GSE and Blaze reform Georgian electricity market with Red Hat

GSE

Headquarters

Tbilisi, Georgia

Industry

Energy

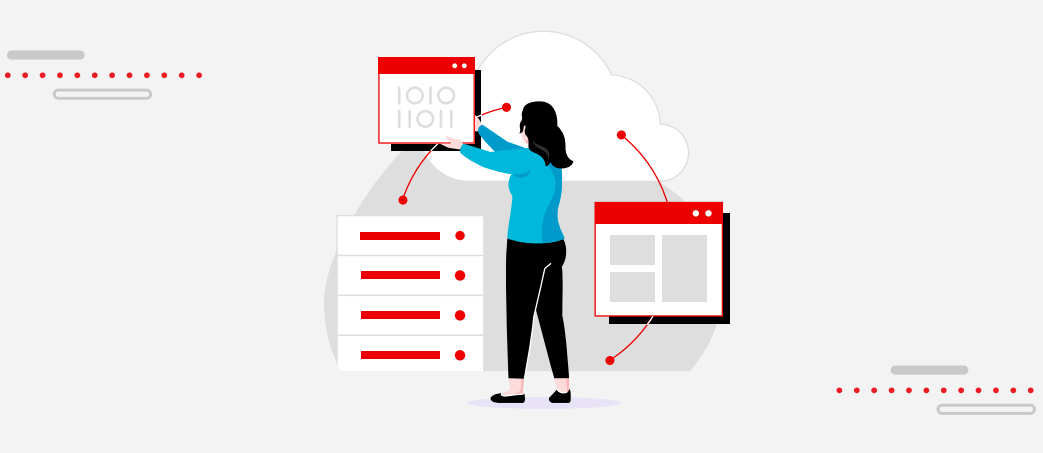
Size

1,400 employees

"Our legacy setup wasn't scalable and couldn't adapt to changing requirements. With Red Hat and Blaze, we've brought the biggest players in Georgia's energy market together on one platform and given them greater visibility into the electricity network."

Zviad Gachechiladze
Director of JSC Georgian State Electrosystem of Organized Markets Development and Electricity Accounting, Georgian State Electrosystem

Georgian State Electrosystem (GSE) is responsible for coordinating the country's electricity system and balancing market. In response to market reforms, it needed to make it easier for new participants to operate, while working toward becoming a certified European transmission system operator itself. The company partnered with Blaze—a subsidiary of Red Hat partner Orient Logic—to launch the Electricity Market Participants (EMP) platform, a fully regulated one-stop shop that unifies the complex systems and real-time data required to operate in the energy market. Built on Red Hat OpenShift Platform Plus and using Red Hat Application Foundations to streamline integrations, the EMP platform is the backbone that supports the modernization of the electricity market.



Software and services

Red Hat® OpenShift® Platform Plus

Red Hat OpenShift Data Foundation

Red Hat Quay

Red Hat Application Foundations

Streams for Apache Kafka (formerly Red Hat AMQ Streams)

Partner resources

Blaze (a subsidiary of Orient Logic)

Benefits

- Delivered real-time insights
- Improved the customer experience with self-service
- Automated development processes and adopted DevSecOps

"We've built our business around helping companies like GSE to modernize operations, automate paper processes, and become more agile. With Red Hat technologies, we can develop solutions that make life easier for real people while improving efficiency."

Merab Gogolauri
Director, Blaze

Responding to market reforms and EU regulations

Georgian State Electrosystem (GSE) owns and operates 6,500km of electricity lines and 93 substations across Georgia, which borders Eastern Europe and West Asia. The state-owned company is the electricity transmission system operator (TSO) responsible for coordinating the country's power system and balancing market, which involves balancing supply and demand in real time.

GSE also provides data and services to market participants, i.e. businesses trading in the wholesale energy market such as energy producers, suppliers, traders, and system operators. And as the state's primary TSO, it's responsible for implementing the policies and guidelines issued by government and industry regulators.

