Smart Energy Monitoring System

User Guide

This IoT project enables real-time monitoring and optimization of energy consumption in GPU-based crypto-mining facilities. It includes an intuitive web and mobile application for operators to:

- Monitor energy consumption data.
- Receive alerts for threshold violations or anomalies.
- Analyze consumption history and predict future usage with machine learning algorithms

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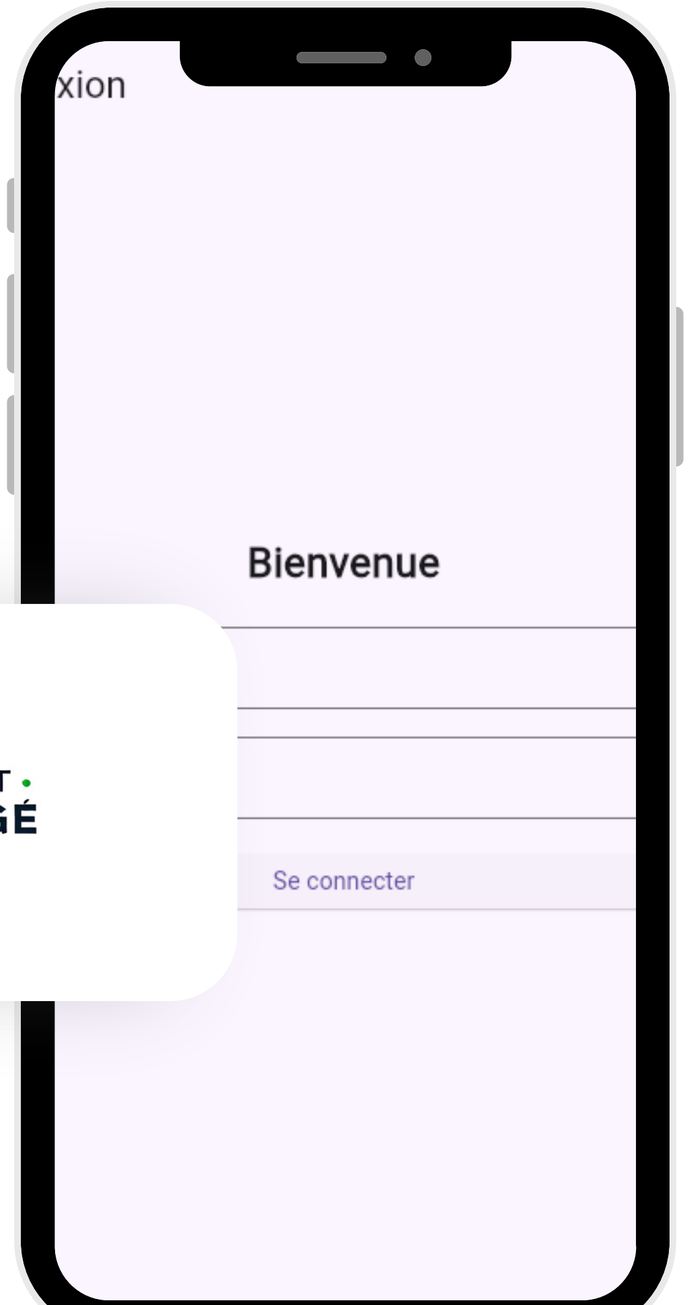

