



Future-proof solutions  
to accelerate  
the digitalization  
of power grids

QEd  
Quantum  
Edge<sup>®</sup>  
device



gridspertise  
accelerating your electric future



WHO  
we are

The partner of choice  
for DSOs worldwide

We accelerate the digital transformation of electricity distribution networks worldwide to deliver a new era of sustainable and reliable smart grids through innovative, flexible and customer-driven solutions that are circular by design.

We partner with Distribution System Operators (DSOs) all over the world to help them advance their power distribution networks, delivering integrated, cutting edge and sustainable smart grid solutions to make energy infrastructure fit to meet the evolving needs of grid users and electricity end customers.

### Our solutions provide benefits for the entire ecosystem

#### For DSOs

They increase service quality, reduce operating costs, optimize investments in new infrastructure and enhance safety, productivity and sustainability of field operations.

#### For grid users

They provide a platform to integrate distributed energy resources and facilitate the development of the energy service market, including flexibility and electrification of end uses.

#### For end customers

They increase the reliability of the electricity supply, facilitate electrification, foster energy efficiency and make it easier for end customers to become prosumers by taking part in energy markets.

# WHAT we do

Future-proof  
sustainable solutions  
for the digitalization  
of your grids

We offer end to end Cloud-Edge Platform solutions and services to accelerate the digital transformation of distribution grids.

Our portfolio is designed as an open ecosystem, easy to integrate with legacy systems, combining grid intelligent devices with ready-to-use modular applications, running at central level as well as on the edge.

## METERSPERTISE

### Metering and grid edge digitalization

Our smart meters, HES and MDM systems allow DSOs to effectively manage electricity demand through real-time data monitoring and enable grid reliability. They improve billing and revenue protection with fraud detection functions. The solutions also increase customer awareness on energy consumption, allowing more sustainable habits.

## NETWORKSPERTISE

### Network infrastructure digitalization

Our portfolio boosts power grid intelligence up to the edge, allowing remote control and automation to effectively tackle power interruptions and outages, hence increasing service reliability and quality. It also empowers DSOs to operate the network of the future, through solutions for flexibility and distributed energy resources management.

## FIELDSPERTISE

### Field operations digitalization

Our solutions streamline field operations and workforce management. From augmented and virtual reality to allow training of employees, up to machine learning and computer vision for vegetation intelligence and asset inspection. They enable DSOs to reduce response time, enhance service quality, and increase field workers' safety and efficiency.

# QEd Quantum Edge<sup>®</sup> device



## THE CHALLENGE

Growing **electrification** as well as **distributed generation** are increasing the **complexity of power flows managed by the grid**.

Power distribution networks need to go through a great technological transformation to increase flexibility, grid resilience and quality of service.

## THE SOLUTION

QEd - Quantum Edge<sup>®</sup> device is our edge platform for substation virtualization.

Thanks to its decentralized computational capability, this all-in-one solution performs all the main functionalities of electrical substations **by virtualizing their components into edge applications**. QEd addresses the main challenges of the grid such as **automation** and **DER integration**, **outages prevention** and **reduction**, **IoT sensor integration**, **metering**, **remote monitoring** and **control**.

## QEd<sup>®</sup> Applications Domains

### Meter Data Concentrator

Native integration of Data-concentrator to gather Smart Meters data via PLC and RF streams

### LV Grid Monitoring

Asset health and performance monitoring from transformer up to LV feeders through IoT sensors

### Remote Control

Remote commands to control the MV and LV networks and the system performance on the edge, allowing a constant update of the topology integrity and the recording of logs, events and measures

### Automation

Multifeeder MV protection and control, automated real-time fault detection and service restoration

### DERs Observability and Control

Granular monitoring of measurements of electrical equipment and DERs as well as remote load management to increase grid hosting capacity