"There are major reforms happening in the energy sector. We need to accommodate new players on the market to increase competition, and to expand into Europe's energy market we must become a certified European TSO and comply with EU regulations," said Zviad Gachechiladze, Director of JSC Georgian State Electrosystem of Organized Markets Development and Electricity Accounting, GSE. "This created a new demand for real-time data, which caused a significant shift in the way we operate. For example, we used to capture electricity meter data monthly to calculate settlements, but to satisfy market participants, regulators, and the balancing market, we need to track usage hourly."

Scaling a process 720-fold, from monthly to hourly, presents a challenge—especially when data is captured from multiple disconnected systems, calculations are manual, and reports are tracked in spreadsheets. To unlock greater transparency, GSE needed to integrate systems, eliminate manual processes, and increase data accuracy.

"We didn't have a central platform to address these challenges, and that was causing a bottleneck in our transformation," said Gachechiladze. "The market can't operate efficiently if we can't manage settlements and balancing quickly."

GSE partnered with Blaze, the software development subsidiary of Orient Logic, to design the EMP platform, a one-stop shop that aggregates data from multiple systems, digitizes processes, and gives participants relevant insights through a simple interface.

"We designed the EMP platform around the user experience, which meant mapping the systems we needed to integrate, building new functionality to plug any gaps, and listening to stakeholder feedback and concerns," said Merab Gogolauri, Director, Blaze. "When we'd defined our requirements, we started looking for an on-premise application platform—a government requirement—with the security and functionality to innovate at speed."

Building a custom all-in-one platform for market participants

Blaze created a request for proposal (RFP) for a platform to support a modern, microservices approach to development. The team also needed to follow Georgia State's general procurement framework to ensure that the solution met its security requirements.

"We've used Red Hat OpenShift for internal development and customer projects since day one at Orient Logic, so it was the obvious choice," said Gogolauri. "It's a reliable platform that streamlines DevSecOps practices, reduces operational complexity, and accelerates time to market. Its integration with continuous integration and continuous delivery (CI/CD) tools, Kubernetes orchestration, and built-in security perfectly aligned with our needs for agility, scalability, and compliance. It's also easy to write and test new code, and deploy it into a test environment with just one click and no manual intervention from an engineer."

On behalf of GSE, Blaze selected Red Hat OpenShift Platform Plus, a unified solution to build, modernize, and deploy applications at scale. This became the foundation of the EMP platform. The team used Red Hat Application Foundations, a suite of developer tools, including API management, data streaming, and enterprise integration, to connect the billing system, enterprise resource planning (ERP), and market management systems.

To allow real-time data flows and track data changes, Blaze used Red Hat Application Foundations' data streaming tools, including Debezium and Streams for Apache Kafka—Red Hat's enterprise distribution of Apache Kafka—to implement change data capture (CDC) mechanisms. This allowed Blaze to detect and stream updates from source systems directly into the EMP platform, delivering timely insights without overloading the infrastructure. By standardizing on Red Hat's integrated streaming and messaging ecosystem, Blaze implemented real-time, secure, and scalable data synchronization across critical services.

The team also used Red Hat Advanced Cluster Security for Kubernetes, which protects containerized workloads hosted on GSE's virtual machines. This allowed it to integrate security throughout the development lifecycle and to enforce policies, identify vulnerabilities early, and continuously monitor container workloads. Blaze took a shift-left approach to apply security to code, images, and configuration before deployment while establishing real-time threat detections and responses across Red Hat OpenShift clusters.

During the development of the EMP platform, Blaze used the full suite of Red Hat OpenShift Platform Plus components, including Red Hat Advanced Cluster Management for Kubernetes, which centralizes app lifecycle management, governance, and policy application. Red Hat OpenShift Data Foundation provides software-defined storage for GSE's containers, and Red Hat Quay acts as the container image registry and content repository.

The EMP platform also uses technologies from Red Hat partner, IBM. Gogolauri estimates that the business processing engine, IBM Process Automation Manager Open Edition, saved between 4 and 5 months of development time, while IBM Instana Observability provides comprehensive application monitoring. The team also used Red Hat OpenShift's built-in automation to deploy new releases in one click and speed up software development processes, backups, and security checks.