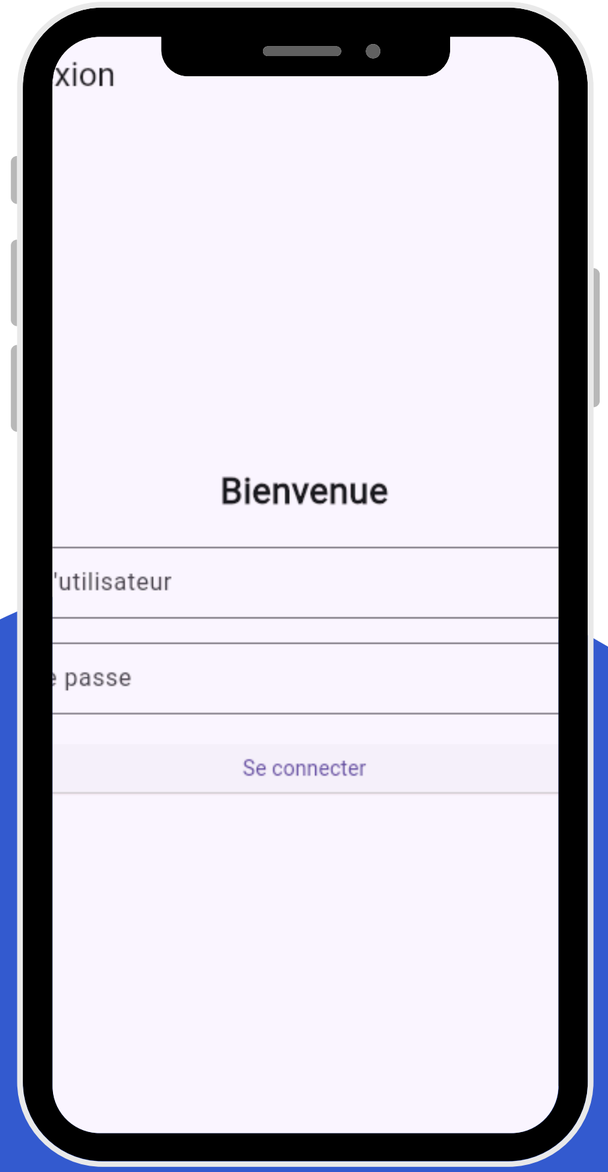

1. Mobile Application

2.1 Login Screen

- Simple login interface for quick access.
- Fields: Username and password.

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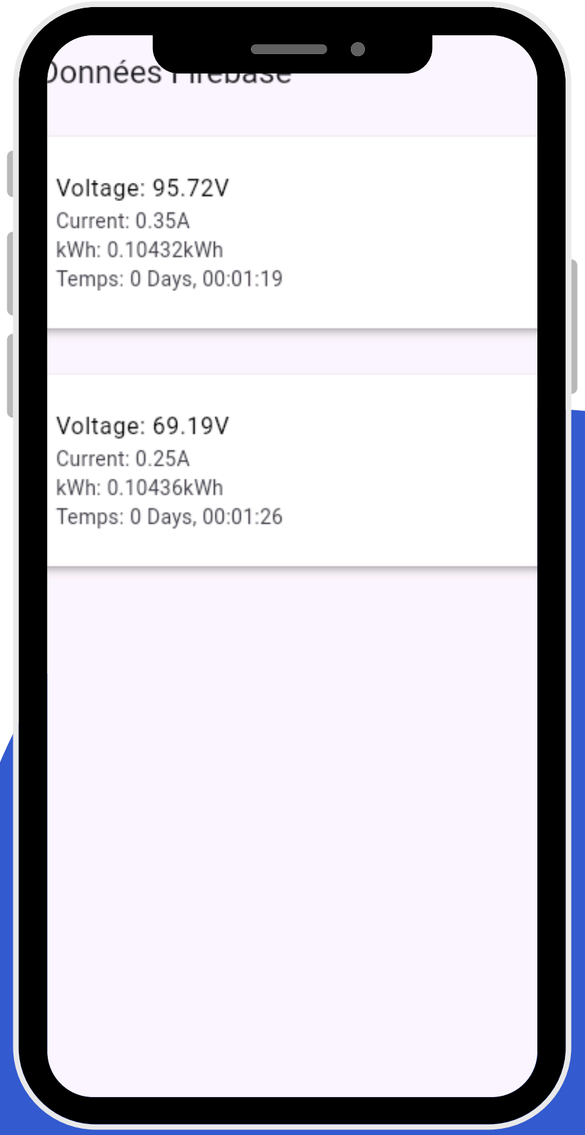
Real-Time Data Display

- Data cards show metrics like voltage, current, kWh, and elapsed time for each device.
- Green checkmarks indicate normal operational status.



