

## PROJECT TYPE

Internet of Things

## TECHNOLOGIES

Ruby (Ruby on Rails),  
JavaScript, Firebase,  
PostgreSQL

## DURATION

12 weeks

## METHODOLOGY

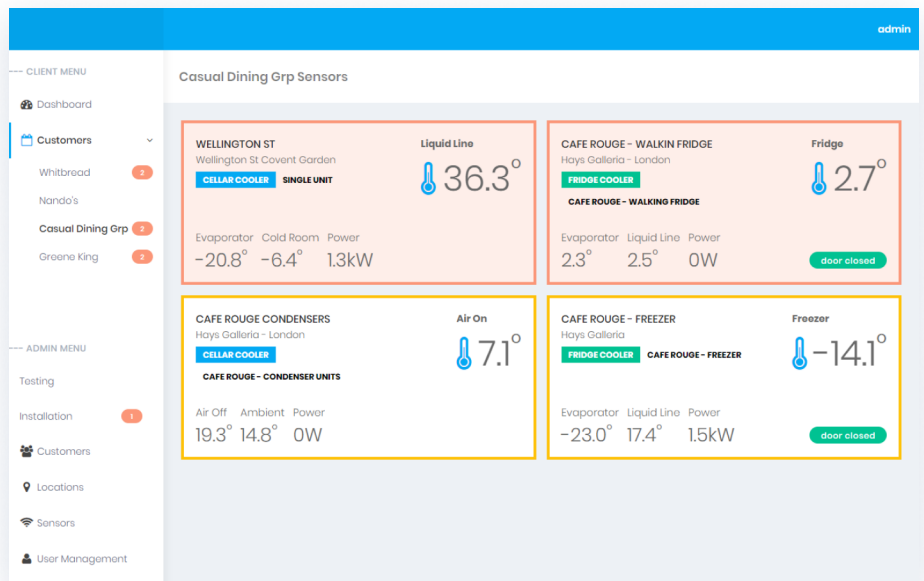
Scrum

## TEAM

1 Project Manager  
2 Senior RoR Developer

# Fridge Sensors — Internet of Things Application Development

The core of the project is an IoT solution providing HoReCa venues with a possibility to monitor the work of industrial (commercial) refrigerators online, get instant alerts on urgent issues and manage historical data.



## Business challenge

The objectives of the project set for SumatoSoft team by the Client were the following:

- ✓ to plan, design and develop an MVP (minimum viable product) version of the solution to prove the feasibility of the project to potential investors and demonstrate an effective solution to future clients;
- ✓ to implement Big Data and Machine Learning solutions;
- ✓ to integrate the new application into the ecosystem of the client's existing solutions.

By the time the client turned to SumatoSoft for software development assistance and guidance they had already developed and tested the required devices.

The major challenge of our team was to develop administrative and enduser panels, implement core features for monitoring, visualization of data (multiple indicators: temperature, electricity, door sensors, etc.), database management, and provide integration with the data source.

In addition, the Client requested introducing AI & ML algorithms for anomaly detection.

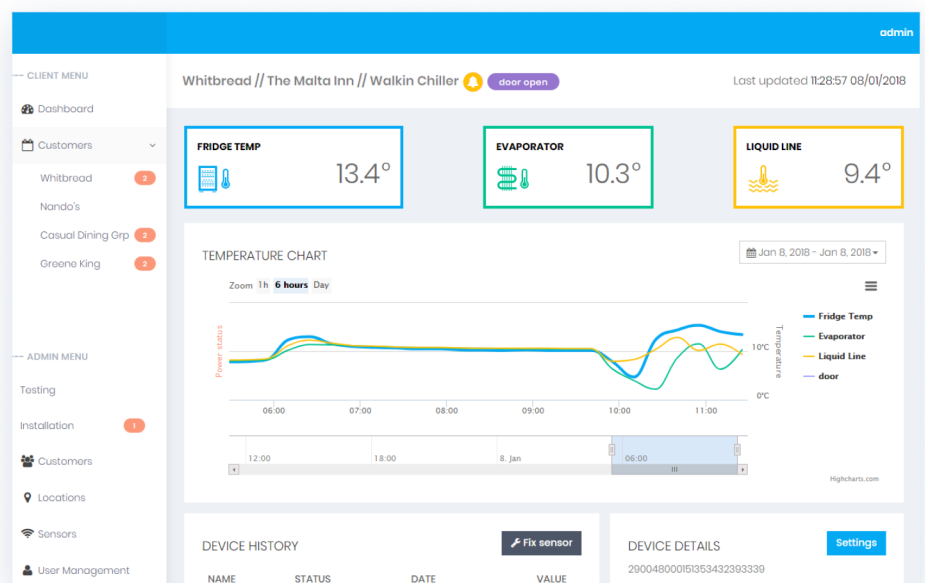
SumatoSoft team was also entrusted with connection of the IoT devices (smart sensors) to the wireless network, enabling transmission and processing of data collected by the sensors.

