IoT Suite of Solutions

ST Engineering’s suite of IoT solutions help smart cities to manage multiple smart city applications on a common platform. Its open architecture design leverages best of breed technologies and standards to facilitate data exchange and analytics, while generating valuable insights to improve quality of city services and enhance operational efficiency. Our solutions include:

- IoT Platform
- Smart Street Lighting
- Smart Lamp Post
- Smart Lift Monitoring
- Smart Waste Management

Global Deployment

We have a proven track record in deploying more than 15 million wireless sensors and smart solutions that transform cities worldwide. Our global footprint covers various countries such as the UK, the US, Canada, France, New Zealand, Brazil and India.

Our solutions enhance city planning, improve service delivery, optimise efficiency and reduce operating costs essential for driving sustainable and liveable smart cities.
Efficient, Data-Driven and Cost-Effective

Data-driven, Real-time Monitoring
ST Engineering provides a Smart Waste Management solution that leverages innovative technology, Internet of Things (IoT), analytics and smart sensors, to enable operators to optimise route planning, monitor bin and waste collection status in real-time, and enhance operations with data-driven collection process.

Unified Management
The versatile solution provides a unified dashboard and central management system that support various connectivity, easily integrate with various waste detection and monitoring sensors (vendor-independent) on a common IoT platform.

Key Benefits
- Optimise waste collection services to better serve residents
- Enhance operational efficiency with unified management
- Improve control with real-time status update and monitoring
- Reduce operational costs with better resource management
- Optimise route planning with real-time data of bin-fill level
- Enhance resource planning with data-driven analytics
- Optimise manpower deployment to achieve better service delivery
- Reduce carbon footprint with optimised routes
- Improve city image with better managed waste collection
- Flexible deployment to support multi-device providers
- Future-ready and scalable platform to support smart city applications

Key Features
- Map View
  - Real-time monitoring
  - Bin-full level prediction
  - Proximity to overflow calculation
  - Weight and volume of waste
- Dashboard with Analytics
  - Number of collections during a period of time
  - Fill level and status
  - Frequency of overflow
  - Distance travelled / volume collected
  - Distance travelled / weight collected
  - Total distance travelled
- Collection Planning and Management
  - Auto route planning
  - Automatic detection of collected data
  - Available vehicles and cleaners for deployment
  - Key Performance Indicator for every route
  - Send capacity alert
- Mobile App
  - Job and route guidance to the cleaners on the move
  - Real-time updates of their job completion to the operators
- Report Management
  - Collection and bin status record
  - Fill level trend
- Alarm Management
  - Automatic event identification
  - Send event alert
- Multi-tenant Management
  - Zone level data and access control
  - Each operator views their respective areas
- Asset and Inventory Management
- Mobile App for Cleaners

Urbanisation has led to the increase of waste production in cities worldwide. Most municipalities are using waste management systems that are labour-intensive and inefficient to meet the needs of growing populations.

With majority of the conventional waste collection service scheduled to travel on a regular predefined route, this has potentially caused half-full bins to be emptied and over-flow bins unattended, resulting in excess use of resources, wasted fuel and operations that are not optimised to ensure a clean city.

Software
- Central Management System
- IoT Platform

Hardware
- Bin Sensor
- Gateway

Multi-tenant Management
- Zone level data and access control
- Each operator views their respective areas

Mobile App for Cleaners
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**Software**
- Central Management System
- IoT Platform

**Hardware**
- Bin Sensor
- Gateway

**IoT Platform Application**
- LoRaWAN
- Cellular
- Ethernet
- NB-IoT

**Central Management System**
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Map View of Bins

Report Management