FORGET THE BUZZWORD IOT ...

... IT'S JUST ABOUT DATA-DRIVEN DECISION MAKING IN ASSET MANAGEMENT

Implementing IoT for asset management can sound intimidating and complex. In the end, we are only talking about harvesting data for business intelligence to make profitable decisions to enhance and develop the business, by connecting things, such as assets to each other.

EFFICIENT DATA COLLECTION SYSTEMS ENABLE FORMING REPORTS SUCH AS

1. What is in stock (stock levels)
2. Where are the goods exactly
3. When did my goods arrive in stock
4. When were they sent out
5. How to get them sent out faster and more efficiently
6. What is the condition of my goods
7. Where is the personnel at any given time and
8. Who performed a specific task, into the hands of decision makers.

Technology choices for asset connectivity can have a positive impact on overall system simplicity and project ROI. With the right choice of technology companies can concentrate on their own core business instead of trying to manually gather the data.

BUSINESS INTELLIGENCE

When managing your assets, making efficient decisions based on the most accurate and timely information available is indispensable. To get that information and reports for business intelligence, collection of the right raw data at the right time from the right sources is required. The most common data needs in asset management use cases are: inventory levels, location data and sensor data, such as temperature and acceleration. Based on the use case, also other data and bi-directional communication both to and from the tracked asset, may be needed. To gather this data and thereby provide the best data driven insights, an efficient and robust communication technology is needed. Wirepas Massive is a solution that offers data collection for the following main markets:

- Warehouse environments (incl. distribution centers)
- Manufacturing
- People count and location management
- Construction and mining
- Sensor data collection

Wirepas operates also in healthcare and pharmaceuticals, logistics and the automotive supply chain. The following table explains the main customer needs seen in the considered application areas and the features of Wirepas Massive that enable those needs to be easily met:

CUSTOMER NEED	WIREPAS MASSIVE FEATURE
Serialized ID-based asset count inventory	Each node has its own ID as well as the network ID.
Location data	The location can be calculated with the help of easily configurable anchor nodes.
BLE beaconing - commanding the Beacon functionality in the nodes to push Beacon messages to standard Bluetooth devices	The BLE Beacon is in the WPC stack as a standard.
High density	The network is built to support high density of nodes.
Complementing other technologies (e.g. BLE Beacon or bar code)	WPC requires no changes to existing processes and can easily add value to technologies already in use.

WIREPAS MASSIVE IS PARTICULARLY SUITED TO ENABLE THE FOLLOWING ASSET MANAGEMENT USE CASES:
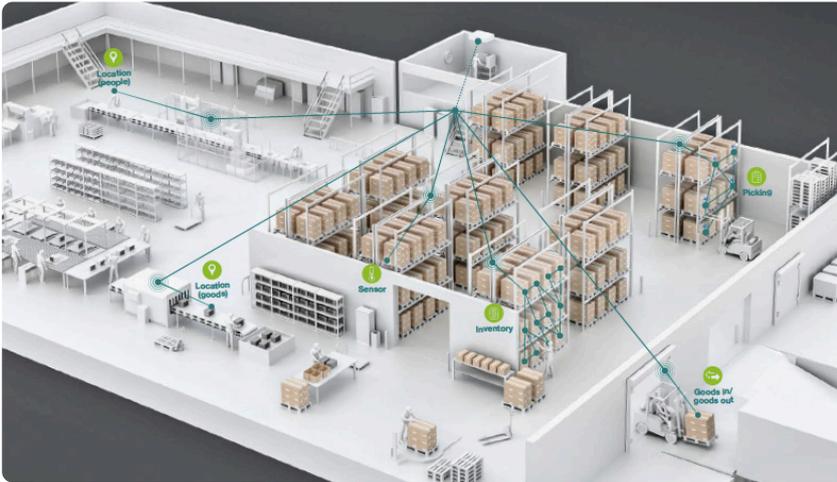
1. **GOODS-IN AND GOODS-OUT**
2. **INVENTORY**
3. **PICKING**
4. **LOCATION DATA**
5. **SENSOR DATA**
6. **PEOPLE COUNT AND LOCATION DATA**

Let Wirepas Massive bring the data to the back-end system to know when the assets arrive at the premises, how long they stay there, the condition of them, the picking process and making sure the personnel handling them is safely where they are supposed to be.

