

CS



InnovationIgniters



# SiteSentry:

SMART ENVIRONMENTAL  
MONITORING SYSTEM WITH  
REAL-TIME HAZARD MITIGATION  
AND PRECAUTIONARY ALERTS

by Julia Nurfadhilah, Noor Syahirah,  
Harith Thaqif, Danish Al-Muhaimin & Izrin Syafiq



# Problem Statement

The **UNPREPAREDNESS** of unpredictable **environmental conditions** during climate change will be one of the major **economic concern** for the construction sector

- Dr. Sergey Sundukovskiy

## what are the consequences of being UNPREPARED?

- Weather extends construction project durations by an average of 21%.
- The estimated cost of weather-related delays approaches **\$4 billion**.
- Estimated insurance losses and employees compensation of **\$48.5 billion**.

astro AWANI | PANTAU KERAJAAN BAHARU

TERKINI VIDEO ENGLISH MALAYSIA DUNIA POLITIK HIBURAN BISNES SUKAN RA

Bekerja dalam keadaan cuaca buruk, majikan boleh diambil tindakan

Utusan ONLINE LIVE

Berita Video Rencana Hiburan Bisnes Pendidikan Sains & Teknologi

JUJUB | 09/12/2012

Faktor cuaca punca projek lewat





one of the affected company,

## COMPANY H

are facing major issues:



- Construction company
- 200+ sites around the globe
- Handle hazardous equipment and materials
- Develop in countries with extreme weather

| Operation Efficiency   | Labour Safety   | Cost and Resources  |
|--|---|---|
| <ul style="list-style-type: none"><li>• Unpredicted environment disruption that halts construction operations</li><li>• Lack of preparedness and poor planning, <b>not having contingency plans</b> in place</li></ul> | <ul style="list-style-type: none"><li>• High percentage of employees <b>on-site incidents and injuries</b></li><li>• <b>Lack of safety equipment and procedures</b> to handle extreme environmental conditions.</li></ul> | <ul style="list-style-type: none"><li>• High <b>materials degradation</b> due to exposure to moisture and temperature fluctuations</li><li>• High <b>equipment maintenance and replacement cost</b> due to weather damage</li></ul> |



# Our solution

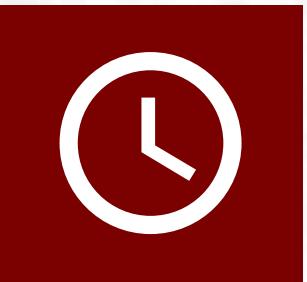
## SiteSentry

*"Environmental awareness  
at your fingertips."*





# Main Features



Accurate **real-time** environmental conditions monitoring for **multiple construction sites**



