

USE OF THE INTERNET OF THINGS IN LOGISTICS

Almost every day, we use various tag trackers and other devices that are integral components of the Internet of Things (IoT). These devices, which include smart tags, sensors, and connected gadgets, have become an essential part of our daily lives, often without us even realizing it. From tracking the location of personal items like keys and luggage to monitoring the health of equipment in factories, the reach of IoT is vast and growing.

For example, in the logistics sector, businesses rely heavily on IoT-enabled devices to track shipments' real-time movement, manage inventory, and monitor environmental conditions such as temperature and humidity during transport [1].

The first thing that comes to mind is vehicle location tracking, which allows you to monitor their movement online. This opportunity dramatically facilitates vehicle management and increases the efficiency of logistics operations. Through GPS trackers and sensors, IoT allows businesses to constantly receive up-to-date information about the location of vehicles, the status of their routes, and even the technical condition of vehicles in real time [2].

This can significantly improve transportation planning and organization, as companies can optimize routes, reduce fuel consumption, avoid traffic jams, and avoid unforeseen situations that could affect delivery times. In addition, constant monitoring allows for a quick response to technical problems or accidents, which helps to reduce downtime and mitigate risks.

Another example is using sensors to monitor temperature and pressure, which is especially important for transporting sensitive goods such as food, medicine, or chemicals. Thanks to IoT sensors that can be integrated into packaging or vehicles, companies can continuously monitor transportation conditions in real-time and receive alerts for deviations from established norms.

For example, when transporting vaccines or frozen foods, even slight temperature changes can lead to a loss of quality or safety. Thanks to temperature sensors that send data in real-time, companies can instantly detect problems, such as if the temperature in a container has dropped or risen beyond the permissible range. This allows them to take prompt action to remedy the situation, prevent losses, and ensure the safety of the cargo [3].

A promising option for improving the efficiency of cargo transportation is using smart containers, which allow for remote monitoring of cargo during transportation.

These containers are equipped with sensors that monitor important parameters such as temperature, humidity, pressure, or fill level, which allows for appropriate conditions for different types of cargo.

This technology provides real-time monitoring and integration with other logistics systems, which automates the management of transportation processes and reduces the risks associated with deviations in transportation conditions [4].

Integrating IoT technologies into logistics significantly increases the efficiency and transparency of processes, allowing for the creation of detailed reports that are an important tool for managers to make informed decisions. This data facilitates the planning process and allows you to respond to unforeseen situations while transporting goods quickly.

In addition, online transport monitoring ensures a higher level of safety for both drivers and cargo, as potential problems or violations of transportation conditions can be detected in time. Such transparency in the company's operations increases its internal efficiency and builds trust from customers and partners, which is an important factor for successful cooperation in a competitive environment.

Thus, IoT technologies are an important step in developing modern logistics, opening up new opportunities for process optimization and increasing the competitiveness of companies [5].

References:

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