

Enhancing the Internet of Valuable Assets

This educational guide introduces the benefits of enabling connectivity as a feature to your asset tracking products and solutions. It recommends the special considerations to account for when selecting a connectivity choice out of a range of options. Finally, it provides a check list of questions to help you make your final connectivity selection.

IoT turns day-to-day measurements into valuable insights.

Asset tracking is the most well-established machine-to-machine (M2M) application, relying first on short-range communications such as RFID and then on traditional long-range 2G cellular connectivity. These assets are part of the logistics supply chain where the ability to track and trace a shipment on a transportation route is the main function of the goods distribution sector. In these situations, the assets that are connected depend on a simple cost/benefit calculation of penalties avoided in the event of a supply chain breakdown.

However, there are many more types of assets that can be connected so that companies can know where assets are and how to find them. These other assets include those static and relatively slow-moving ones such as containers, pallets, racks or living things such as people, livestock, pets. Once the cost/benefit threshold is reduced, any kind of assets can become valuable to warrant IoT connectivity. Licensed low power wide area (LPWA) such as NB-IoT and LTE-M is one such connectivity option to enable more assets to become 'valuable'.



Before the Internet of Valuable Assets

- Location of non-core but essential assets such as snowmobiles or cement mixers may not be known immediately in the event of incidents or emergencies.
- Lack of end-to-end visibility of asset location and condition to communicate throughout the supply chain.
- Requires a manual track and trace of assets.
- Inefficiencies in the broader logistics supply chain in a thin margin distribution sector.



After IoT Connectivity

- Improves business processes (by having increased situation-awareness data for decision making).
- Enables pro-active responses in event of supply chain breakdown.
- Exceeds customer expectations on real-time information updates on supply chain.
- Enables new business models for usage-based pricing on asset utilisation.



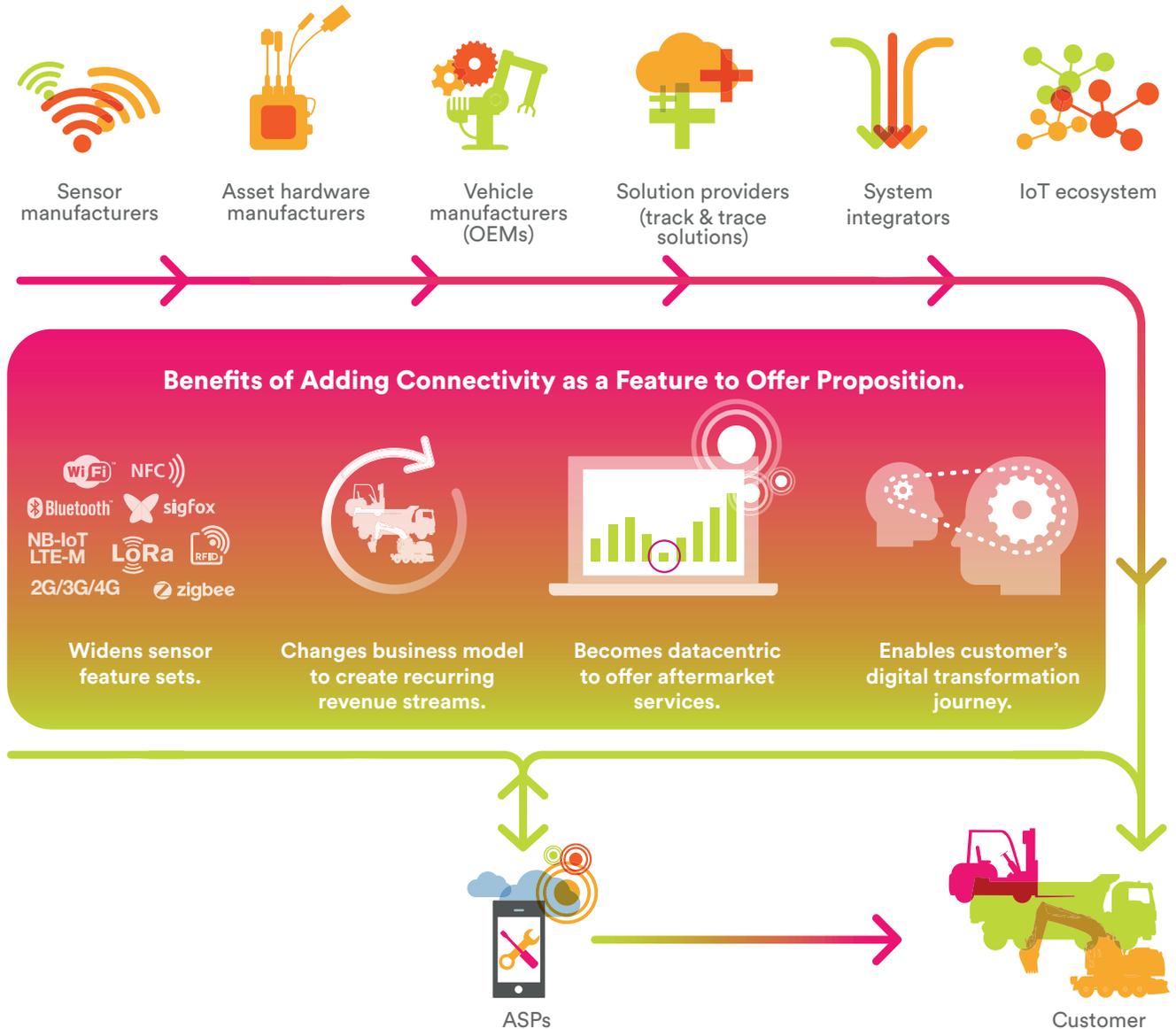
Adding connectivity as a feature creates revenue opportunities for the value chain

The traditional asset tracking value chain, from OEMs and aftermarket hardware providers, solutions providers, and applications service providers, can facilitate end-customer benefits by making connectivity a default feature in their products and solutions. Once connectivity is enabled, everyone on the value chain can move closer to the end customer. **Figure 2** illustrates the likely progression of a typical asset tracking value chain as a result of enabling connectivity.