1. GOODS-IN / GOODS-OUT TO KNOW WHEN THE ASSETS ENTER AND LEAVE

For goods-in and goods-out use cases a set of criteria defines whether an asset is considered counted in or out of the inventory once it has been detected entering or leaving the network. At the most fundamental level a time stamp per asset is needed in the backend systems to know when the goods arrive at the premises and when they leave.

2. INVENTORY TO KNOW YOUR STOCK LEVELS AT ANY GIVEN TIME

Once all the assets are tagged with devices including Wirepas Massive with serialization, they can be automatically counted for inventory management. The data flows through the connected assets to a gateway that forwards the data to existing back-end systems for calculations and analysis. Wirepas simply requires assets to be tagged with low cost battery operated devices - the installation of simple battery powered infrastructure and a small number of gateway devices connecting the wireless network to the corporate network. No data leaves the premises ensuring a robust and secure solution with no dependencies on public infrastructure. The automated system removes the need for manual labor costs versus pen & paper where the cost per just one inventory count of 10 000 assets can add up to 2 200 €.

*Finnish hourly cost approx. 33€, according to
http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Labour_costs_per_hour_in_EUR,_2004-2015_whole_economy_excluding_agriculture_and_public_administration.png

3. PICKING PROCESS THAT REDUCES THE HUMAN ERROR

Usually the start of the picking process is that the asset gets chosen onto a picking order list. Using Wirepas Massive the warehouse order handler doesn't need a printed list, a device or a map to follow to find the assets in the warehouse. Thanks to the bi-directional communication possibility of the Wirepas Massive, their hands are totally free for the picking duties. He can simply walk around the warehouse and pick assets that have an indicator, e.g. an LED light lit on them. This eliminates the possibility of choosing the wrong asset since each item has an ID and the picking can be assigned in the backend system by ID and then light the LED on the item's tag. Every time human error can be reduced, efficiency rises.

4. LOCATION DATA OF THE ASSETS IN YOUR PREMISES FOR MORE EFFICIENT PROCESSES

Deriving the location of an asset requires no additional investment in infrastructure and the required data comes "for free" in a Wirepas enabled network. Simple setup is re- quired to define the physical location of some nodes in the network and the areas in which assets should be tracked. The location data can be made available to existing backend systems for visualization, logging and other needs.

5. SENSOR DATA TO ENSURE THAT YOUR ASSETS AND GOODS ARE IN MINT CONDITION

Sensor data, such as temperature, acceleration and ambient light level, can be collected through all the devices in the network and identified by the node ID. This data is useful to establish the condition of goods and whether they have been subjected to abnormal handling that may impact their value.
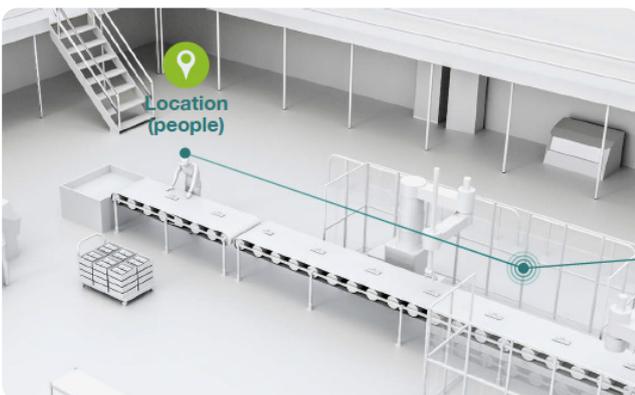
6. PEOPLE COUNT AND LOCATION DATA TO MAKE SURE THAT YOUR STAFF IS SAFE AND PERFORMING

When talking about people count and location data, it is usually only done in situations where the regulations require this data for employee safety reasons, e.g. mining, hospitals and construction sites. People count and location data is also used to move work force where it is needed most critically.

CONNECTED WITH WIREPAS MASSIVE

Enabling all the above use cases is possible using the Wirepas Massive solution. Wirepas Massive is a de-centralized radio communications protocol for devices. The Wirepas Massive protocol software can be used in any device, with any radio chipset, and on any radio frequency band, to form a network between them.