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Configuring Thresholds

- Navigate to Settings to set custom voltage limits.
- Enter the desired value and save to apply changes.

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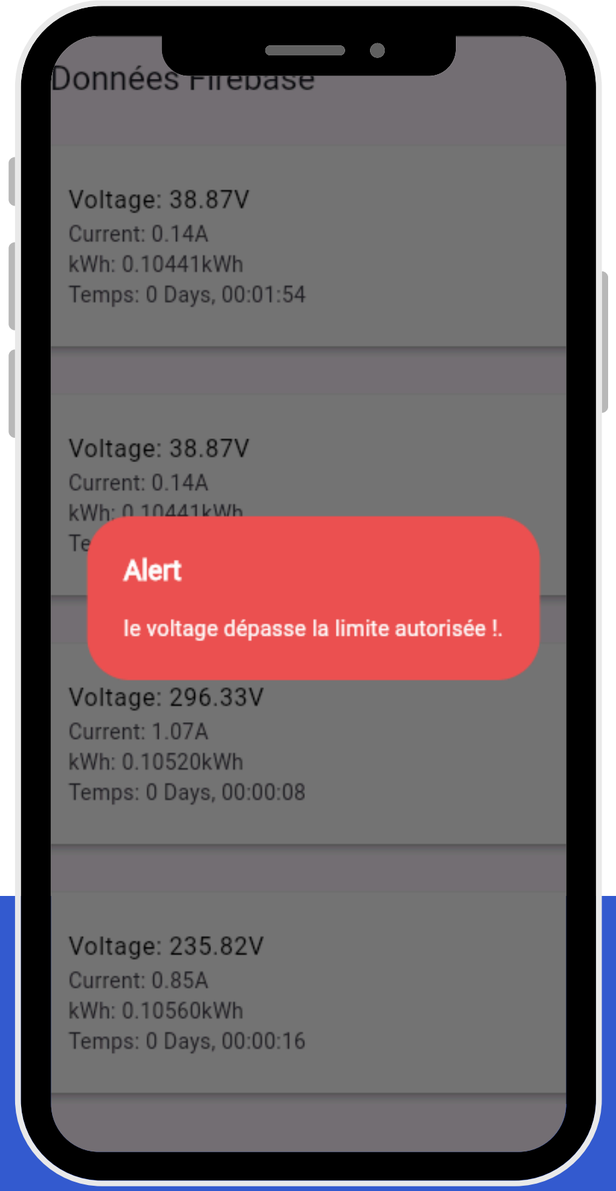

Alerts for Threshold Breaches

- The system raises an alert message in red when voltage exceeds the set limit.
- The message ensures operators are informed immediately.

