Story

Summary

Firefighters need a way to detect forest fires before they get out of control and cause massive damage to the forest.

Story

Man-made forest fires are usually detected early and suppressed before it can spread to a large area of the forest. However, naturally caused fires are not detected immediately and can burn for hours before firefighters respond to them. Naturally caused fires are often started by lightning, so there is no way to predict when they will start. A solution is needed to detect fires when they start to reduce the damage to the environment. Firefighting companies will then be able to fight these devastating fires more efficiently and quickly.

Ron Martin

Fire Chief

"I want to prevent wildfires before they get too big to fight"

About

- 50, married, 20 years of firefighting experience
- Lives in California, where wildfires occur frequently
- Coordinates efforts with other local firefighting companies

Responsibilities

- Organizing and directing fire department
- Ensure the safety of firefighters
- Respond immediately to fires

Main Goals

- Detect wildfires and forest fires immediately
- Minimize damage on the forest and environment
- Keep crew safe

Needs

- I need a real-time solution that will alert me when a forest fire breaks out
- I need to detect forest fires as they start and before they grow too large

Pain Points

- Naturally occurring forest fires are not detected fast enough
- Can't pinpoint location of the fire

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Point of View

As a fire chief

I need a way to detect forest fires as they happen

so that damage is minimized and the fire is easier to fight.

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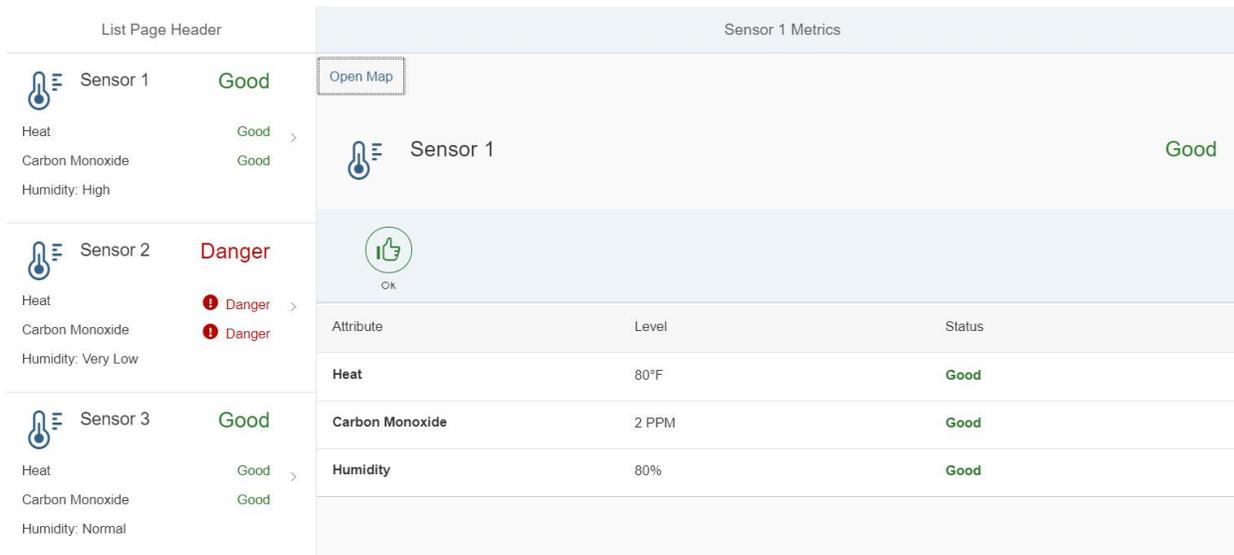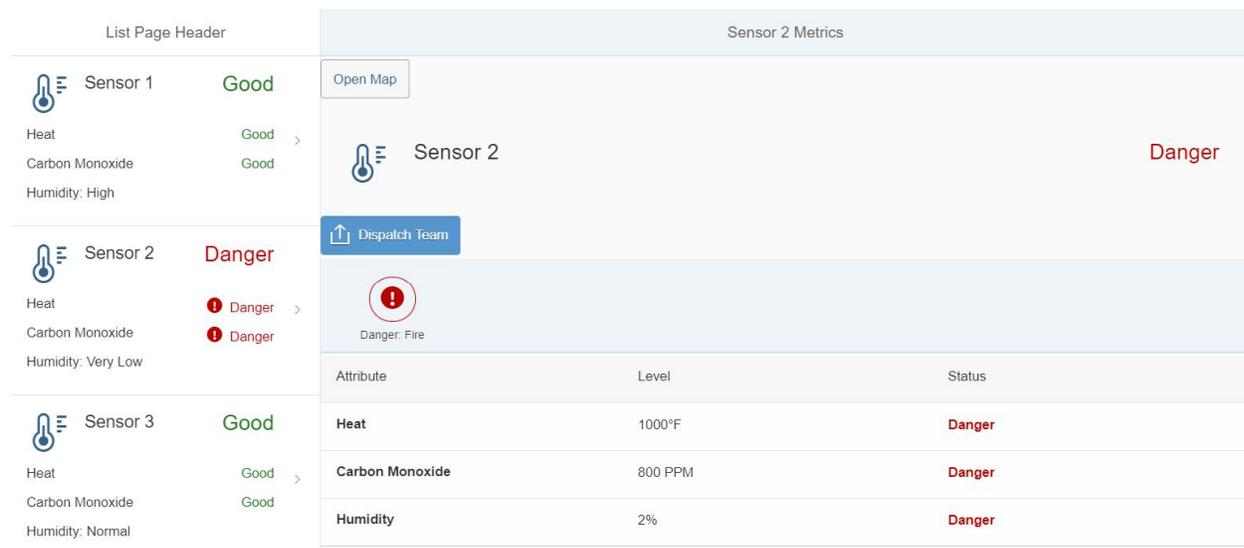|						
ACTIONS	Start day and enter the fire station	Wait for a call about a forest fire or wildfire	Receive a call, there is a wildfire nearby	They arrive on the scene and wildfire is getting quite strong	Put out the fire	Return to fire station and wait for another call
MINDSET	"I wonder if there will be any calls today"	"If there is a fire, I hope we can contain it before it gets too large"	"We need to get out there as soon as possible"	"I hope my crew members stay safe"	"This would have been easier to fight if it was detected earlier"	"Hopefully the other calls are easier than that last one"
FEELING	☺ · · · · · · ☹					
TOUCH POINTS	Fire station	Fire station Phone Alert system	Fire engine Phone Crew members	Fire engine Crew members	Crew members	Fire station Phone Alert system

