Bluetooth LE:

1. Attach BLE beacons to the equipment

2. Use a BLE gateway or receiver to detect the signals transmitted by the beacons/tags. These gateways can be strategically placed around the UPS facility to ensure proper coverage.

3. To configure BLE beacon, there are beacon management software like Kontakt.io, Estimote Cloud, BlueCats etc.

    - In software's dashboard, option for add new beacon device. Enter the details of the beacon, like unique identifier or MAC address, battery level etc.

    - Assign Equipment Number to beacon within the beacon management software. You can configure properties/attributes to the beacon.

4. In our project app, in search bar, user enter the equipment number they want to locate. Integrate the application with location services on the user's mobile device to obtain user's current location.

5. Enable BLE communication in the mobile application to detect nearby beacons or tags.

    - In the mobile application, request the necessary permissions from the user to access the device's Bluetooth functionality. This typically involves asking for the `BLUETOOTH` and `BLUETOOTH_ADMIN` permissions in Android or the `CBCentralManager` permission in iOS.

    - Initialize a Bluetooth manager or central manager object in your application. In Android, you can use the `BluetoothManager` class, while in iOS, you can use the `CBCentralManager` class.

    - Use the Bluetooth manager to scan for nearby BLE devices. This involves setting up a scan callback or delegate that will receive the discovered devices.

    - Once you've identified the desired BLE device (beacon or tag) based on the equipment number, establish a connection to it using the Bluetooth manager. mplement connection callbacks or delegates to handle the connection process and handle connection-related events.

- Once the connection is established, you can retrieve data from the BLE device. This can include information such as the beacon's identifier, signal strength, or any custom data associated with it.

- React Native or Flutter provide abstractions and plugins for BLE communication, which can help streamline the development process across multiple platforms.

6. Locating Equipment:

- When the user clicks on the "locate equipment" button, use the BLE communication to determine the distance between the user's device and the beacon/tag attached to the equipment.

- Establish a connection to the specific beacon/tag using the BLE plugin or library in your mobile application.

- Begin monitoring the RSSI value by implementing event handlers or callbacks that receive updates whenever the RSSI value changes.

- Measure and record the RSSI value when the user is at a known distance from the beacon/tag.

- Calibrate the RSSI values obtained by establishing a relationship between RSSI and distance. There are various mathematical models and algorithms available for estimating distance based on RSSI, such as the Free Space Path Loss (FSPL) model or the Log-Distance Path Loss (LDPL) model.

- Based on the calibrated RSSI-distance relationship, calculate or estimate the distance between the user's device and the beacon using the current RSSI value received from the connected device.

- Apply the calibrated model or algorithm to convert the RSSI value into an estimated distance.

- Utilize the user's location and the equipment's location obtained from the beacon to provide directions to the equipment.

- Based on the signal strength or proximity to the beacon/tag, you can estimate the equipment's relative distance and display it on the screen