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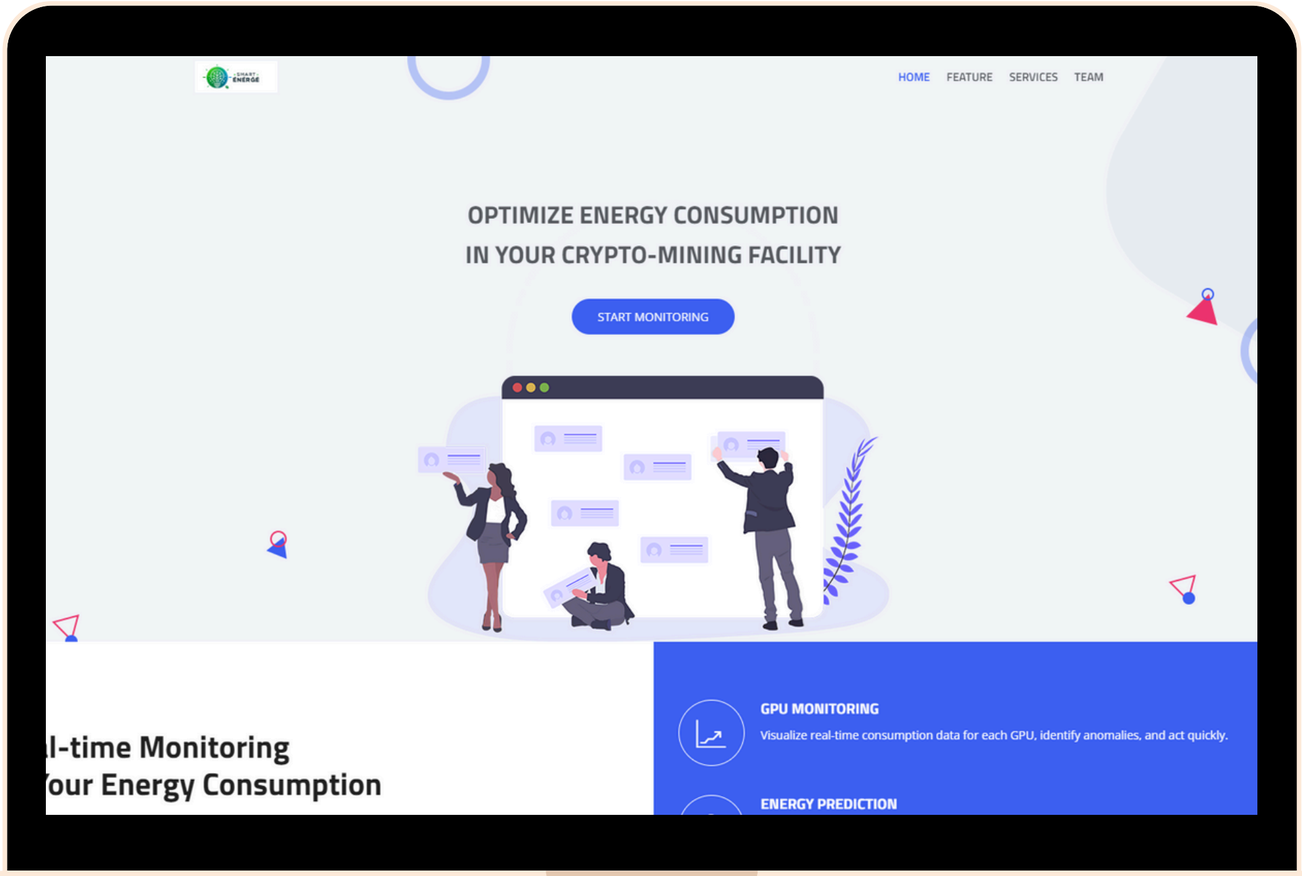