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Prototype

IoT Network
- Sensors are placed on trees strategically so a large area can be constantly monitored for wildfires
- Each sensor has modules to detect temperature, carbon monoxide, and humidity levels
- After a certain temperature and carbon monoxide threshold, the system will determine that there is a fire
- From the system, the fire chief can dispatch a team and using the geomap, the firefighters can know the fire's location
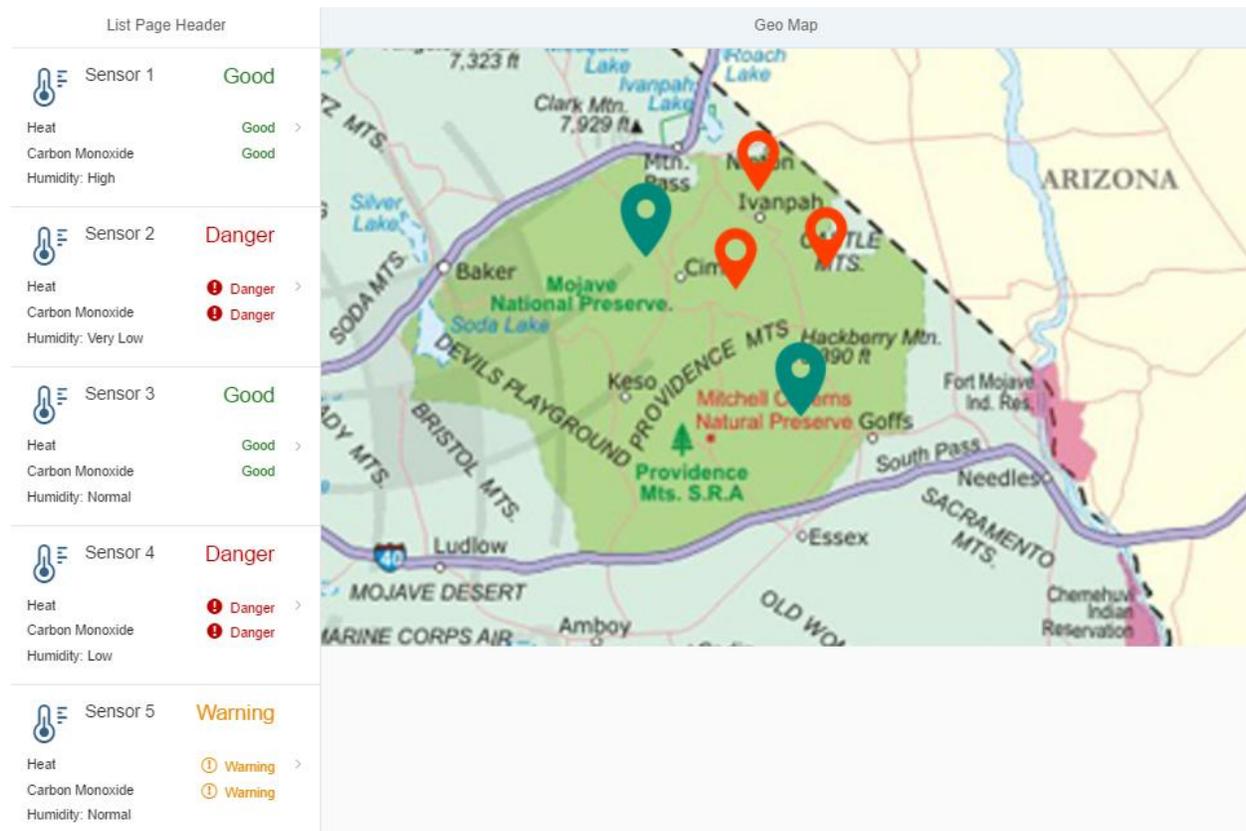
- Mockup I: the map shows where the sensors are in the area and their status. The list on the left provides some details on the sensors' statuses. There seems to be a fire near sensor 2 and 4. There could also be a fire at sensor 5. Sensor 1 and 3 are not triggered, so the fire has not yet spread to those areas.

List Page Header		Sensor 1 Metrics			
🌡 Sensor 1	Good	Open Map			
Heat	Good	🌡 Sensor 1			Good
Carbon Monoxide	Good				
Humidity: High		👍 Ok			
🌡 Sensor 2	Danger	Attribute	Level		Status
Heat	❗ Danger	Heat	80°F		Good
Carbon Monoxide	❗ Danger	Carbon Monoxide	2 PPM		Good
Humidity: Very Low		Humidity	80%		Good
🌡 Sensor 3	Good				
Heat	Good				
Carbon Monoxide	Good				
Humidity: Normal					

Mockup II: clicking one of the sensors on the left will open a screen with more detailed information on the status. There is an accurate reading of temperature, carbon monoxide, and humidity levels. There is no fire at sensor 1, so all the statuses say "Good".

List Page Header		Sensor 2 Metrics			
🌡 Sensor 1	Good	Open Map			
Heat	Good	🌡 Sensor 2			Danger
Carbon Monoxide	Good				
Humidity: High		⬆ Dispatch Team			
🌡 Sensor 2	Danger	❗ Danger: Fire			
Heat	❗ Danger	Attribute	Level		Status
Carbon Monoxide	❗ Danger	Heat	1000°F		Danger
Humidity: Very Low		Carbon Monoxide	800 PPM		Danger
🌡 Sensor 3	Good	Humidity	2%		Danger
Heat	Good				
Carbon Monoxide	Good				
Humidity: Normal					

Mockup III: Clicking sensor 2 shows that there is a fire. Currently, the sensor detects a temperature of 1000 degrees and high amounts of carbon monoxide. The humidity is also very low. The system determines that there is a fire at the sensor's location and there is a button on the screen that allows the fire chief to dispatch a team of firefighters to the sensor's area.

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