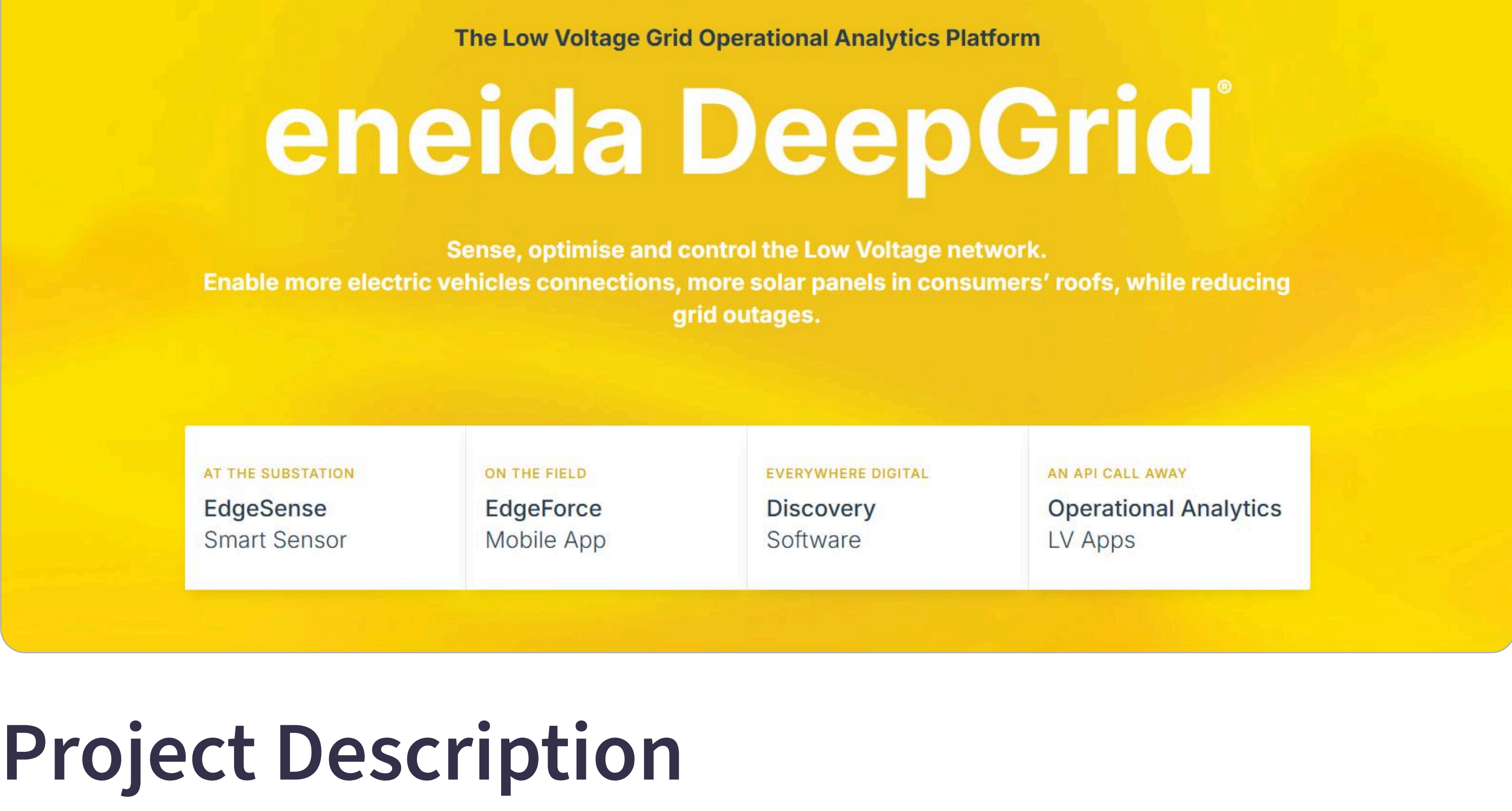


How We Modernized Eneida's Smart Grid IoT Architecture with Hybrid Cloud

Eneida DeepGrid® is an operational analytics platform for low-voltage grids. It supports neighborhoods aiming for zero emissions by providing operators with real-time insights and control over local LV networks.

EdgeSense smart sensors—compact IoT devices placed in substations and on poles—capture live data on voltage, current, capacity, and faults, then send this information to the analytics platform. It analyzes the network so operators can sense, optimize, and control the grid.

Thanks to this setup, more electric vehicle chargers and rooftop solar systems can be added without costly upgrades. Outages become less common, and each neighborhood gets closer to reaching zero emissions.