Web Application

Home Page

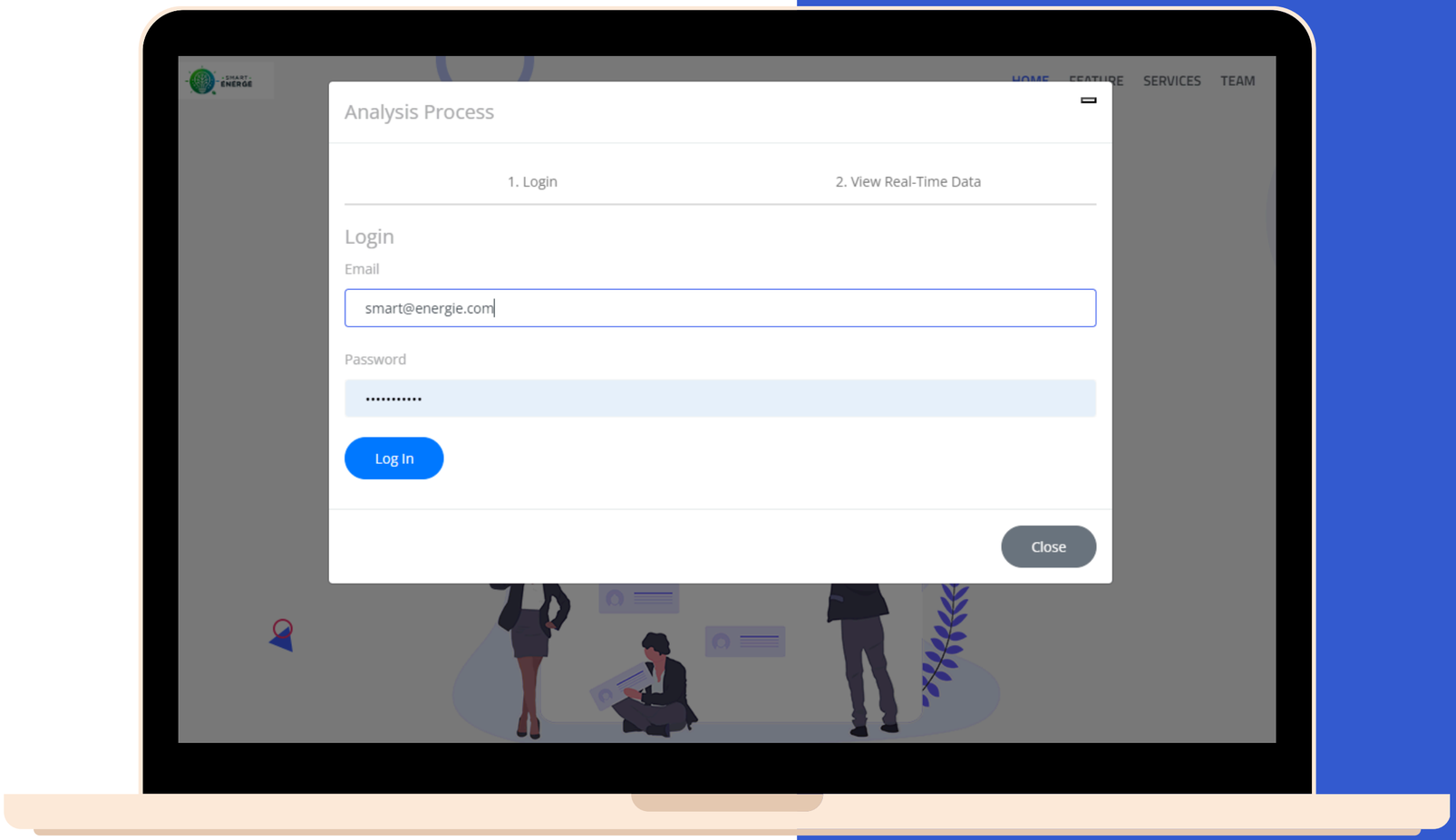
The web interface opens with a dashboard that introduces the system. Key features include:

- Start Monitoring Button: Quickly access the monitoring interface.
- Real-Time Energy Monitoring Section: Displays current data metrics such as voltage, current, and power usage.

Login Process

Users need to log in to access the monitoring features

- Fields: Enter the registered email and password.
- Action: Click Log In to proceed.
- If the credentials are incorrect, an error message will prompt for retry.

