



ELIFTECH

Case study

SenseQ – An Industrial IoT Solution built on an AWS Serverless and AWS IoT

#IIoT

#sensors

#AWSIoT

#AWSGreengrass

SenseQ—An IIoT solution that mines the hidden potential of connected industrial equipment through a powerful web dashboard that is accessible anytime, anywhere and on any device.

About the Client

IoT Systems is an Industrial IoT company, based in Cambridge, Massachusetts, USA, that is focused on integrating the power of cloud-connected industrial systems with the latest automation technologies.

Challenge

IoT Systems needed a dedicated team of developers to support its software development projects as they built an AWS IoT Solution. Eliftech was awarded the development contract after a thorough review of the software developers on the Eliftech team. Having a strong AWS infrastructure team we first built the AWS BackEnd for the Provisioning service API, which enables the AWS components to connect new sensors.

After proving ourselves to the customer, we focused on the development of the dashboards that deliver business value to the customer. The SenseQ dashboard was customized to the demanding needs of the Operations team at an industrial customer. The hands-on team that supports and maintains mission-critical industrial equipment every day.

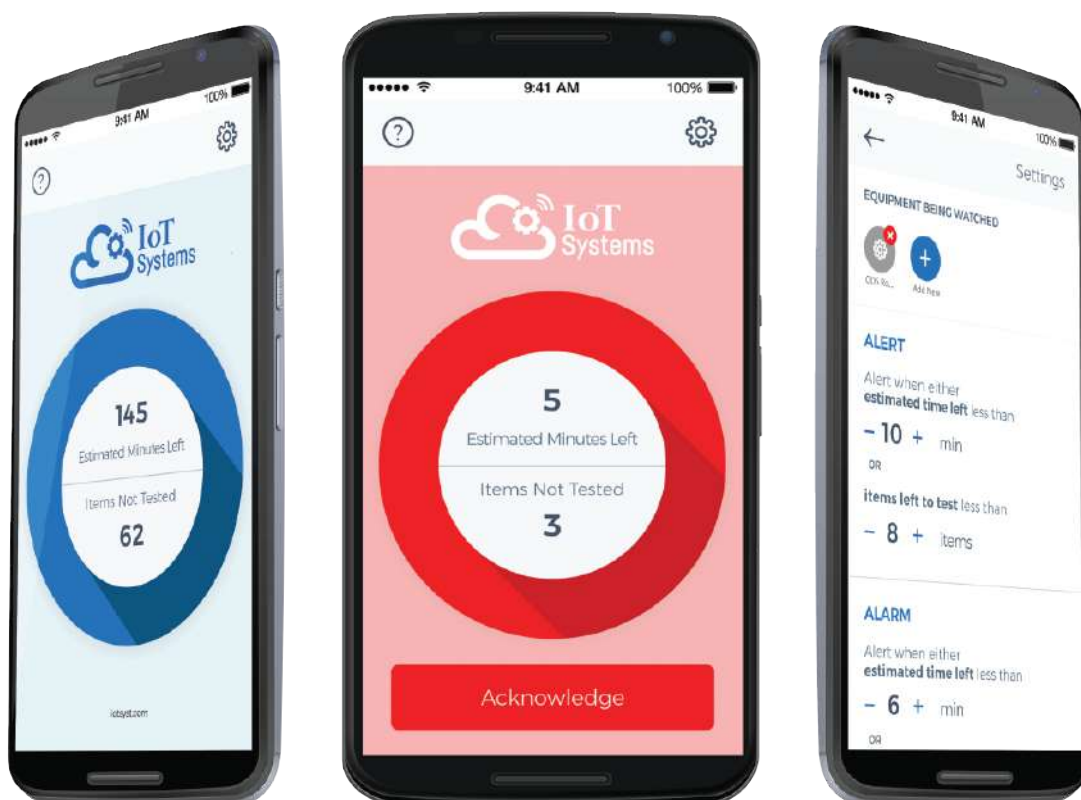
Results

The Provisioning service API was based on AWS SDKs and CloudFormation templates, so it can easily incorporate new sensors to the system.

The dashboard application was focused on supporting mobility for the equipment operators. It was built with React Native and supports both Android and iOS. The equipment owners and operators required anywhere, anytime access on smartphones, tablets and PCs. The dashboard built has an intuitive simple to configure interface for defining data thresholds, enabling the equipment operators to receive alarms via in-dashboard notifications, via email, via SMS.

At the edge of the IoT solution, ElifTech developed and fine-tuned AWS Greengrass. Greengrass extends AWS functionality to Internet of Things (IoT) devices, allowing a business to perform data collection and analysis at the edge.

ElifTech owned responsibility for the development of the edge software that communicates with AWS IoT using the MQTT protocol; AWS Device Shadow and AWS IoT Greengrass Lambda functions developed. The edge software stack is a hardened mission-critical solution; that is required to collect sensor data while connected to and disconnected from the AWS cloud.



Features

The ElifTech team developed the following features for the Provisioning service API:

- exposure via the AWS API Gateway;
- storing credentials and initial config in a newly created Amazon S3 bucket folder (after that device can download the configurations, it begins working);
- configuration of AWS IoT to conduct data transactions between Gateway and the chosen supported sensor models.

ElifTech created a custom solution for the manufacture of smartphone motherboards.

The solution had the following set of features for the dashboard app to notify the equipment operator of the appropriate time to feed motherboards into an automated In-Circuit Tester (ICT) process as well as to send vital alarms:

- monitoring of the ICT, registration of the number of units waiting to be tested and the In-Circuit Tester's current 'units per hour' (UPH)
- the option to configure two levels of warnings for users—notification and urgent alarm;
- enabling users to specify MQTT topics from which the app can gather its data;
- the option to run locally if the AWS Greengrass groups have no cloud connectivity, with seamless switching from the cloud to the local network and a built-in connection indicator;
- Android and iOS support.

Technologies

AWS IoT, AWS CloudFormation, AWS Greengrass, AWS S3, AWS Incognito, AWS API Gateway, AWS IAM, AWS STS, AWS CloudFront, AWS Route 53, AWS SDK, AWS DynamoDB, AWS EC2, AWS SNS, AWS SES, AWS Elasticsearch, Go, React Native, Node.js, SensorThings API, MQTT protocol, WebSockets

Country: USA

Year: 2016-present

Link: <https://iotsyst.com/>

Services Provided

- Efficient, dedicated team
- Software project outsourcing
- Development & Operations
- Architecture consulting
- UX & UI consulting services
- Load testing

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