RFID Asset Tracking

TECHNICAL TEAM

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Contents

Introduction

The solution is for industries where assets and products, that circulate around the site, are kept track off by using RFID sensors. A passive RFID tag is present on the asset to assist the tracking system. RFID sensors are placed at important areas all throughout the site to keep a continuous and thorough tracking of assets. The data stack captured by these IOT devices is sent to a gateway which sends it to a centralized cloud to be processed and stored. If the admin is searching for a particular asset, necessary actions are performed to assist the admin in locating the asset

Industry challenges and Problem statement

Industries, for example, ones that involve running electronic device repair shops have a lot of assets and products that have to be kept a track of. The assets may be limited numbers in quantity and may be required by multiple staff members to the point where demand is greater than the supply of a particular asset. And entering these assets back into the main store and getting it checked out from there involves wastage of a lot of time. This leads to frequently used assets to be stored in local stores where no formal entry is done as to who has checked it in and who checked it out. Sometimes, the local store is not involved and the asset is taken by another who requires it. Multiple such scenarios similar to the one mentioned above leads to assets being all over the site with no one but the person who last borrowed it, knowing where it is.
Some industries have hired people dedicated to locating these assets and products. This has resulted in decrease in turn around time and loss in revenue for such industries.

We at **Life9sys** add value for IoT based RFID tag tracking with adequate **planning, controlling** and the **end to end management** of the infrastructure. Our goal as a company is to minimize human involvement with the IoT based systems we integrate

while making minimal to no changes in the normal procedure of running operations and procedures.

To drill down the current biggest challenge that companies, which require location of assets and products, are facing is decrease in turn around time due to mis-placed or unknown location of the asset in question to be found.

Our solution is provided in terms of asset tracking using RFID sensors over the key areas throughout the site and placing passive RFID tags on all the assets that have a need to be tracked.

Our Tracking System overall benefits

- ✓ **Asset Tracking**
  - RFID sensors placed strategically throughout the site helps keep track of all assets within the readable radius
- ✓ **Asset Inventory**
  - All the data regarding location of all assets is stored in the centralized cloud database and available to anyone with access to the app built for this system
- ✓ **Search for a particular asset**
  - In the search bar provided in the app, by entering the ID of the RFID tag of a particular asset, one can pinpoint and locate the asset.
- ✓ **Physical cues/signal for assisting searches**
  - Physical LED lights placed near the RFID sensor that blink when a particular asset that is being searched for is scanned by the RFID the LED is assigned to.
- ✓ **Passive RFID tags**
  - Passive RFID tags are added to every asset/device/product to be tracked. Since these are paper sticker based, they require no power and because of the RFID technology being used, do not need direct line of sight with the RFID scanner.

Methodology

Resolution of Asset tracking

Today's Scenario of keeping track of assets and products in an area as big as a warehouse workshop is very inefficient in terms of usage of time. Time is lost in trying to locate an asset or product that a staff member may require to perform their tasks. This in turn results in loss of revenue. An end-to-end asset tracking system which relies or has no human involvement will be the solution to the problem.

Asset Tracking

- Our solution places nodes integrated with RFID sensors at key and strategic places all over the site so that the entire area is covered in terms of tracking.
- One or many gateways will be placed at the site that helps collect, stack and send the data to a centralized cloud server where data is stored in the database
- Passive paper RFID tags will be attached to every asset or product to be tracked by the system.

Asset location App

- Our solution also has an integrated app that comes with features to view all or locate one particular asset.
- Upon pressing the update/scan button, the gateway initiates a scan command at every RFIID node and updates the database with all assets present under each RFID scanner.
- Using the search tab, a particular asset can be searched for by entering the ID of the RFID tag attached to the said particular asset.

Overall Summary

- Wireless communication enabled IoT RFID sensor node to be installed at key and strategic locations throughout the premises.
- IoT enabled wireless communication gateways to be installed in appropriate locations throughout premises.
- AWS/Azure is chosen as the cloud platform to implement centralized data processing and analytics
- MQTT is `the chosen protocol for communication of data gathered from the RFID tracking system to the cloud and vice versa.
- Graphic user interefaces, dashboards and mobile applications will be created to help monitor the system in real time and keep maintenance upto date
- The sensors shall also have alert message facility to enable monitoring of sensor tampering, theft etc.

Conclusion

IoT enabled RFID tag tracking system presents a low cost IoT based solution using LPRF/UBW/LoRa for tracking. The nodes with RFID sensor integrated show good coverage, reliability and reduce time lost in manual tracking of assets and products, thereby, increasing profits.

The solution provides a complete overview of the location of every asset present on the premise and the option of selecting and locating any particular asset the user may look for. These features will be presented in an app integrated with the tracking system. This system will provide significant in work productivity while making sure there is minimal human involvement with the new system and also making sure that workflow and procedures are not interfered or changed in any way.

Thank You

For more information, contact: contact@life9sys.com