- ✓ Develop Administrative and End-User Panels
- ✓ Connect IoT Devices
- ✓ Implement Features for Data Transmission, Processing, Visualization and Database Management.

## Our solution

SumatoSoft created an application with main technological features, sufficient for initial commercial use and user feedback. The MVP version of the solution included:

- ✓ A tool for data gathering and systematization;
- ✓ A web panel for service administration and sensors setup;
- ✓ A web panel for end users.



The application incorporated a number of specific features, such as:

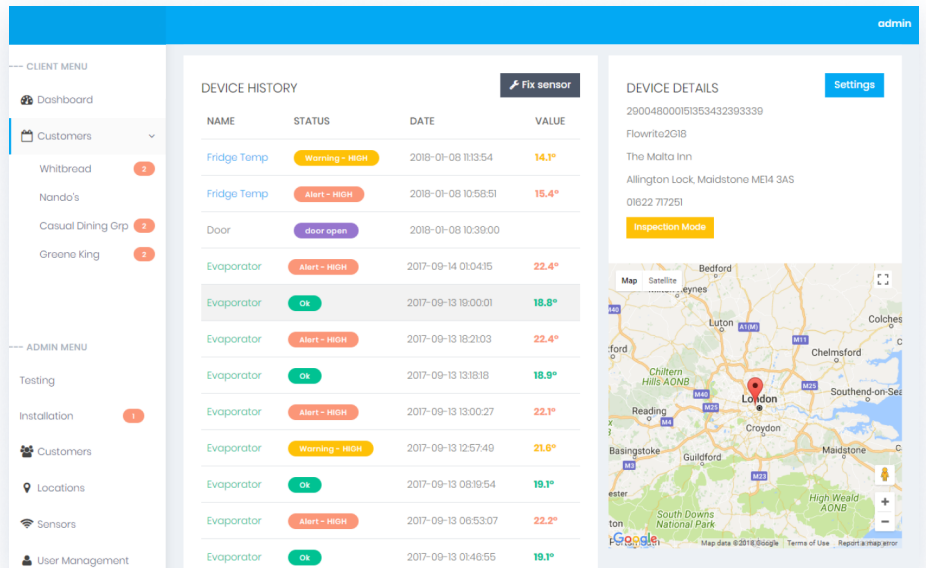
- ✓ Robust integration with an external data source (Firebase);
- ✓ Integration with JS library for extensive data visualization;
- ✓ A custom system for roles administration with extended permissions management;
- ✓ Machine learning integration;
- ✓ Data visualization.

The solution developed by sumatosoft allows to:

- ✓ Monitor refrigerators in real time (condition, temperature, whether doors are closed);
- ✓ Detect anomalies and get instant alerts in case of emergencies;
- ✓ Be notified when refrigerators need to be repaired;
- ✓ Access and control historical data and analyze statistics introduced in intuitive and interactive dashboards (track condition over time).

## Results & benefits

The Client succeeded in testing the business idea: the solution was presented to potential customers, received positive feedback and approval, which allowed the client to move forward with the project development. What is more, major existing customers of the Client have shown an interest in the Product and placed orders.



The screenshot displays the SumatoSoft dashboard interface. On the left, there is a navigation menu with sections for 'CLIENT MENU' (Dashboard, Customers) and 'ADMIN MENU' (Testing, Installation, Customers, Locations, Sensors, User Management). The main content area is divided into three panels:

- DEVICE HISTORY:** A table listing recent sensor readings.
 

NAME	STATUS	DATE	VALUE
Fridge Temp	Warning - HIGH	2018-01-08 11:13:54	14.1°
Fridge Temp	Alert - HIGH	2018-01-08 10:58:51	15.4°
Door	door open	2018-01-08 10:39:00	
Evaporator	Alert - HIGH	2017-09-14 01:04:15	22.4°
Evaporator	OK	2017-09-13 19:00:01	18.8°
Evaporator	Alert - HIGH	2017-09-13 18:21:03	22.4°
Evaporator	OK	2017-09-13 13:18:18	18.9°
Evaporator	Alert - HIGH	2017-09-13 13:00:27	22.1°
Evaporator	Warning - HIGH	2017-09-13 12:57:49	21.6°
Evaporator	OK	2017-09-13 08:19:54	19.1°
Evaporator	Alert - HIGH	2017-09-13 06:53:07	22.2°
Evaporator	OK	2017-09-13 01:48:55	19.1°
- DEVICE DETAILS:** Shows information for a specific device (ID: 20004800015353432393339), including its name (Flowrite2G18), location (The Malta Inn, Allington Lock, Maidstone ME14 3AS), and a 'Fix sensor' button.
- Map:** A Google Maps view showing the location of the device in Maidstone, Kent, UK.