**THE WIREPAS MASSIVE NETWORK:**

- Is entirely de-centralized – which means local decisions in each device over:
  - Role: routing or not routing
  - Channel
  - Best neighbors for optimal routing
  - TX power
- Is battery-operated
- Is fully automatic, large scale, high density, low power for the whole network
- Does not suffer from signal collisions and overhearing
- Offers secure communication
- Offers optimized gateway to device ratio
- Offers bidirectional communication enabling e.g. Over-the-Air updates

WIREPAS POSITIONING FOR ASSET MANAGEMENT

As mentioned above, asset management use cases often require location data for tracking purposes. The visibility of your assets' whereabouts can help reduce costs by sizing down the asset pool or finding the missing assets, mostly located at customer premises, and invoicing the customer for their use.

With minor configuration, the otherwise autonomous network, Wirepas Massive also offers location data. All you need to configure are some battery-operated anchor nodes. The configuration is assigning the anchor nodes a fixed location with latitude and longitude. In the future, the technology will also develop into using height as a dimension for positioning.

The location of other nodes can then be derived from existing diagnostics data in the network. Using a small number of battery operated anchor nodes reduces installation cost and complexity. Locations can be calculated either in the cloud or the gateway depending on desired system architecture and constraints. Wirepas positioning handles coordinates in World Genetic System 1984, the same reference frame used by the Global Positioning System (GPS) to allow for simple integration with existing systems.
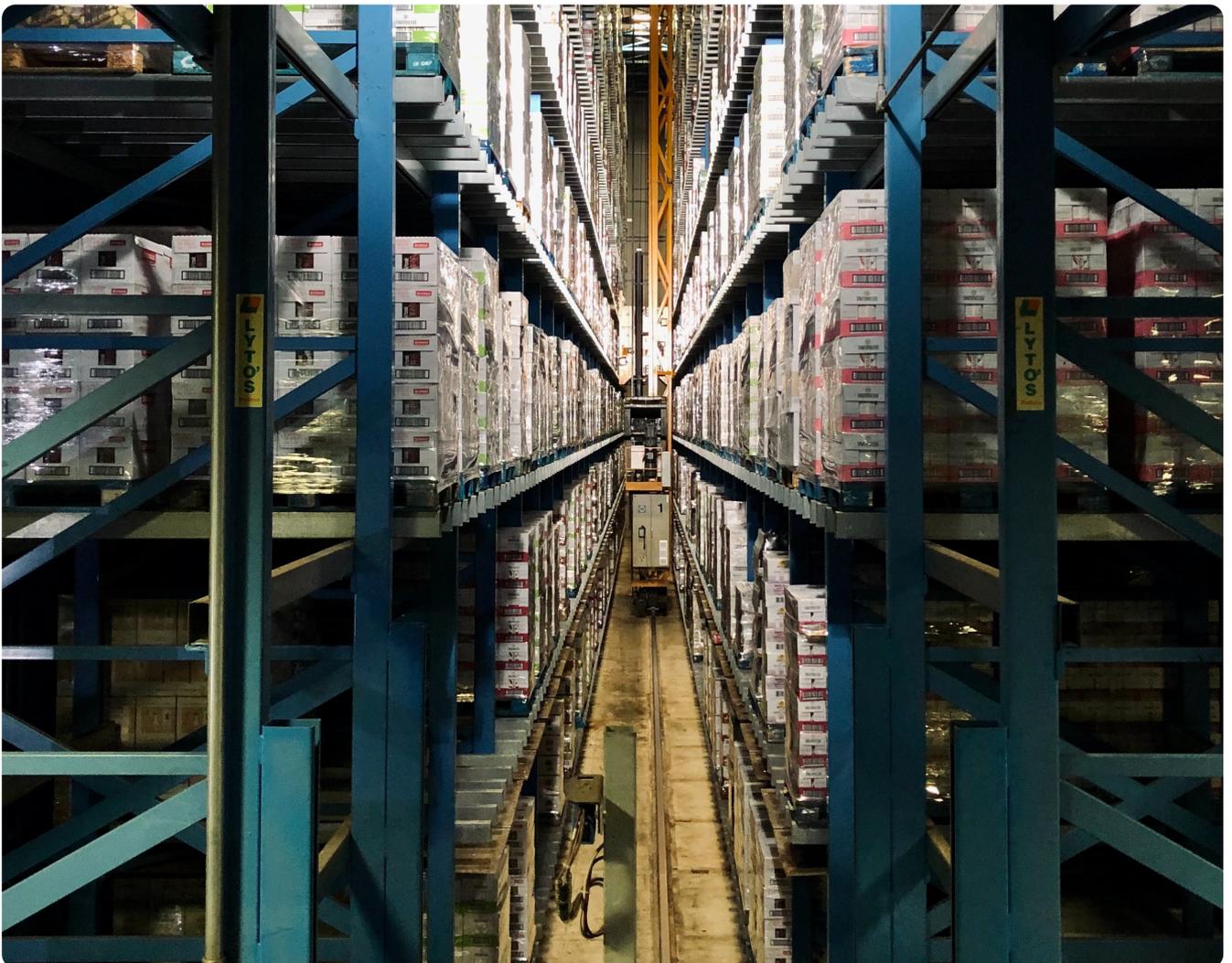
WIREPAS BENEFITS IN ASSET MANAGEMENT:

- Affordable connectivity, with off-the-shelf radio components and no monthly subscriptions
- Wide network coverage for the sparse installation
- Data collection on chosen intervals
- Low cost, easy to install & maintain infrastructures
- Efficient and reliable use of radio resources:
  - Overcomes environmental challenges e.g. RF hostile environments containing large amounts of metal
  - Highly tolerant to interference from other radios sources e.g. Wi-Fi networks
  - Co-existence with other networks operating at the same frequencies
- Consolidated applications
  - Sensors, actuators, positioning/tracking, beacons are all possible in the same system
- Offering location data with less data congestion, since the nodes have chosen a path how to send the data instead of sending it to all neighbors and gateways act solely for data backhaul

STUDY YOUR NEEDS AND USE CASES CAREFULLY AND CHOOSE FIT-FOR-PURPOSE TECHNOLOGY

When deciding on a technology, the use case scenario and environmental requirements set the framework. The end solution can be a combination of several technologies or just the one that is the best fit for purpose.

Wirepas Massive is the best fit when discussing scalability up to millions of assets, high density environment and when the operation requires a battery powered network. In addition, Wirepas Massive does not suffer from some of the most challenging environments for radio frequency techno- logy, e.g. metal, due to its ability to find an alternative route for the data. Bi-directional communication can be used for indication purposes as mentioned earlier in the picking use case.

Wirepas Massive can easily complement other technologies to reach the best fit for purpose solution. With long term legacy systems, changing processes can be an overwhelming task. Sometimes it's a worthwhile exercise to examine whether a new technology should replace the old one or just complement it to save time and resources. Wirepas Massive can complement the existing system to achieve access to more data without changing the processes too much.

Wirepas Massive fades away the concerns that adopting a new technology, the Internet of Things, can raise. The use cases above are every day processes at any asset management environment, e.g. warehouse, distribution center or factory floor. Wirepas Massive is easily installed to any of these environments to enable data collection for reports that decision makers can use to make business savvy decisions and improve process efficiency.
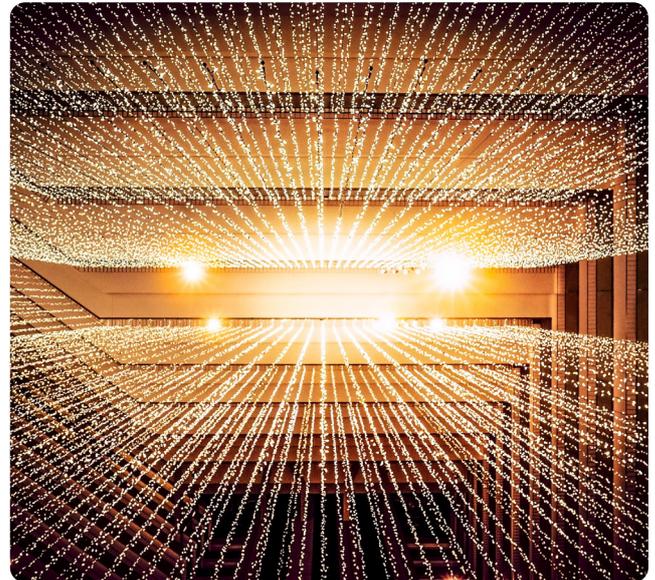
CONTACT

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WIREPAS

We're changing the face of IoT. To set a new standard. To skip the bullshit. To get infinitely scalable connectivity. Gentle on your wallet and way better than cellular 5G. In a network that never fails. Without middlemen or infrastructure. Totally self-managing. Tailored for commercial and industrial applications. Just more than you need. For less. We give you very very good IoT.