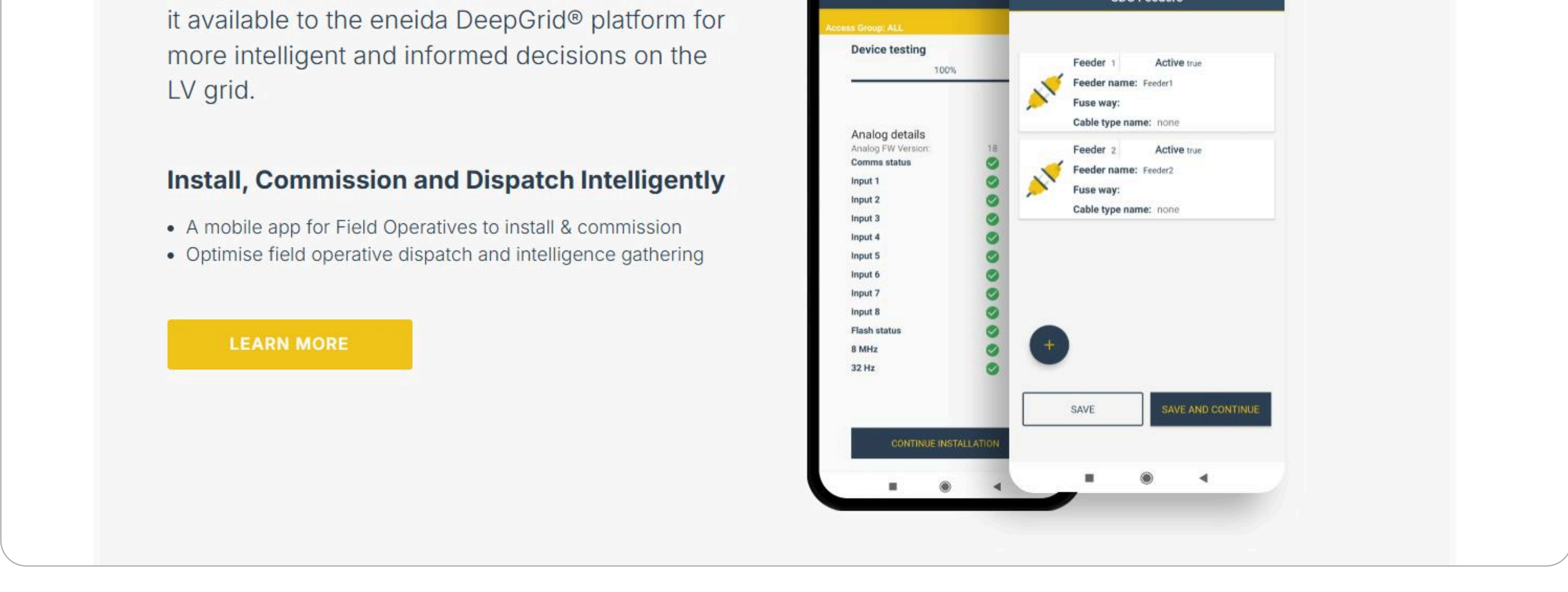


Project Description

Previously, each Eneida's customer ran its own instance of the platform and managed it on their side. Our client decided to switch to a central system, where customers can access it on a subscription basis.

At first, our client was working with an AWS/EKS setup, but they found it to be too expensive and not powerful enough to handle their needs.





We stepped in to design a centrally managed platform that gives the business a clear, subscription-based path forward. It needed to be both budget-friendly and robust enough to process massive streams of sensor data.



Provided Services

DevOps services	Cloud adoption
<ul style="list-style-type: none">Infrastructure and architecture designCI/CD automation	<ul style="list-style-type: none">Cloud migration services
Kubernetes managed services	
<ul style="list-style-type: none">Efficient scalingCost-savingsFaster deployments	

Work agenda

Client
 Eneida DeepGrid® is an operational analytics platform for low-voltage grids
Location
 Portugal
Technical team
 2 DevOps Engineers
CTO
Project Manager
Project timeframe
 September 2023 - June 2024

The Main Project Challenge

01 Some customers operate in countries with strict data-residency rules. This means all customer information has to stay within the country's borders, whether it's stored, processed, backed up, or recovered. Practically, this pushes the architecture toward separate, country-specific deployments.

Solutions

	1. Cost-first planning (FinOps) We tested several regions and providers and evaluated how the price compares to performance. Based on this, we created a plan for deployment and ongoing monthly costs, aiming to coordinate different regions and providers to work together while keeping expenses as low as reasonably possible.
	2. Hybrid Kubernetes setup We set up a hybrid Kubernetes environment, with the master node hosted on Microsoft Azure and worker nodes running on Hetzner's bare-metal servers. This approach simplifies control on Azure and shifts the heavy workload to fast, affordable hardware. In addition, we chose Hetzner for Europe because of the data centers located within the EU, which meets European clients' data requirements.
	3. Smoother CI/CD We improved the CI/CD process by simplifying build and deployment workflows and reducing manual steps to make releases more consistent and repeatable.
	4. Monitoring We implemented monitoring with the kube-prometheus-stack to track metrics and send alerts, ensuring teams can assess system health in real time.
	5. Centralized logging We deployed Loki combined with Promtail to gather and query logs.
	6. Knowledge transfer We provided training sessions and hands-on workshops so that our client's engineers can independently run, monitor, and enhance the platform.

Results

We replaced a mix of customer-managed setups with a unified, centrally managed platform. This simplifies daily operations, reduces costs, and provides better performance. Our hybrid architecture design offers a great balance of price and performance for Europe and covers data residency requirements.

The platform is already configured to support country-specific deployments and can easily handle different subscription options.