A Guide to
Asset Tracking System

HyperNym

An IoT Company

What is IoT Asset Tracking?

IoT asset tracking is the application of IoT technology to asset management. It connects tagged items in your inventory – transportation, people, shipments, and such – to your asset management ecosystem, providing real-time visibility into where each item is in the globe, how far along your supply chain it is, and how long it takes each item to travel through it.

Many industries can minimize human errors, losses, and theft by replacing manual asset management with real-time location systems tracking. Gaining real-time insights and data into what is happening to the asset can improve logistics, resource management, and security.

This guide will cover everything your organization needs to know about IoT asset tracking. We'll go through the basics, the different types of asset tracking available to you, the benefits effective asset tracking can reap, and various use cases for real-time IoT tracking.

What are Asset Tracking Needs?

One of the first things you'll want to decide on when selecting an IoT asset tracking is the type of tracking technology to rely on. Different solutions have a broad range of use cases and depending on what your business needs, you will need to start by asking:

Where are your assets going?
Do you need a solution on global or local scale? Do you need to track assets indoors, outside, underground or in remote locations. There are different asset tracking solutions depending on what your asset route is – some are designed for indoor and some can track your cargo anywhere in the world.

What do you need to track and how often?
Do you need to track your asset in real time or once per day? How much data do you need your asset to send – just location time-stamps or maybe weather condition and real-time asset status. You may need a data-heavy real-time asset tracking solution or one that sends just a few bytes once in a while.

How secure do you want your solution to be?
Do you need your asset tracking solution to have the highest level of security with limited user access? Do you need to know the exact location of your asset within centimeters or is approximate location sufficient?
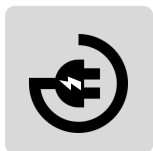
How much power are you looking to use?
Do you need your assets to stay operational for longer periods of time. Different tracking systems use power consumption. Some assets require low-power tracking solutions, while dynamic assets may need to send frequent updates on the location.

Asset Tags

Asset tags are primary devices used to track and pinpoint the location and other insights about different parameters.

RFID MONITORING

RFID is a passive form of asset tracking because it cannot pinpoint a device's location. Instead, it just reports whether or not a particular RFID tag is within range of an RFID scanner.

For instance, you could have a handheld RFID scanner that only detects tags within a few centimetres of the scanner. Or you could have a scanner with up to 800m of range that alerts you whenever a tag enters that range.

Although RFID can't provide precise location information or transmit data, it is available in various form factors and ranges. It doesn't require a battery and is very low cost. RFID is highly susceptible to interference, though, which is important to keep in mind.

CELLULAR TRACKING

Tracking assets with cellular connectivity relies on getting location data from nearby cell towers. Each tower location is mapped within a global database and by passing in proximity of one, the tracker sends an update that is currently in its vicinity.

Cellular tracking is currently the most popular solution for IoT, because it supports highly accurate location tracking with real-time and high-volume data capabilities.

This solution type is suitable for highly mobile assets, such as road vehicles and cargo, where location stamps and asset status data is needed on a regular intervals.

With the advancement of 5G, cellular tracking accuracy is expected to increase even further.

GPS TRACKING

The Global Positioning System (GPS) is a satellite based navigation system. It uses global satellites to triangulate the location of an asset by sending and receiving several signal types to a set of 4 satellites in position. It is part of the GNSS and one of the GNSS most accurate systems.

GPS trackers are the most widely used type of trackers, which makes them a ready-available low-cost option. They are also a suitable low-power option. Current system accuracy is within 3m or 95%.

The system is ideal for tracking assets that travel around the world on long routes and through remote locations.

HyperNet IoT platform also allows connection with other tags such as Ultra-Wide Band, Bluetooth tags, LPWAN and WIFI tracking, all contingent on customer demand.