Rapid sensor data and weather pattern analysis for **site condition prediction**



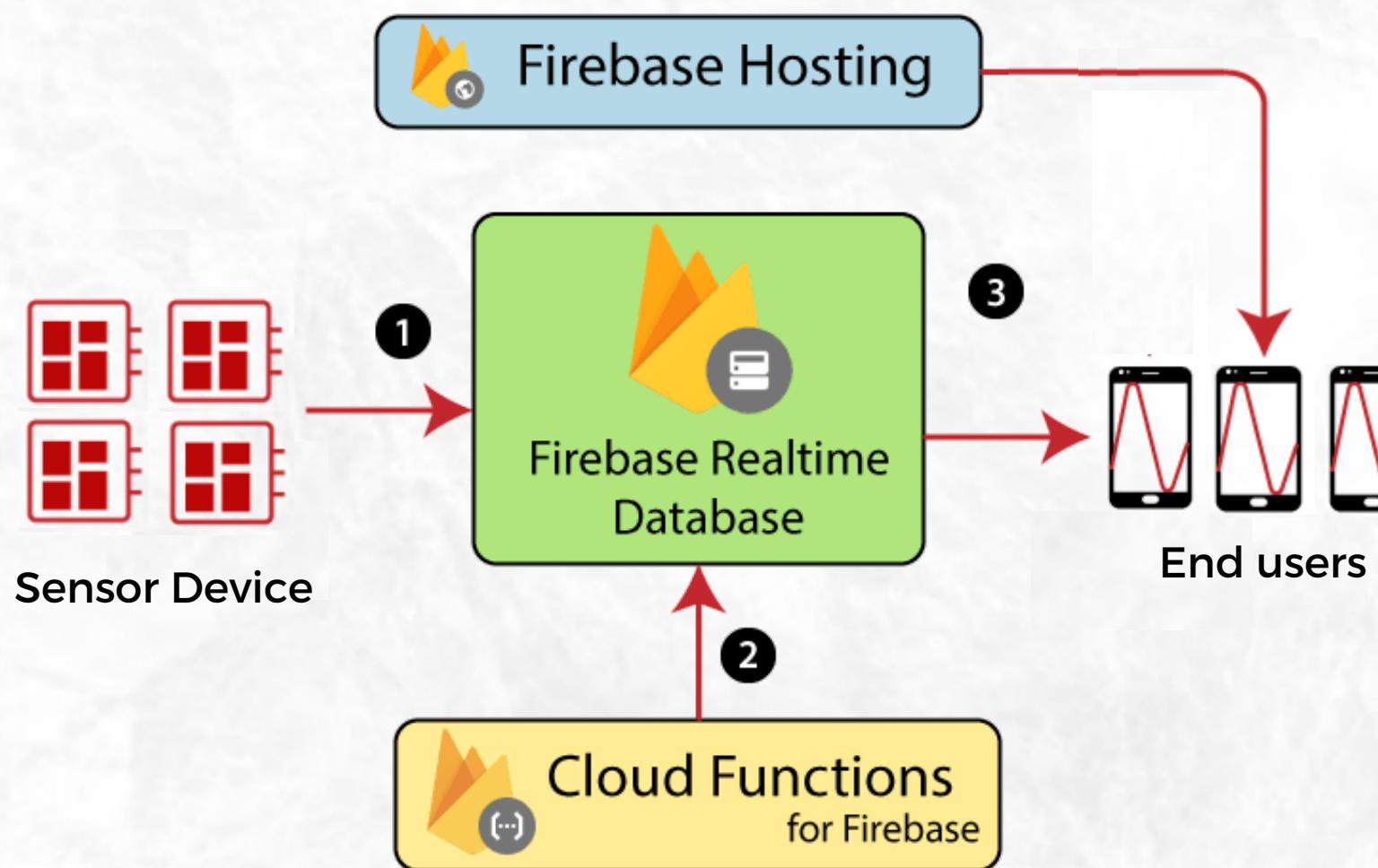
Alert employees with **appropriate precaution measures** according to **analysis outcome**

Enough time and resources to  
**PREPARE** with **CONTIGENCY PLANS**





# Technology Implementation



**3-tier architecture :**

Presentation, Business and Database



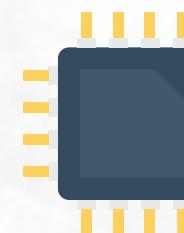
**Flutter** for front-end mobile development



