Applications of IoT in Logistics

Implementation of IoT in logistics industry can boost the constituents of these pillars and help the logistics industry augment by leap and bounds. Below are some of the advantages that a conventional logistics company can enjoy from the application of Internet of Things.

1) **Location and Route Management**:

Trucks are the lifeline of any logistics company. In the US alone, more than 70% of all the goods are transported by trucks. In fact, around 95% of all the manufactured goods at one point are transported via trucks. Logistics and fleet companies hence require systems that can help them manage their truck operations.

The location and route management solution of IoT for logistics industry is hence quite popular. This solution enables a logistics manager to monitor the location of their trucks in real-time. By using GPS tracking systems and geofencing techniques, the route taken by the trucks can also be monitored from remote locations. This further helps the logistics companies to track driver activities and ensure timely cargo delivery.

Moreover, the real-time alert system of these vehicle tracking solutions alarm managers about any anomaly like thunderstorms or accident on a freeway via push notifications that may affect the status of shipment.

These features act as an assistant for logistics companies and assist in the planning and management of delivery schedules. Time-delaying barriers are instantly identified and mitigated that result in streamlined business processes and cent percent customer satisfaction.

2) **Inventory Tracking and Warehousing**:

IoT in logistics other than providing fleet management services also facilitates the storage of goods and management of stock levels. In a logistics ecosystem, it enables a company to have clear-cut transparency in its various operations, further supporting in seamless inventory organization.

RFID tags and sensors allow companies to easily keep track of their inventory items along with their status and position. In other terms, IoT facilitates the development of a smart warehouse system that allows a company to prevent losses, ensure safe storage of goods, and efficiently locate the items in need. Furthermore, it also helps companies to revamp their

warehousing operations, resulting in the reduction of labor costs and an increase in efficiency due to less manual handling errors.

3) CBM and Breakdown Prevention:

IoT applications in logistics segment are not only limited to the monitoring and management of assets. However, its most beneficial application is the identification of bottlenecks that may result in the breakdown of these assets. Internet of Things has helped industries to jump on predictive maintenance and condition-based maintenance instead of depending on scheduled inspection procedures.

By measuring and analyzing parameters that define the performance of the trucks, companies can predict patterns related to common truck breakdown. Similarly, real-time alert systems can be used to gain alerts about probable unexpected malfunctions that can be prevented via condition-based maintenance.

These predictive applications of IoT will help companies to identify defects before they become catastrophic. Logistics companies will be able to improve their decision-making processes and create effective inspection/repair strategies. Moreover, these preventive insights

about their assets will help companies reduce risks and downtime that will further result in seamless process execution and timely delivery operations.

4) IoT and Blockchain for Digital BOL:

Applications of IoT in logistics industry when blended with the technology of Blockchain create a digital Bill of Lading (BOL) that creates whole new transparency in the supply chains. This BOL allows a company and its customers to trace the transportation cycle of the products being shipped.

The amalgamation of both these technologies has resulted in the creation of smart contract solutions (BOL being one of its many constituents) that enable monitoring of all the stages between the origin of the goods and their final delivery in the customer's hands. Sensors and GPS trackers play a crucial role in this solution as well. Both parties can measure temperature, humidity, location, and other parameters from remote locations in real-time during the shipment and make sure that all the conditions of the contract are fulfilled.

As data is stored in a Blockchain, the probability of data theft or cyber-attack is considerably reduced. Hence, transactions are instantly released from the customer's account if all the pre-described conditions comply. The customer can also cancel the contract if the contract is breached due to reasons like spoiled cargo or delivery delay. This maintains a two-way authority over the contract specifications further enforcing the security, transparency, and traceability of the supply chain.

5) Autonomous and Self-Driving Cars:
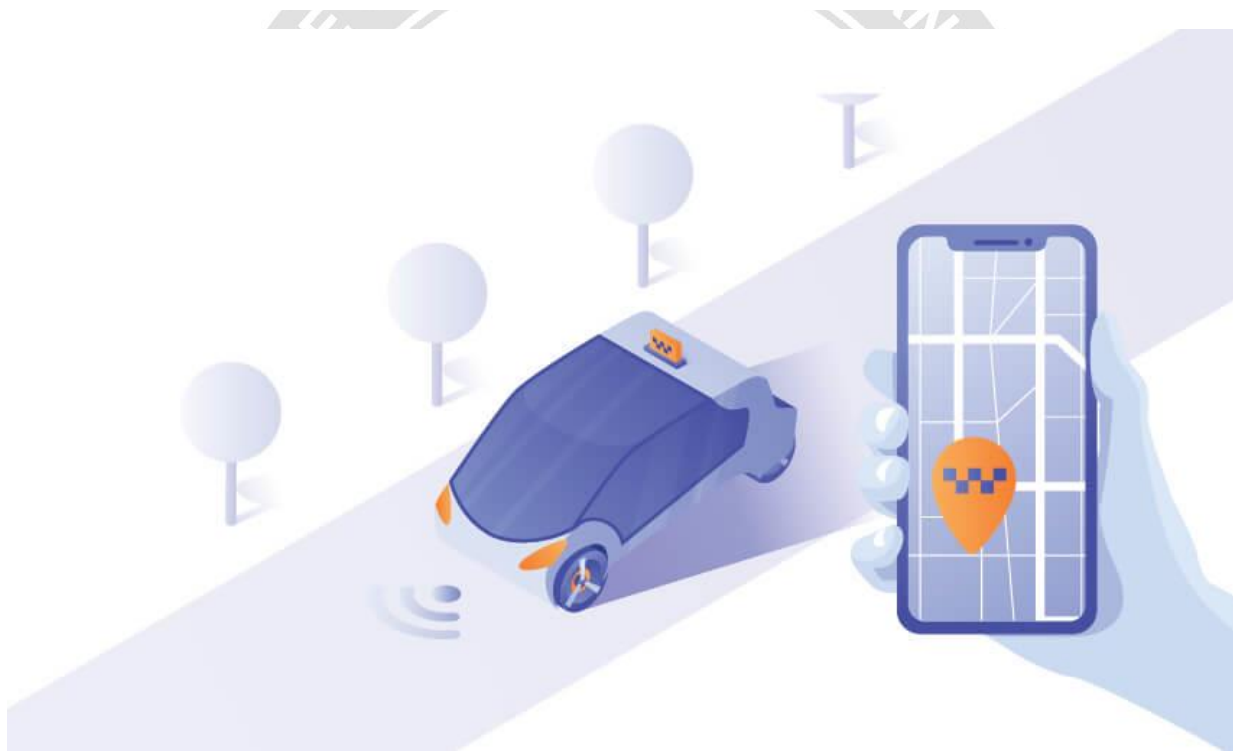
Logistics managers are not only responsible to manage the management of assets being transported. They are also supposed to ensure the safety of truckers and the cargo being shipped. This can be accomplished by the implementation of self-driving vehicles.

