DISASTER TRACKER

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Software Engineering Senior Project 2014-2015

R·I·T datto

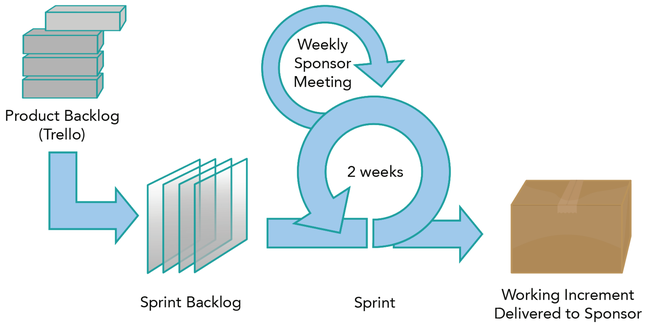
Background

Datto, Inc. is a vendor of backup, disaster recovery, and intelligent business continuity products and services. Datto prepares customers for events like power outages, floods, fires, hurricanes, tornadoes, and earthquakes.

The goal of this project is to proactively inform customers of potential natural disasters and weather phenomena. The team created a web application to view at-risk customer devices across the nation. A mobile application is available to provide customers with immediate notification of potential disasters.

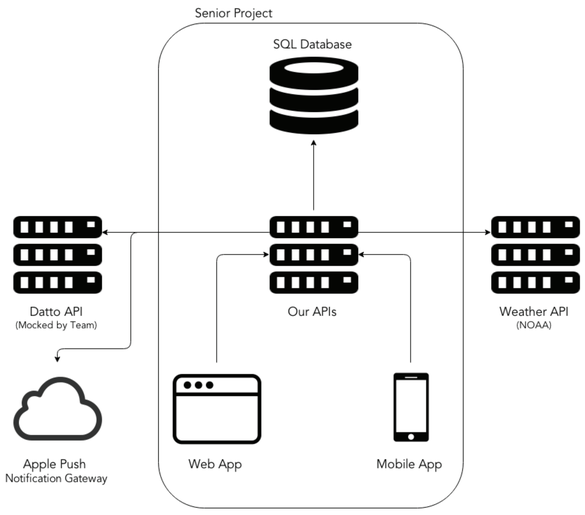
Process

Scrum with 2-week Sprints

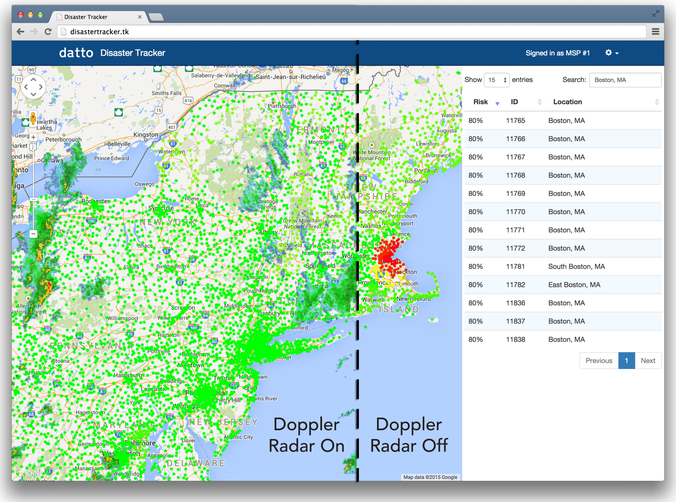


Following an agile methodology fit the sponsor's culture and allowed for close and frequent communication. Weekly meetings and constant collaboration helped define requirements early on and keep the project on track.

Architecture



High Level Architecture



Web Application

A web application was implemented for use by Datto to monitor at-risk devices across the nation.