From a user perspective, when companies register on the EMP platform, they are assigned to a balancing party or become one themselves. They then submit information to confirm their connection types, place points, and details of their end customers. Companies can also register trading portfolios on the power exchange and compare the market. A huge amount of information is collected and aggregated by the EMP platform, which helps to calculate settlements, balance the market, and assess whether participants are meeting their obligations to customers.

"The EMP platform has gone live. We'll continue to maintain it and launch new releases on behalf of GSE," said Gogolauri. "Red Hat is an innovative company; there's new functionality with every release. That inspires us to stay ahead of the curve, so we'll always be looking for ways to improve the EMP platform."

Streamlining industry reforms

Delivered real-time insights

The EMP platform collates vast quantities of real-time data from across the electricity network. Data from market participants, electricity suppliers, generators, traders, TSOs, and distribution system operators in Georgia fuels complex calculations, speeds up settlements, and helps GSE to balance the market. It allows for the buying, selling, import, and export of energy across the domestic network, and helps to track consumption and settlements while giving auditors and regulators real-time visibility of metrics around energy prices and usage. This helps to make the electricity market more competitive, benefiting the households and businesses that rely on affordable energy, and is a crucial requirement to becoming a certified European TSO.

"The EMP platform applies logic to data to generate reports and insights for market participants and regulators. There are lots of complex calculations involved in running the electricity market," said Gachechiladze.

For example, in the event of a grid failure, system operators can trigger a process to adjust settlements to account for outages without resorting to complex manual calculations.

"Our legacy setup wasn't scalable and couldn't adapt to changing requirements. Now, we can tap into real-time data to monitor electricity production, consumption, and fulfillment of schedules," said Gachechiladze. "Electricity production is incredibly dynamic, so accurate information is everything. The EMP platform makes data transparent and gives participants the agility they need to operate efficiently.

"With Red Hat and Blaze, we've brought the biggest players in Georgia's energy market together on a single platform and given them greater visibility into the electricity network."

Improved the customer experience with self-service

Before the EMP platform was launched, market participants complained that industry reforms were difficult to understand and implement. They struggled to use complex systems and submit schedules, and were limited to pulling monthly data. Now they have smooth workflows to guide them from registration to settlement, and everyone can get the information they need to run their businesses.

"We've unified the customer experience and provided a user-friendly, one-stop shop for all their needs," said Gachechiladze. "The EMP platform is straightforward and has a low learning curve, so market participants can do more without increasing headcount or recruiting for specialist skills."

Automated development processes and adopted DevSecOps

By partnering with the seasoned Red Hat experts at Blaze, GSE benefits from faster development times, resilient systems built on Red Hat OpenShift, effortless integrations between multiple systems, and harmonized data. Blaze also brings DevSecOps expertise to embed security throughout the development lifecycle and give GSE the flexibility to continuously adapt and evolve the EMP platform.

"We've built our business around helping companies like GSE to modernize operations, automate paper processes, and become more agile," said Gogolauri. "With Red Hat technologies, we can develop solutions that make life easier for real people while improving efficiency."

About Orient Logic

Orient Logic is a leading IT company, operating in the Georgian market since 1995. Its mission is to create better IT ecosystems by providing technical support for the development of businesses. Its core activities include banking, government and strategic business.

About Blaze

Blaze is the software development subsidiary of Orient Logic. It offers clients technological solutions including web application development, legacy systems modernization, and cloud infrastructure.

Taking the EMP platform to the global market

GSE has established itself as a true pioneer of the electricity sector, and with Red Hat and Blaze it's ideally positioned to thrive as the market continues to evolve.

"Not only have we adapted to manage reforms and comply with EU regulations, but we've also created something we're really proud of. The EMP platform takes the complexity out of extremely complicated processes and eliminates manual, error-prone tasks," said Gachechiladze. "The project has attracted international interest, and we're looking at how we could offer it as a package to other countries to accelerate the shift towards a fairer, more stable, and efficient energy market."

About Georgian State Electrosystem

Georgian State Electrosystem (GSE) is the country's sole electricity transmission system operator. The state-owned company operates 6,500km of transmission lines and 93 substations from its national dispatch center. Headquartered in Tbilisi, it employs around 1,400 people.

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