**Firebase** for hosting, real-time database and analysis, and prediction



**Node.js** for server-side programming and non-blocking, event-driven servers



**Node MicroController Unit** with integrated Wifi solution

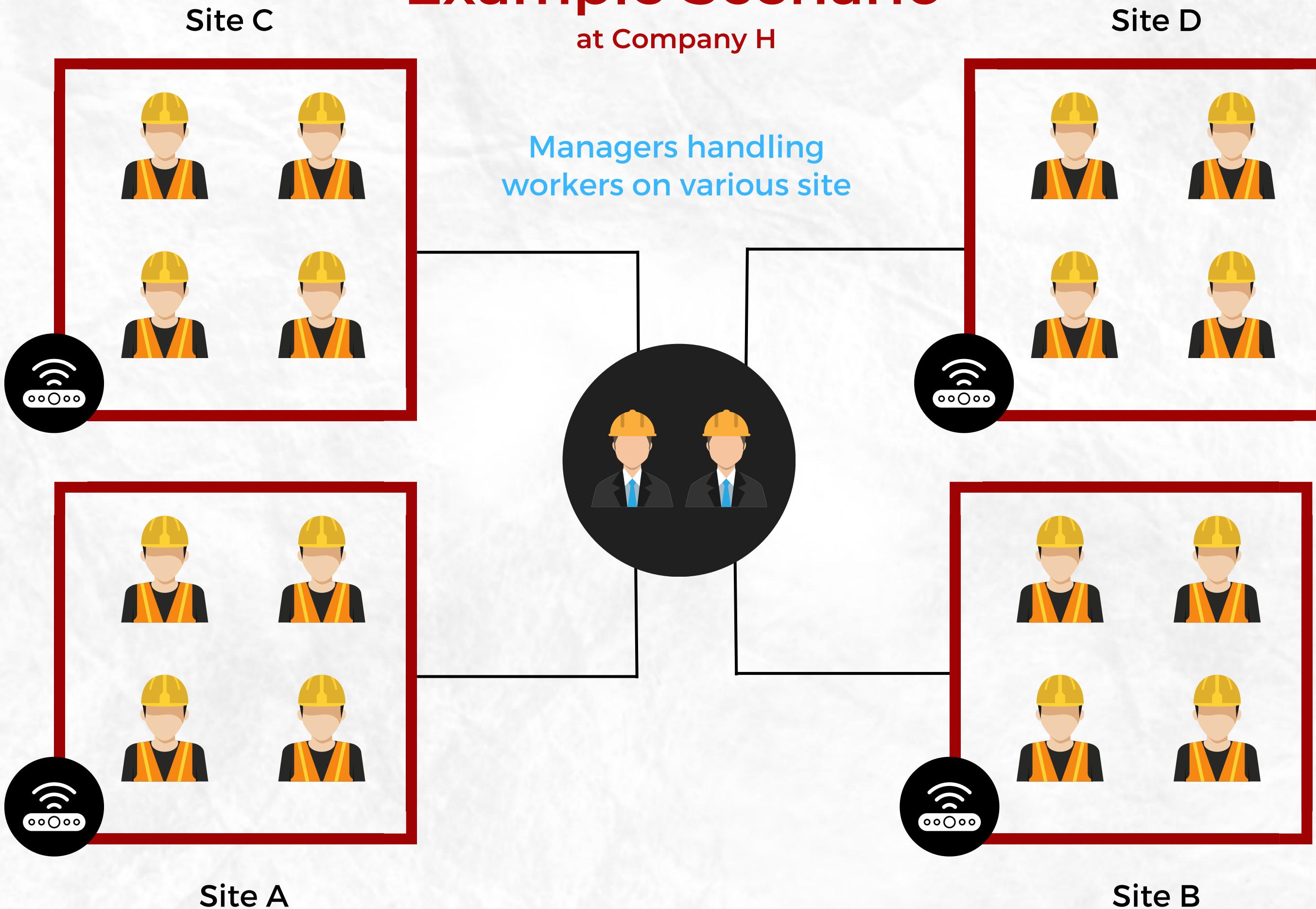


**Various sensors** including DHT11 and MQ135



# Example Scenario

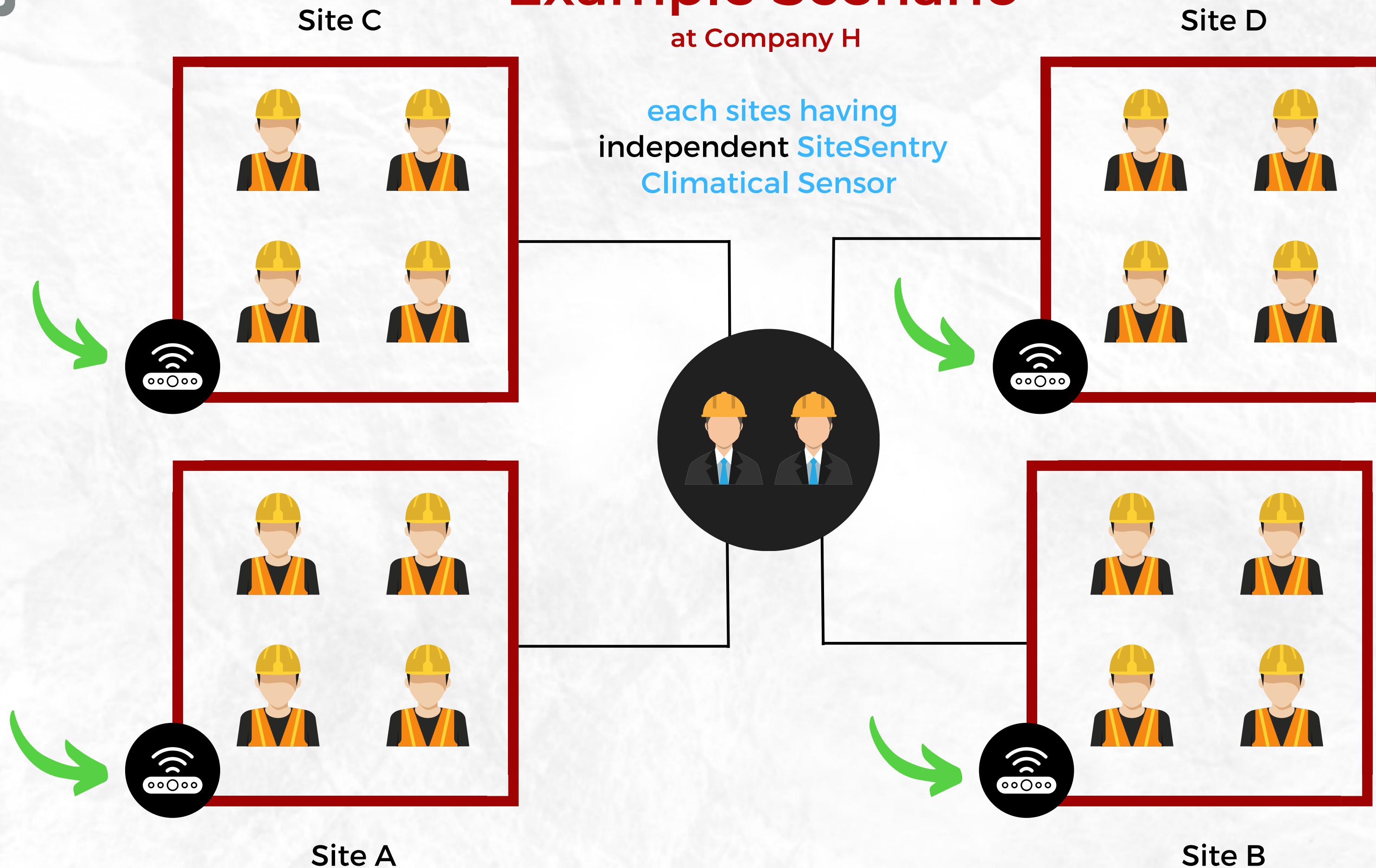
at Company H





# Example Scenario

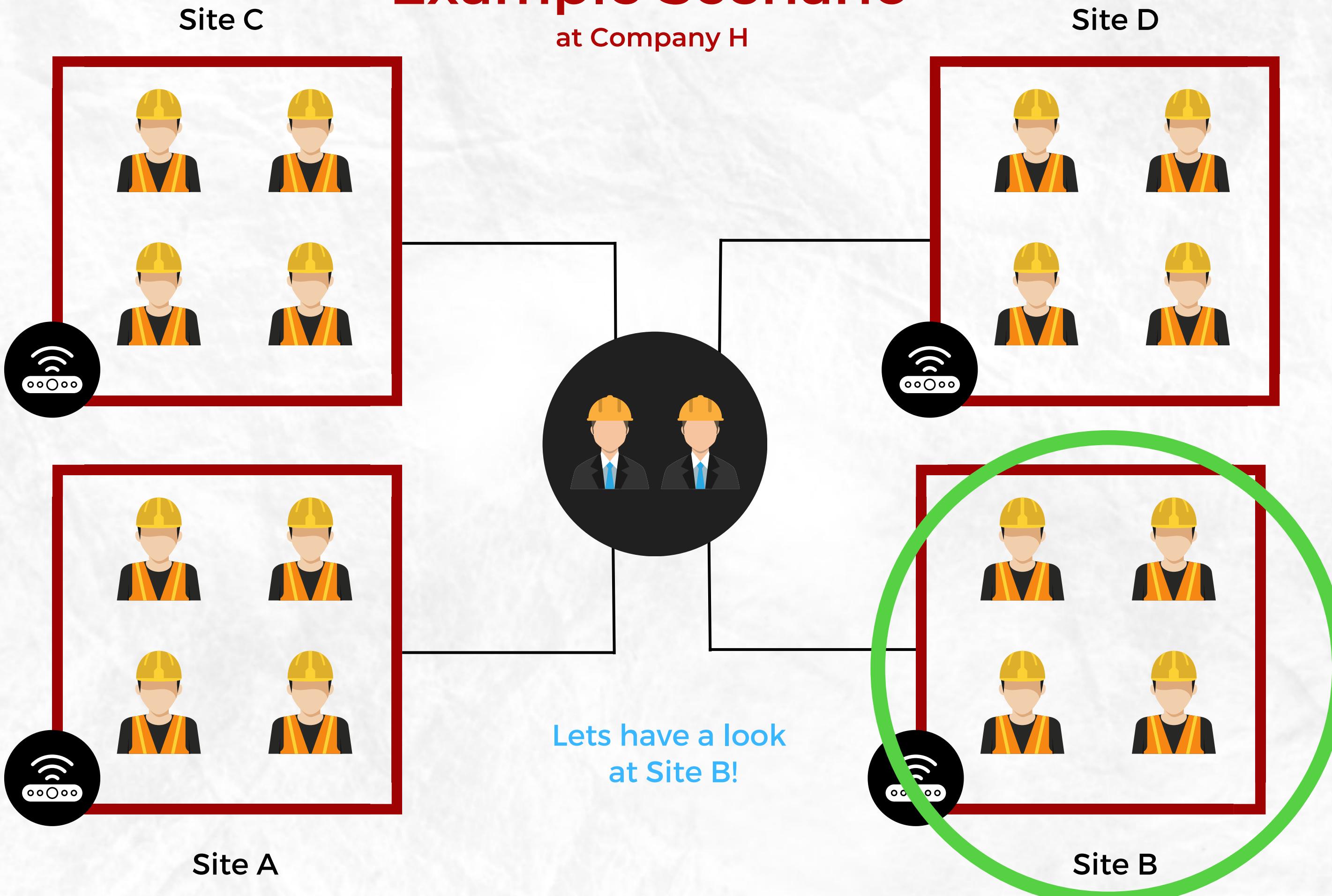
at Company H





# Example Scenario

at Company H





# Why choose SiteSentry?



## Elongate Resources Lifespan

Preserve equipment and materials from weather damage



## Protect Employees

Reduce risk of on-site incidents and injuries



## Control Hazardous Conditions

Early detection of unsafe state and potential dangers



## Improve Facility Management

Plan, prepare and coordinate for predicted case scenarios



# How does SiteSentry excel from others?

## EXISTING SENSOR MONITORING SOLUTIONS ARE :

- ✗ Not location-accurate analysis outcome
- ✗ Lack of appropriate **precaution** recommendation
- ✗ Lack of **real-time** environment monitoring
- ✗ Lack of data **analysis** and site condition prediction
- ✗ Hard to integrate **various sensor** in multiple location



SCIENCE | GLOBAL ISSUES

Why are weather forecasts sometimes wrong?