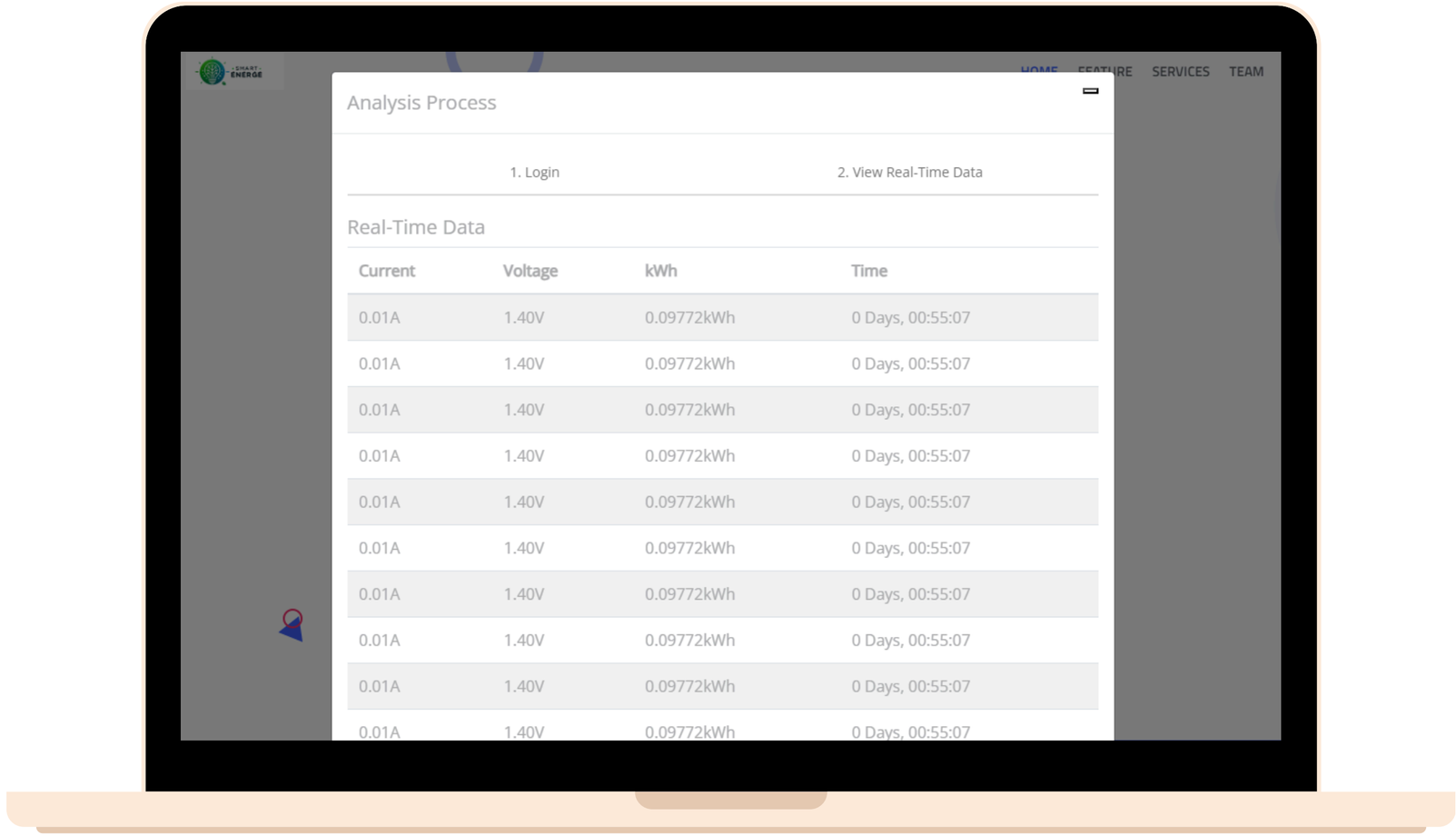


Real-Time Data Monitoring

Real-Time Data Monitoring

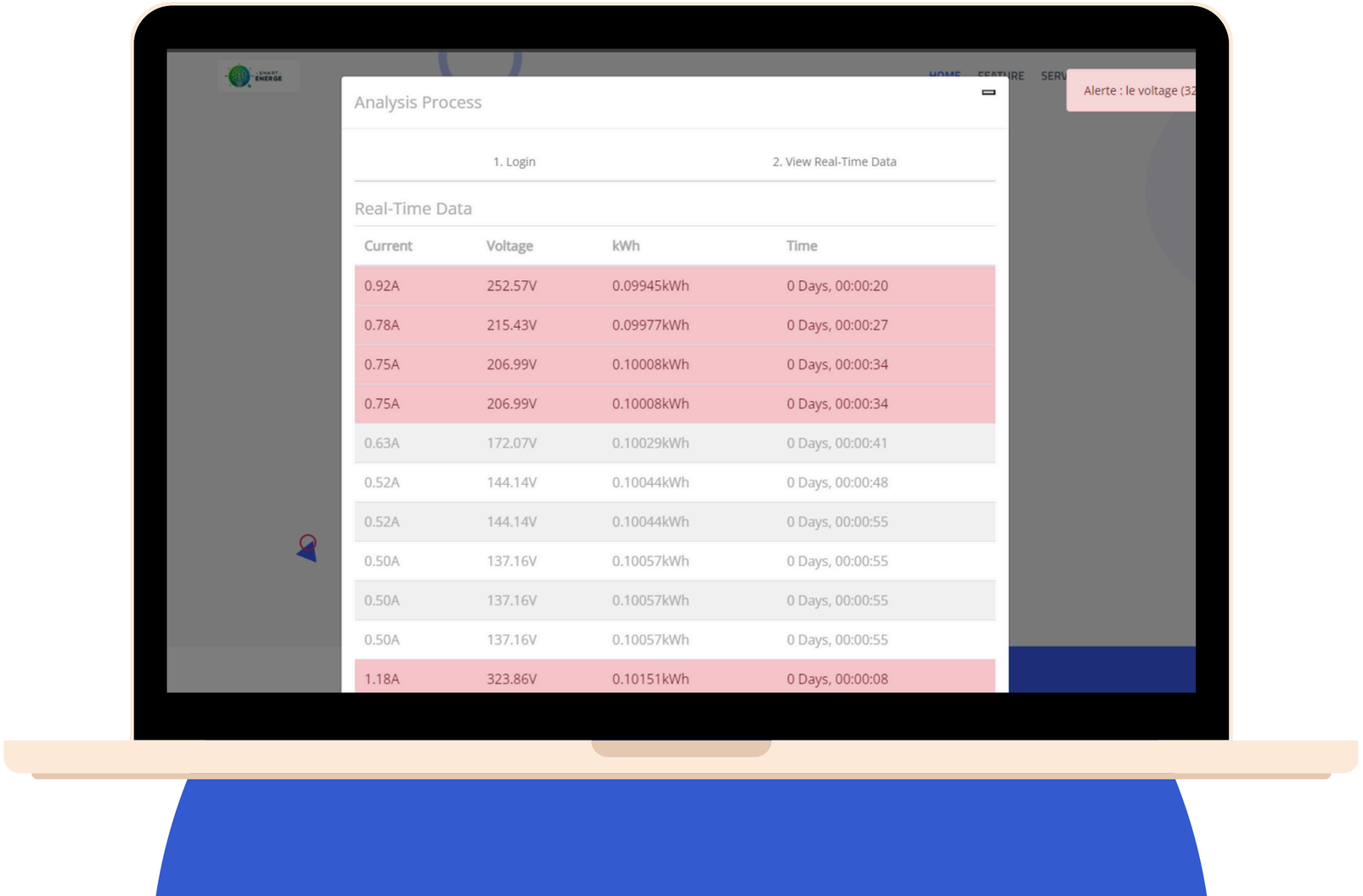
After logging in, users can:

- View current, voltage, power (kWh), and elapsed time for each device.
- Data is updated continuously to reflect real-time energy consumption.



Alert System

The application highlights rows in red if the voltage exceeds the configured threshold. A banner notification informs users of specific threshold breaches.