The hype of autonomous and self-driving vehicles is at an all-time high. Intelligent technologies like artificial intelligence and machine learning are being blended by connected infrastructures formed by the Internet of Things. Using such infrastructures of IoT in logistics will be the first step for businesses to include the concept of autonomous vehicles. Data corresponding to various shipment parameters will be analyzed and processed to develop smart

driving routes and directions. Logistics will hence be able to reduce their operation costs, minimize car accidents, and ensure timely cargo delivery based on traffic conditions.

6) Drone-Based Delivery:
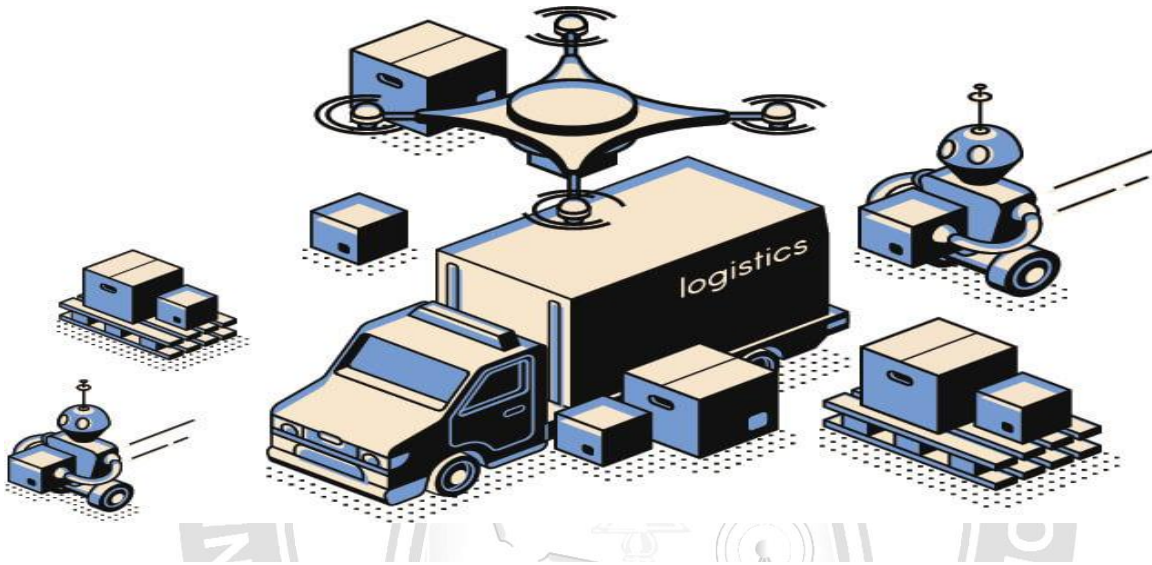
Unmanned Aerial Vehicles (UAVs) or drones are the new medium to deliver packages. Their potential lies strongly in the field of retail, logistics, agriculture, and e-commerce. Amazon, one of the Big 4 tech companies in the world has also unveiled the use of drones for delivering ordered items to people located in remote areas.

Drones applications and implementation of Internet of Things in logistics can ensure automated process execution and quick delivery of goods. The market of drones based delivery systems is growing at a rapid rate and is expected to reach a market valuation of $11.2 billion by the end of 2020.

CONCLUSION:

Applications of IoT in the logistics industry are now emerging at an unprecedented rate. By using the integrated solutions of IoT, businesses can develop data and process it to create useful insights, which further boosts the mobility and speed at which the goods are conveyed. IoT for logistics will act as a new pillar and enhance its existing rudimentary aspects. The global connected logistics market is already booming and by using new mobile technologies companies can manage supply chain management and distribution systems.