SMART WASTE MANAGEMENT FOR METROPOLITON CITIES

Idea 1:

In implementing the smart cities the great challenge is how to manage waste with low cost and high performance. Waste has a negative impact in the society quality which smart city aims to improve it. Makkah and holy sites are very congested areas where waste management is a big challenge. Three factors make it a big challenge, behind its natural, small area, short period of time and the increasing of the Pilgrimages' member. The process of collected wastes, separated it, and transports the containers daily and quickly to avoid any prospect of a spread of diseases is a complex process. This paper aims to study the concept of the waste management and proposed smart systems for waste management system with recycling .The proposed system will use the sensors technique in site the container, as a lower level, to separate the waste into 4 categories [food, plastics, papers, and metal] and use actuator at a top level to inform the management system to collect the container. The proposed system will save time, money and efforts compared to the recent process of the waste management system and improve the society quality as all.

Advantages:

- It saves time and money by using smart waste collection bins and systems equipped with fill level sensors.
- As smart transport vehicles go only to the filled containers or bins.
- It reduces infrastructure, operating and maintenance costs by up to 30%.

Disadvantages:

- The process is not always cost-effective
- The resultant product has a short life
- The sites are often dangerous

Idea 2:

With urbanization, rising income and consumption, the production of waste increases. One of the most important directions in the field of sustainable development is the design and implementation of monitoring and management systems for waste collection and removal. Smart waste management (SWM) involves for example collection and analytics of data from sensors on smart garbage bins (SGBs), management of waste trucks and urban infrastructure; planning and optimization of waste truck routes; etc. The purpose of this paper is to provide a comprehensive overview of the existing research in the field of systems, applications, and approaches vis-à-vis the collection and processing of solid waste in SWM systems. To achieve this objective, we performed a systematic literature review. This study consists of 173 primary studies selected for analysis and data extraction from the 3,732 initially retrieved studies from 5 databases. We 1) identified the main approaches and services that are applied in the city and SGB-level SWM systems, 2) listed sensors and actuators and analyzed their application in various types of SWM systems, 3) listed the direct and indirect stakeholders of the SWM systems, 4) identified the types of data shared between the SWM systems and stakeholders, and 5) identified the main promising directions and research gaps in the field of SWM systems. Based on an analysis of the existing approaches, technologies, and services.

Advantages:

- Raise public awareness of utilizing renewable energy.
- collect and analyze area-specific data on waste volumes for better planning.
- increase WiFi coverage with their function as a free public WiFi hotspot.

Disadvantages:

- The practices are not done uniformly: ...
- Waste management can cause more problems: ...
- 4 Old School Business Processes to Leave Behind in 2022.

Idea 3:

The Internet of Things (IoT) is constantly evolving and is giving unique solutions to the everyday problems faced by man. "Smart City" is one such implementation aimed at improving the lifestyle of human beings. One of the major hurdles in most cities is its solid waste management, and effective management of the solid waste produced becomes an integral part of a smart city. This paper aims at providing an IoT based architectural solution to tackle the problems faced by the present solid waste management system. By providing a complete IoT based system, the process of tracking, collecting, and managing the solid waste can be easily automated and monitored efficiently. By taking the example of the solid waste management crisis of Bengaluru city, India, we have come up with the overall system architecture and protocol stack to give a IoT based solution to improve the reliability and efficiency of the system. By making use of sensors, we collect data from the garbage bins and send them to a gateway using LoRa technology. The data from various garbage bins are collected by the gateway and sent to the cloud over the Internet using the MQTT (Message Queue Telemetry Transport) protocol.

Advantages:

- This proposed system is the use of LoRa technology for data communication
- It enables long distance data transmission along with low power consumption as compared to Wi-Fi, Bluetooth or Zigbee.
- It integrates technologies required for waste management: identification technologies, data acquisition

Disadvantages:

- **imbalance between the production and the capability to manage it**.
- the waste volume continues to increase in line with the population growth.
- changes in the quality of life and the dynamics of community activities.