Key Features

1.Real-Time GPU Monitoring:

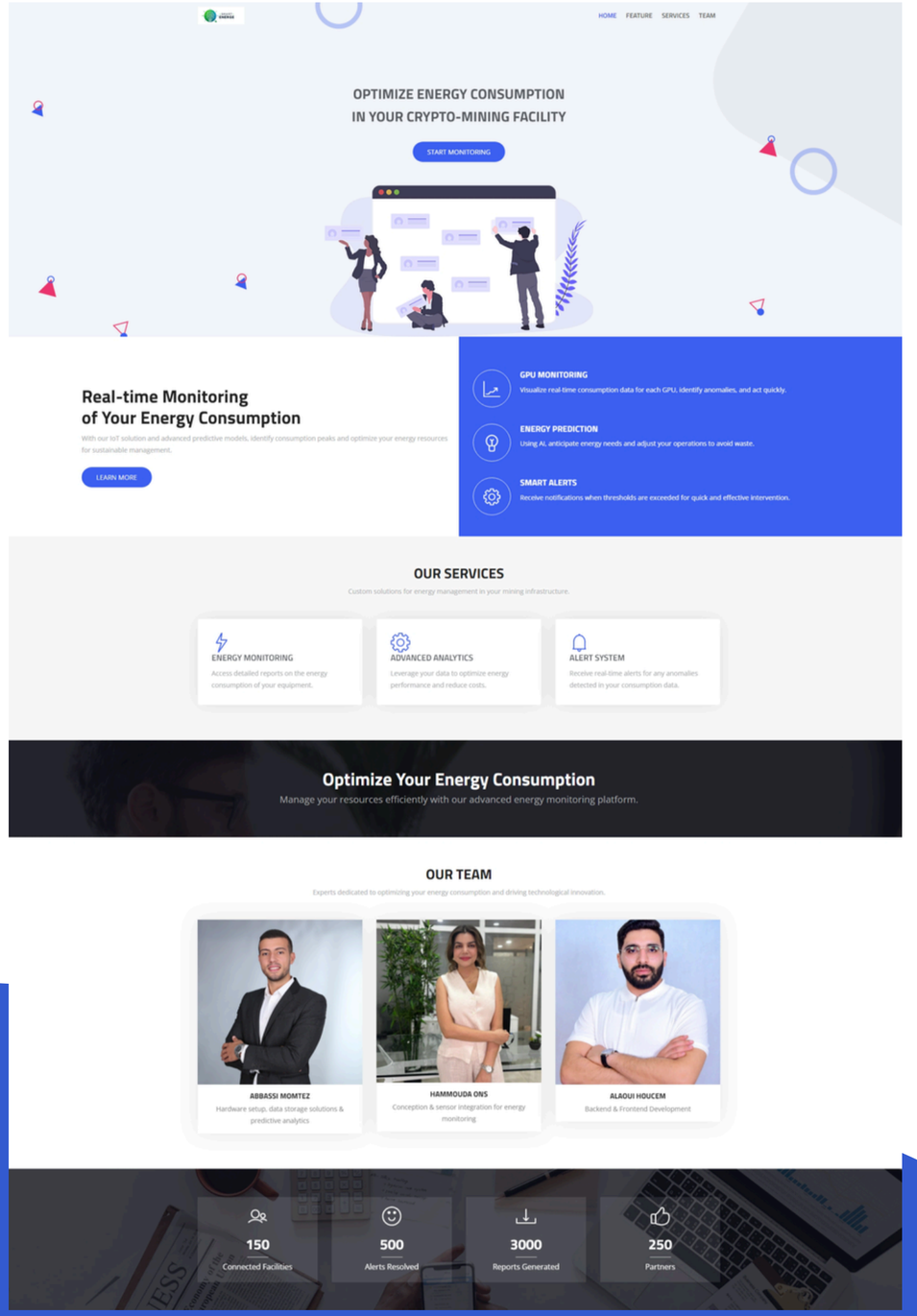
- Track power usage for individual GPUs.
- Detect anomalies instantly.

2. Energy Prediction:

- Utilize machine learning models to forecast energy consumption.
- Optimize operational efficiency.

3. Custom Threshold Alerts:

- Configure voltage thresholds.
- Receive real-time notifications for violations.



Summary

The Smart Energy Monitoring System simplifies energy management for crypto-mining facilities. Both web and mobile platforms provide real-time insights and predictive tools, helping operators enhance energy efficiency and reduce costs.
Let me know if you'd like the guide formatted further or if additional details are needed!