Clare Roth  
07/18/2022

**asmag**.com  
Security & IoT

NEWS ▾ PRODUCTS ▾ SUPPLIERS SECURITY 50 NEW

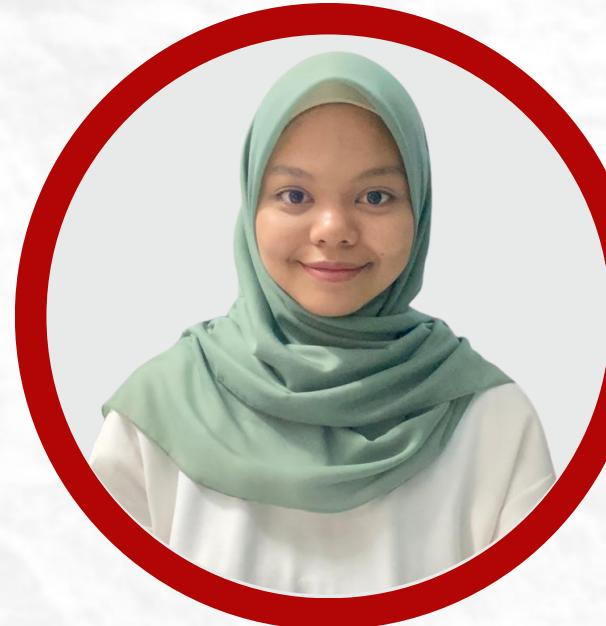
You are at : Home > News > a&s exclusive

Integration challenges emerge from growing use of sensors

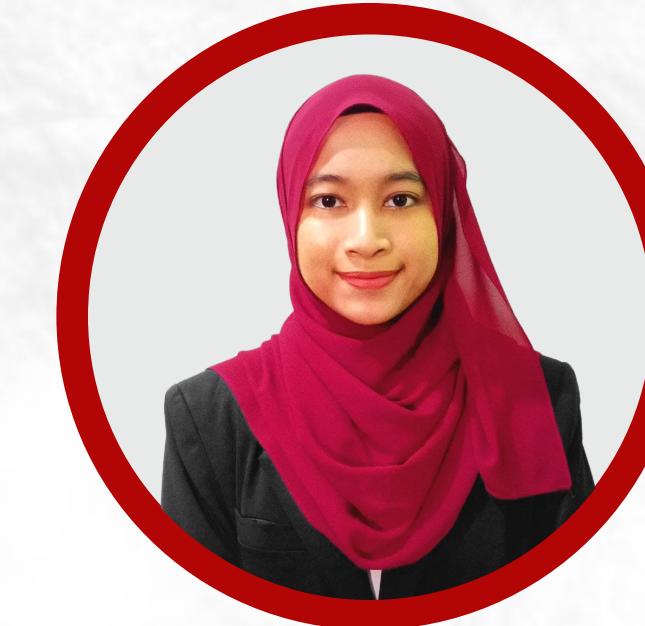
Source: Lisa Hsu Date: 2017/02/03 Related tags: AMAG Technology, iOmniscient, Allegion, Optex, sensor, PureTech Systems



# Meet Our Best Team



**Julia Nurfadhilah**



**Noor Syahirah**



**Izrin Syafiq**



**Danish Al-Muhaimin**



**Harith Thaqif**



InnovationIgniters

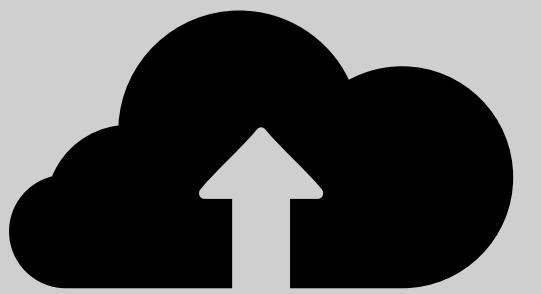


# Thank You

*for choosing*

## *SiteSentry*

*" Environmental awareness  
at your fingertips. "*



SiteSentry  
Automation Server

- ✓ TEMPERATURE
- ✓ HUMIDITY
- ✓ AIR QUALITY



SiteSentry  
Unified Sensor Device