How Wireless Asset Tracking Has Changed the Way Businesses Operate

The modern marvel of UPS's worldwide package delivery system is just one example of the dramatic change in the way businesses operate as a result of Asset Tracking. By scanning the barcode on each package at pickup, transport and delivery touch points, UPS is able to track and deliver more than 15 million packages *a day* to over 6.1 million customers in 220 countries and territories around the world. Asset Tracking has changed more than package delivery companies; it is now an essential function used in nearly every organization in the world, and one of the most important technology advances in business in the 21st century.

Asset Tracking allows organizations to monitor their assets with incredible efficiency and control. Corporations, hospitals, schools, manufacturers, distribution centers, farms and transportation systems are now using Asset Tracking to monitor location and other information about their assets. As a result, these organizations are realizing incredible cost-savings, improved inventory control, decreased labor costs, reduced loss and waste, improved reporting, accountability, forecasting and planning, customer service and public safety.

What Can Be Tracked?
Any item of value that can have a tracking mechanism affixed to it or a radio installed in it can be tracked. Assets that are most commonly tracked include vehicles, rail containers, office equipment and inventory stored in warehouses, distribution centers, and retail stores. Hospitals have begun to track health care equipment such as wheel chairs, portable X-ray machines, and crash carts. Public safety, utilities, and service companies are increasingly employing asset tracking to connect to vehicles and field personnel, even in remote locations.

How Does Asset Tracking Work?
Asset Tracking requires four main technologies:
1. **An asset tracking mechanism or radio/modem** to transmit to a communications network.
    - **Barcodes**- are scanned to the network.
    - **Radio Frequency Identification (RFID)** uses tags affixed to the asset to passively transmit to the network. An early technology used to locate and track company assets; it was designed to use proprietary communications systems which limited signal transmission to relatively short distances. Because it meant that assets could not be tracked outside that area, this technology is used less frequently today for asset tracking.
    - **Real Time Location System (RTLS)** technology improved transmitting performance. It uses the RFID or other unique tracking devices that operate in the 840-960 MHz and the 2.4 GHz ranges which can leverage existing wireless network infrastructure. Asset position is transmitted to existing Wi-Fi access points and antennas, which then deliver the reports to a back-end network hosting a RTLS software application.
    - **Radio/Access Point/Modem**

2. **Wireless Communications System:**
    3G/LTE – **Cellular networks** offer coverage within a range of 10-15 miles from the nearest cell site. As the prevalence of this technology has increased, using cellphone technology to track assets is becoming more and more common. Alerts can be received and commands or responses can be transmitted via cellphones anywhere within reach of a cellphone network. This is especially helpful in remote locations where other wireless networks may not be available. Cellular networks use the 840-960 MHz frequencies for some RFID tags and 700 MHz to 2500 MHz for wireless backhaul to the network.

GPS – **GPS Satellite Communications** may be used where other wireless connections are unavailable, such as rural areas or remote locations. Satellite communications are especially important for transportation, aviation, maritime and military use. The use of satellite technology allows tracking of asset location anywhere in the world.

Wi-Fi **- WLAN** (wireless local area network) enables portable computing devices to connect to the Internet. The ability to transmit over the Wi-Fi network makes Asset Tracking easily available to nearly all businesses. The 2.4 GHz frequency band is used for communications between assets and Wi-Fi access points.

3. **Asset Tracking Software Programs**. Hundreds of industry-specific software programs are available to manage asset tracking.

4. **Computer/Server**- Whether it is one laptop or a data warehouse, a storage unit is needed where the asset information is collected, aggregated and accessed for use.

Affordable and Cost-effective

With ever-increasing access to wireless networks and the ability to use their existing wireless infrastructure, most businesses can easily set up affordable asset tracking systems themselves or hire a professional service company such as Ekahau, Ayantra or CDW. And, with cost-savings from improved inventory control, decreased labor costs, and more accurate forecasting and planning, businesses will quickly recoup their investment in this essential technology.

Choose TerraWave Antennas for Seamless High-Speed Connectivity

The recent improvements in Asset Tracking are, in part, due to the tremendous advancements that have been made in antenna technologies for all wireless networks. TerraWave, a leading innovator in Wi-Fi antenna technology, has contributed to many of those advancements.

Now TerraWave is bringing that innovation to mobile antennas. The new line of mobile antennas offer high-performing wireless connectivity across all networks; LTE, Wi-Fi, SCADA, DAS, Wireless Backhaul and Broadband Communications. TerraWave's mobile antennas are ideal for providing the reliable, high-speed data transmission needed for Asset Tracking as well as Fleet Management, Broadband Communications and Public Safety. For more information visit www.terra-wave.com/mobile-solutions

References:

1. http://www.pressroom.ups.com/Fact+Sheets/UPS+Fact+Sheet
2. http://www.sierrawireless.com/Solutions/Industries/field_service
3. http://www.Ayantra.com
4. http://www.cdw.com/content/solutions/asset-inventory-management.aspx
5. Top Myths and the Facts about RTLS using Wi-Fi. Ekahau. http://www.ekahau.com/real-time-location-system/technology/how-rtls-works#!wi-fi-rtls-myths-vs-facts-2.
6. RFID Basics. ThingMagic. http://www.thingmagic.com/rfid-basics
7. About.com
8. Ilcev, Stojce Dimov, Global Mobile Satellite Communications for Maritime, Land and Aeronautical Applications, *Springer*, 2006