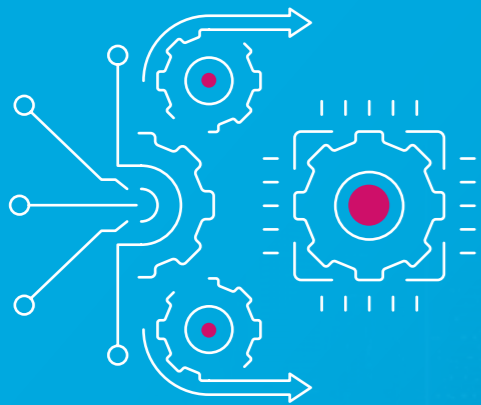
### Communication

Multiprotocol communication HUB leveraging on embedded virtual Modem, switch and Router



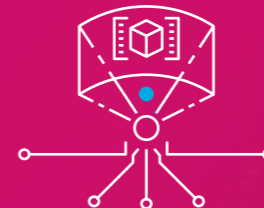
# Distributing intelligence at the edge unlocks new potential for grid operations

## Edge Intelligence



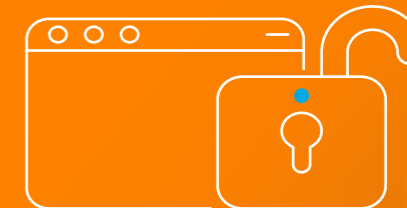
QEd's distributed computational capabilities enable to extend the typical centralized systems functions to run operations closer to the sources of data in near real time. This is particularly relevant when it comes to manage grid observability and DER integration .

## Virtualization



QEd's virtualization technology enables increasing functionalities without adding new devices. The traditional equipment of your substation can now be digitalized into an edge platform through virtual apps, cutting down installation space and costs, as well as optimizing maintenance, logistics and safety.

## Open platform



The QEd leverages on an open platform, which allows the DSO to adopt the applications included from the first installation, to purchase new applications over time, as well as to develop customized applications based on current and future needs.

# QEd Accessories

## Remote I/Os units

QEd ecosystem relies on external I/Os modules to extend the number of digital inputs and outputs while enabling a perfect interoperability with third parties electrical equipment (MV switchgears, external RTU, etc). Furthermore a special I/Os module has been designed to connect QEd with Enel-like MV equipment.

## Remote Merger Units

Merging units with embedded I/Os are part of the QEd ecosystem providing unmatched flexibility for real-time measurements acquisition from different MV LPITs (Low Power Instrument Transformers) including the Gridspertise Smart Termination sensors.



## Power Supply Battery Charger (PSBC)

Is the QEd module enabling batteries charging and managing the supply switch in case of loss of primary voltage source; PSBC also provide the integration with local PV panel and micro wind turbine to supply QEd Ecosystem with green energy.

## Environment Module

This module allows QEd to gather environmental data (like temperature, humidity, flooding and ozone) and electrical parameter from MV/LV transformer (including internal temperature and current) generating a mathematical model to get an accurate estimation of its wear out.

# Edge Beat

A cutting-edge Remote Asset Management Platform to enhance operational efficiency and reduce OPEX associated with grid management. With EdgeBeat DSOs can conveniently engage with all QEds installed within their grids.

Key functionalities provided by the EdgeBeat platform include:

Status monitoring and diagnostic alarm/event tracking.



Visualization of installed applications providing valuable insights regarding their deployment.

Remote application management ensuring seamless control over the software environment.

Downloading new application versions ensuring access to the most up-to-date functionalities and features.

Hot Back-up for the cloud-based download of complete machine parameterization, minimizing downtime, and improving overall system resilience.

EdgeBeat empowers DSOs to remotely interact with QEds, providing comprehensive monitoring, application management, and backup capabilities.

# Join our Co-Creation Program!

Gridspertise has launched a Co-Creation Program to collaborate with pioneering DSO customers and other players from the network ecosystem with the aim to develop new applications and enrich QEd functionalities.

Are you a DSO, an App developer or a Hardware manufacturer interested in our co-creation program?

Join us!



Are you ready  
for the electric future?

[www.gridspertise.com](http://www.gridspertise.com)



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