How Asset Tracking Works

HyperNet Asset tracking operates under the collaboration of the three technologies working in perfect balance and harmony with each other.
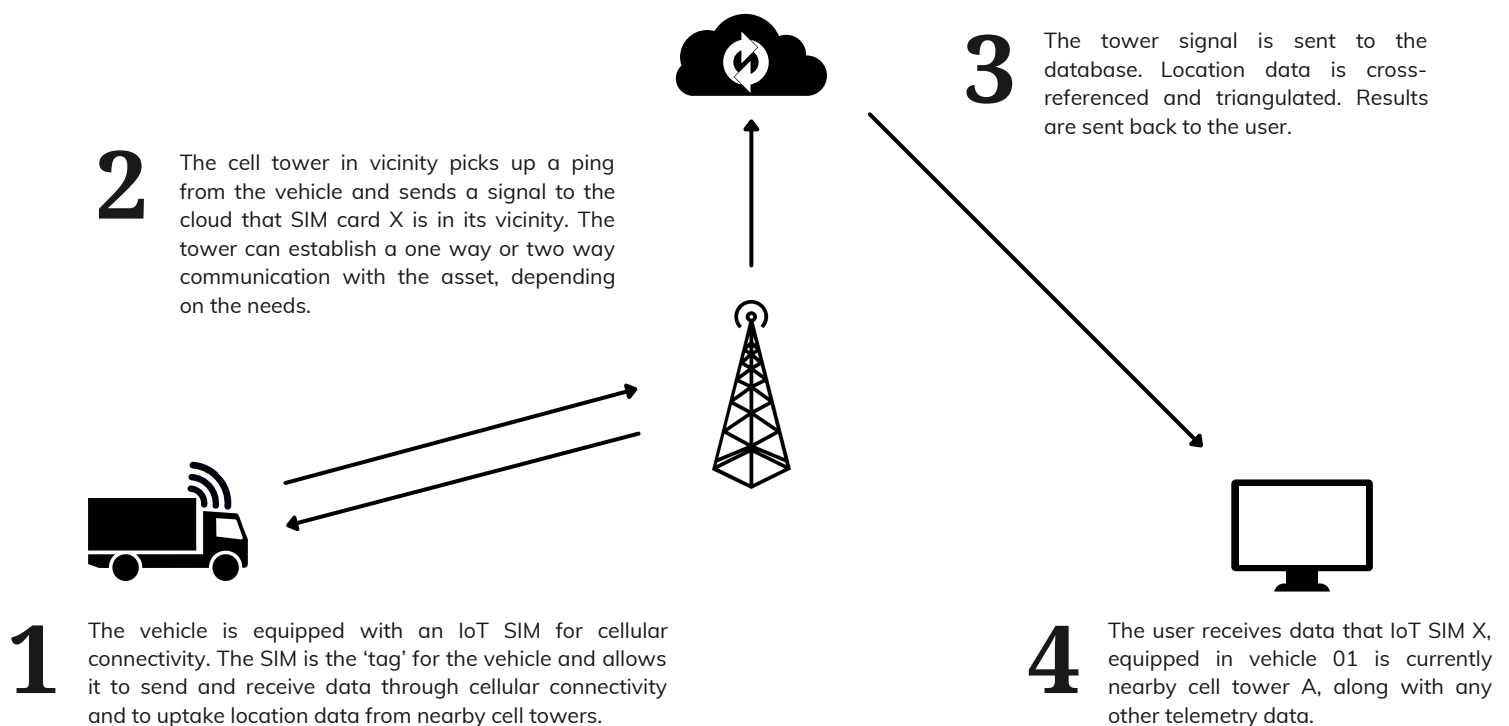
Tags:
In order to track an asset it has to be visible for the tracking system. This could be done through the so called 'tag' which transmits signals. Both short and long-range navigation systems require your asset to be able to send and receive on specific bandwidths. The tags can come in many forms and be built in or attached to the asset.

Connectivity infrastructure:
The connectivity infrastructure is the way to connect the tags to a system and locate them. GPS asset tracking, for example, would include a set of orbital satellites to which your asset would send signals. Cellular navigation would require cell towers and indoor tracking would rely on connecting via beacons and anchors. Your infrastructure would need to send the location data back to a database.