Features include:

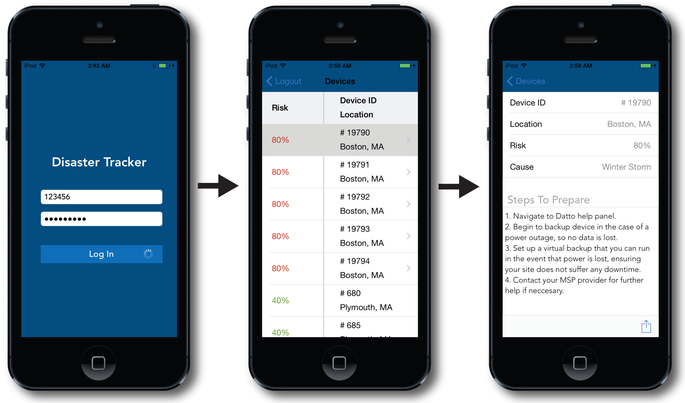
- Map display of 60k+ devices across the U.S.
- Color-coded risk indication (green to red)
- Automatic risk updates every 10 minutes
- List of devices, prioritized by risk
- Doppler weather radar overlay available
- Filter options for displayed devices
- Security through OAuth 2.0

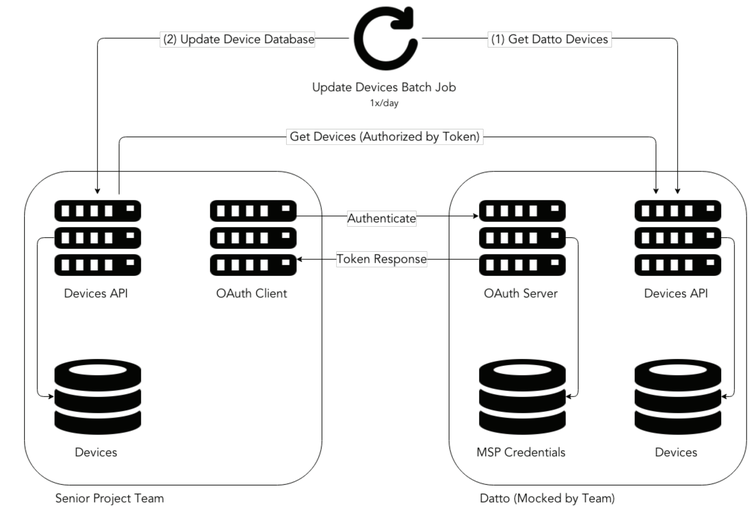
Mobile Application

An iOS application was implemented for use by Datto's customers, the Managed Service Providers (MSPs).

Features include:

- List of owned devices, sorted by risk
- Push notification alerts when devices become high risk
- List of steps to prepare for disaster recovery scenario

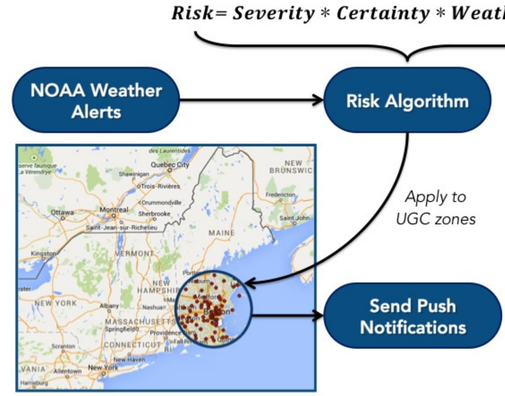




Architecture of Datto Integration

Risk Algorithm

$$Risk = Severity * Certainty * Weather\ Modifier$$



Weather modifiers were calculated using 15 years of historical weather data from NOAA and power outage data from the U.S. Department of Energy. Based on the data, the team was able to determine which weather types are most likely to cause power outages.

These modifiers allow the risk algorithm to better handle the multitude of different weather phenomena that occur each day. For example, hurricanes have a higher modifier than fog, since hurricanes are more likely to cause a power outage.

Technologies

iOS, Google Maps, OAuth, laravel, NOAA, php, Angular

As is common in most software projects, timetables do not always line up. At this time, certain required systems from Datto, including an OAuth server and an exposed API for device retrieval, are not in a completed state.

In order to minimize future integration pains, the team decided to mock the expected implementations from Datto. When the real systems are finalized, a simple redirection of the calls illustrated to the left is all that will be required.