SCDF X IBM Lifesavers' Innovation Challenge: Call for Code 2020

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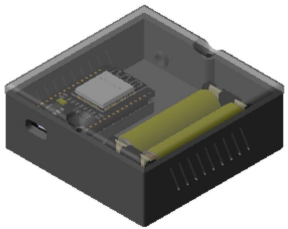
Problem Statement

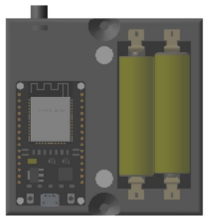
"Infrastructure is getting "**smart**", with sensors and Internet of things (IoT) increasingly embedded in the built environment (e.g. Punggol Digital District). How might we leverage a network of smart infrastructure in the built environment to make better and more timely sense of emergency incidents (e.g. detection of fires developing, building collapses, falls, road traffic accidents etc.) and to trigger early intervention measures, without the need to activate precious emergency resources?"

Issue

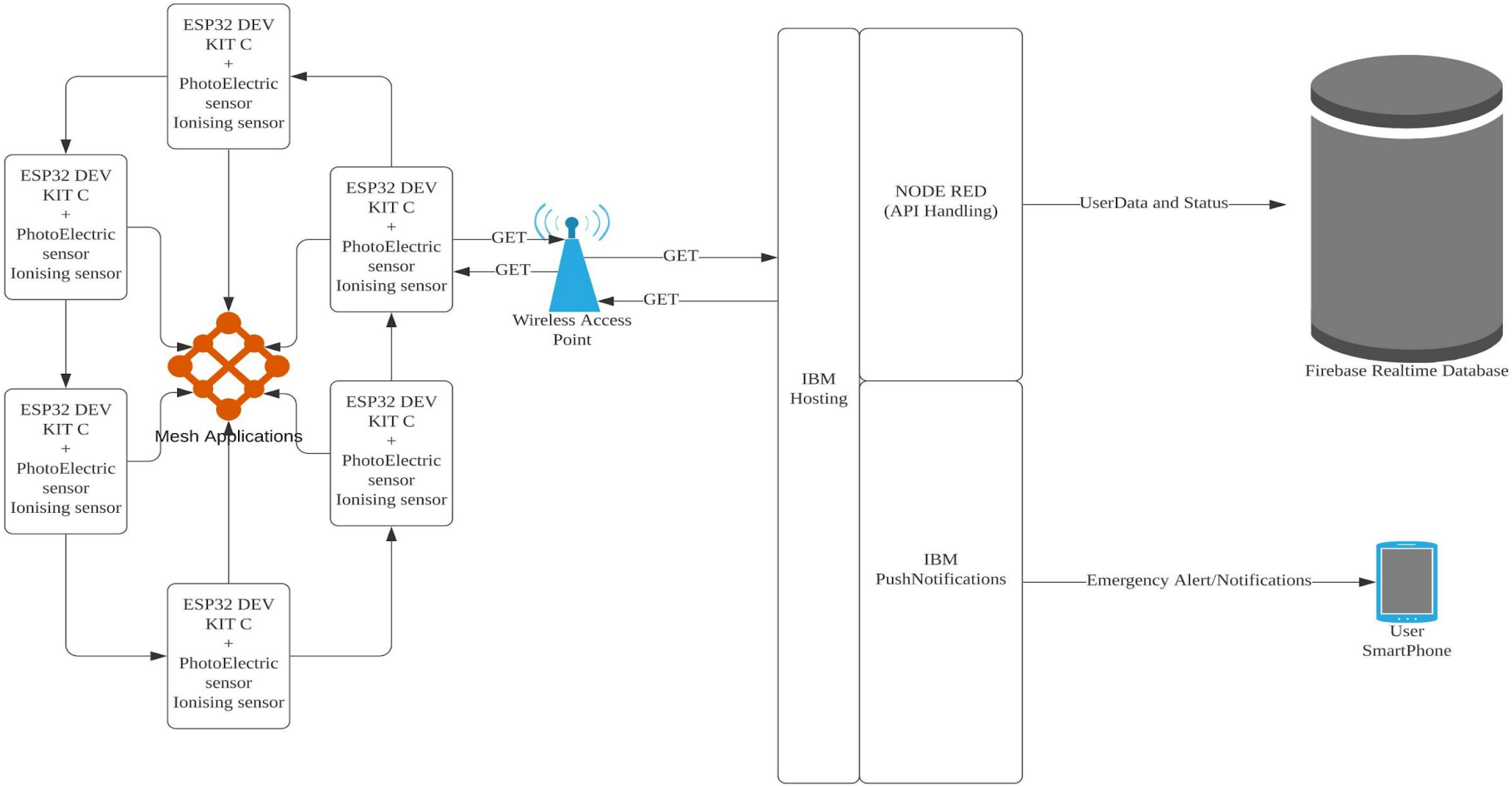
- 2019 → 1168 fire calls
- 40.8% were in residential areas
- Causes:
  - Unattended cooking
  - Improper disposal of rubbish
  - Unmanaged charging of e-scooters/PMA

Solution





- Digital Fire Alarm System (DFAD)
- Detect and respond to early stages of fire
- Alert Community First responders(CFR) for minor fires
- Able to evacuate residents if situations escalates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Mesh Applications
GET
GET
GET
GET
Wireless Access Point
IBM Hosting
NODE RED (API Handling)
IBM PushNotifications
UserData and Status
Firebase Realtime Database
Emergency Alert/Notifications
User SmartPhone

Technical Challenges

- **Complexity of the mesh network hinders implementation**
- **Reliability and sensitivity depends on capabilities of existing sensors**

Other Challenges

- **Lack understanding of the organisation's operational needs**

Conclusion

- **Integrate IOT sensors with pre-existing fire detection systems**
- **Using mesh network to localise fire**
- **Evacuate residents depending on the severity of the fire**
- **Determine and send the personnel and resources base on the extent of the situation**

Thank You :)