Management software:
Asset location information needs to be send to the business asset management software. The software identifies each of your tags and reads the data transmitted by your connectivity solution. You can use this system to view the location of your inventory in real-time.

2 The cell tower in vicinity picks up a ping from the vehicle and sends a signal to the cloud that SIM card X is in its vicinity. The tower can establish a one way or two way communication with the asset, depending on the needs.

3 The tower signal is sent to the database. Location data is cross-referenced and triangulated. Results are sent back to the user.

1 The vehicle is equipped with an IoT SIM for cellular connectivity. The SIM is the 'tag' for the vehicle and allows it to send and receive data through cellular connectivity and to uptake location data from nearby cell towers.

4 The user receives data that IoT SIM X, equipped in vehicle 01 is currently nearby cell tower A, along with any other telemetry data.

The benefits of IoT Asset Tracking

Track your assets in real-time

The core benefit of IoT asset tracking is that it provides real-time insights into the location of your inventory items. IoT asset tracking lets you offer more precise shipment tracking to customers and build more advanced insights into your logistics timeline.

Depending on your operation, real-time asset tracking can be fully automated. Automated monitoring not only provides real-time location insights, but it can do so instantly at all hours.

Prevent theft and loss

IoT technology makes it much easier to reduce theft and loss as well. You immediately know when an item is moved without authorisation, reducing the time between loss and discovery of a loss.

Additionally, it's easier to find items because they have built-in tracking. So whether an item was stolen or lost within your system, you can recover it faster and more reliably.

Save time and reduce disruptions

There are several ways you can use IoT asset tracking to save time and reduce disruptions in your logistics.

It's more accurate and automatic than manual methods, reducing errors and hangups. You can use the real-time data you collect through IoT tracking to find slow points and issues in your supply chain, highlighting potential solutions.

Finally, because IoT asset tracking is automatic, you can save person-hours for every item moving through your inventory.

Achieve sustainable growth

One significant long-term benefit of investing in IoT asset tracking is its potential to boost your sustainability efforts.

For most businesses, their supply chain accounts for 90% of their environmental impact. Making this impact positive is essential to promoting sustainability, winning over customers, and adhering to regional requirements. To reduce this footprint, though, you need data. IoT asset tracking can provide you with this data, empowering you to strive towards carbon neutrality.

Industry Use Cases

LOGISTICS

Keeping track of a supply chain is a lot of work with many different stages. HyperNet Asset Tracking can help you track where goods are in the supply chain, and even provide you with actionable data about fast-selling assets and stock to help your business grow. It is often used to monitor freight and cargo units, tanks, rail cars, trailers, shipping containers and more.

CONSTRUCTION

Construction equipment is expensive, and equipment theft from work sites can be a serious concern. HyperNet Asset Tracking can let you know as soon as a piece of equipment leaves a specified geo-fenced location to help prevent theft and loss. Recieve real time alerts about the tracking status of construction equipment and machinery.

MANUFACTURING

The manufacturing industry can put IoT asset tracking to use in a variety of ways. RFID technologies can help reduce human error when scanning and tracking components or help expeditors find missing parts that haven't made it from one workstation to another. Cellular and satellite tracking can keep a safe work environment.

AGRICULTURE

As one of the world's oldest industries, agriculture has seen plenty of innovations. By Using IoT asset tracking solutions can help farmers manage the condition of their equipment, monitor supply levels, and see location data of livestock. It can help them generate

The HyperNet Approach

For IoT asset tracking to provide you with these benefits, it needs to balance mobility with accuracy. On their own, it can seem like the available types of asset tracking require that you choose between these two factors, but that is not necessarily the case.

At HyperNet, we specialize at providing robust IoT Asset Tracking in both standard Plug-and-Go solutions and customized solutions. Thanks to our vast global network, you'll be able to accurately track your devices as they travel around the world and reduce the price and technical complexity of implementing cellular tracking to your solution. You can couple your cellular tracking solution with the HyperNet IoT Asset Management Platform for a deeper insights of your asset tags and data usage.

Reach out today to learn more about asset tracking with HyperNet and how it can help your business grow with actionable data.