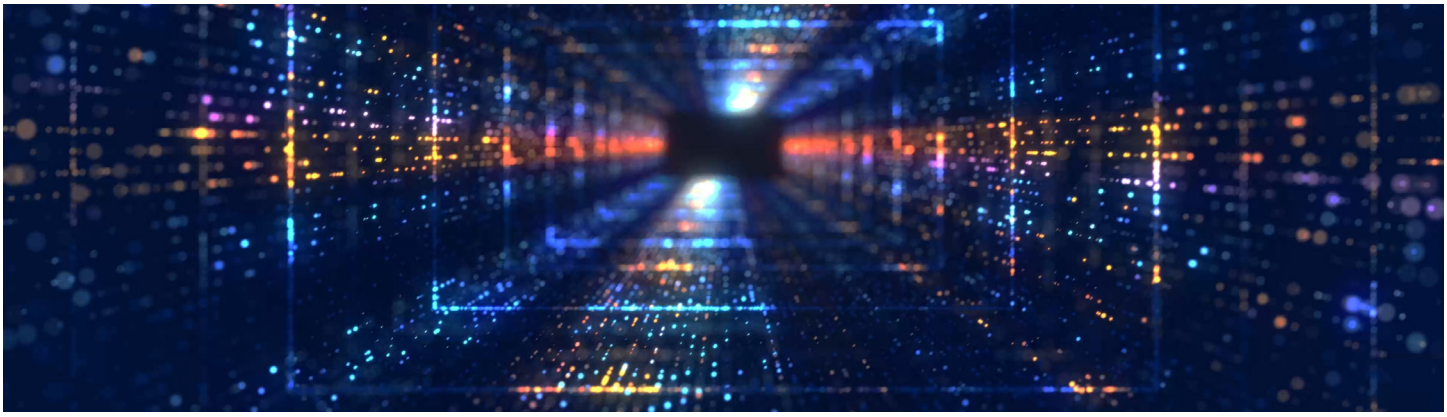


GRID EDGE INTELLIGENCE BENEFITS

- Improve Grid Resilience and Reliability
- Optimize Grid Planning & Capacity
- Integrate Renewables
- Engage Customers & Provide Data Access
- Reduce Operating Costs

SECURE, OPEN AND INTEROPERABLE PLATFORM

UtilityIQ provides a secure, multi-vendor platform that helps utilities integrate and manage diverse metering environments through a single operational framework. Support for DLMS/COSEM ecosystems, mesh and cellular communications, and standards-based interoperability provides flexibility in technology choices while reducing operational complexity. Built on Itron's defense-in-depth security architecture, the platform helps safeguard data, devices and communications throughout the life of the system.





ITRON RIVA METER: AN ADAPTIVE GRID EDGE SENSOR

More than a meter, the Riva device serves as an adaptive grid-edge sensor and distributed intelligence platform. **Each Itron Riva endpoint deployed acts as a new and immediate source of grid visibility and operational intelligence**. By processing data closer to where events occur, the Riva device helps utilities better understand network conditions and respond more effectively to operational challenges.

Supporting a broad range of Grid Edge Intelligence applications, the Riva device provides the visibility, intelligence and edge processing needed to help utilities and DSOs improve network awareness, operational efficiency and grid resilience.

Designed to evolve with utility needs, the Riva platform supports secure deployment of new capabilities over time while maintaining reliable meter-to-cash operations. Flexible communications, remote updates and advanced device management help utilities modernize infrastructure, streamline operations and reduce field activity.

PROVEN SCALABILITY AT THE GRID EDGE

Utilities can begin realizing value immediately while continuously expanding Grid Edge Intelligence capabilities over time. Through distributed intelligence applications running at the grid edge, utilities can address a broad range of use cases including reliability improvement, outage awareness, network safety, low-voltage visibility and DER integration.

As grid requirements evolve, new applications can be deployed securely across the existing platform, enabling utilities to adapt to emerging challenges without replacing infrastructure.

To date, Itron has licensed more than 27 million distributed intelligence applications, shipped over 18 million DI-enabled endpoints, and supported more than 3 million endpoints actively running DI applications worldwide.

DELIVERING PROVEN RESULTS

27M+	18M+	3M+
DI applications licensed	DI-enabled endpoints shipped	endpoints running DI applications

INTELLIGENT ORCHESTRATION WITH IEOS

The Itron Intelligent Edge Operating System (IEOS) helps utilities operationalize Grid Edge Intelligence at scale. By securely orchestrating applications across distributed devices, IEOS enables utilities to transform grid-edge data into actionable operational insights while maintaining centralized visibility and control.

By connecting distributed intelligence with broader operational systems, utilities can accelerate deployment of new capabilities, improve operational efficiency and scale Grid Edge Intelligence initiatives across the network with confidence.

SECURE APPLICATION MANAGEMENT AND DEPLOYMENT

The Itron Enterprise Application Center provides a secure framework for managing and deploying DI applications across the network, enabling utilities to maintain full control over application deployment, lifecycle management and operational monitoring of both Itron and authorized third-party applications. This allows utilities to scale innovation faster while maintaining governance, security and operational consistency across the grid edge ecosystem.



ACCELERATING GRID EDGE INNOVATION

Itron's global innovation and validation centers help utilities evaluate, validate, and accelerate Grid Edge Intelligence initiatives with reduced risk. Through hands-on demonstrations, interoperability testing, technical workshops and real-world use case validation, customers can gain confidence in deployment decisions before scaling solutions across their network.

Including Itron's EMEA Center of Excellence in Budapest, these facilities provide access to expertise, testing environments and collaborative resources that help utilities move more quickly from concept to operational value.

A HOLISTIC RETURN ON INVESTMENT

Grid Edge Intelligence helps utilities maximize the value of existing AMI investments by delivering operational and business outcomes through a single platform. Improved reliability, increased network visibility, enhanced safety and more efficient asset utilization help utilities address today's challenges while preparing for future grid demands.

Rather than deploying multiple standalone technologies, utilities can leverage the same AMI infrastructure to support a growing portfolio of Grid Edge Intelligence capabilities, improving capital efficiency and enabling more informed network investment decisions.

For more information, please contact your Itron sales representative.

WHY UTILITIES CHOOSE ITRON FOR GRID EDGE INTELLIGENCE

- Over 3M DI-enabled endpoints running DI applications
- Open, multi-vendor architecture supporting DLMS/COSEM ecosystems
- Flexible mesh and cellular networking options
- Scalable architecture to evolve with future requirements
- Grid-edge intelligence delivering value from the first deployed meter

Itron. Your trusted partner for the Grid Edge Intelligence journey.

To learn more visit itron.com

We create a more resourceful world

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