Enabling IoT connectivity benefits everyone on the value chain

- Sensor manufacturers** differentiate from others by offering a connected asset product from the beginning, simplifying their customers' connectivity decision.
- Asset hardware manufacturers** differentiate from others by offering a connected asset product from the beginning, simplifying their customers' connectivity decision.
- Vehicle manufacturers (OEMs)** differentiate from others by being able to build their connected fleet management services for value added revenue streams.
- Solution providers (track and trace solutions)** expand their service portfolio by taking on their customers' non-core data centric functions. Once connectivity is enabled, solution providers can help their customers turn asset data into insights.
- System Integrators** in their capacity of running digital transformation project have the potential to expand their consultancies to drive new applications derived from having asset location and condition data.
- Application service providers (ASPs)** develop new applications for end customers in the logistics supply chain and other verticals such as healthcare, retail, construction and transportation.

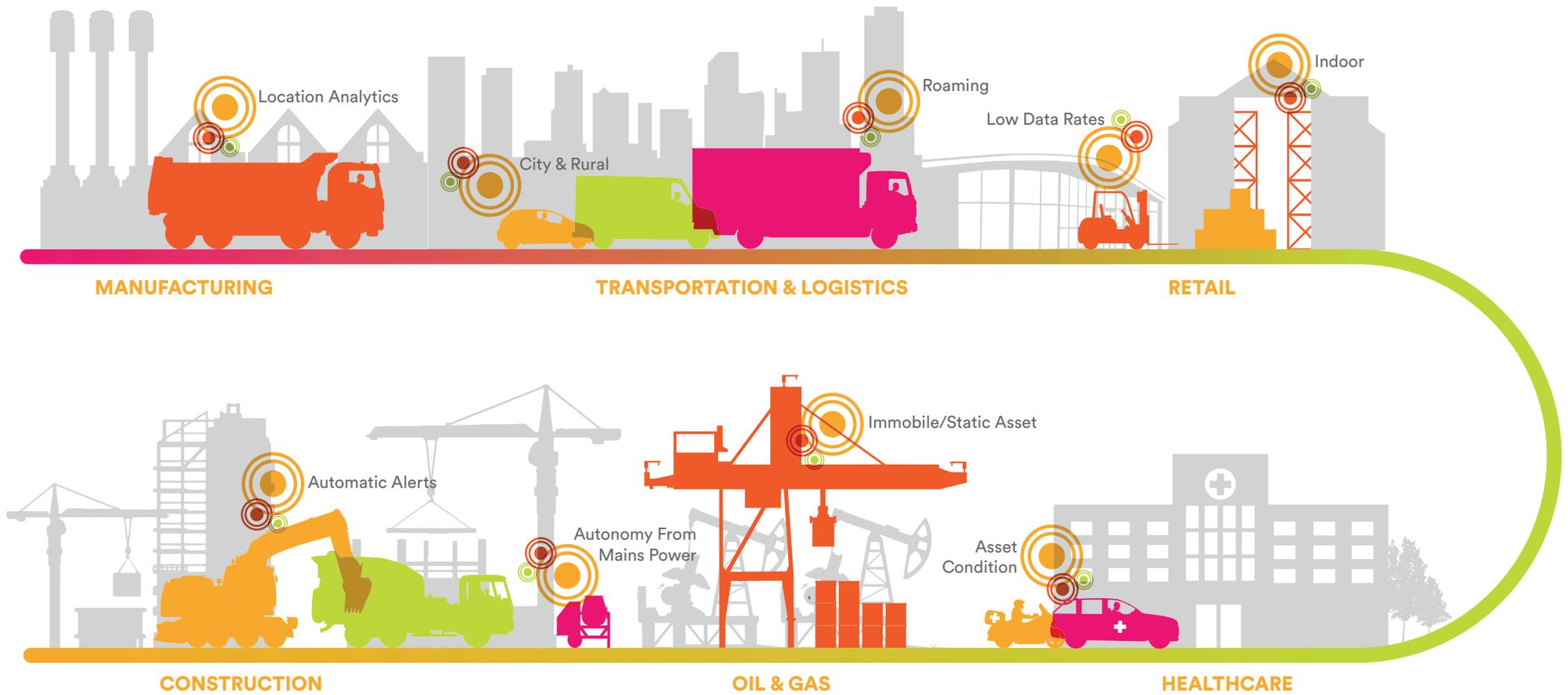
Figure 2. Asset Tracking Value Chain



Understanding the connectivity needs of asset tracking

The choice of connectivity for both the logistics supply chain and end customers in the various verticals becomes a critical business decision dependent on the specific cost, performance and benefit of asset tracking. **Figure 3** illustrates the diversity of connectivity requirements across different types of asset tracking deployment in different environments.

Figure 3. Key Attributes of Asset Tracking



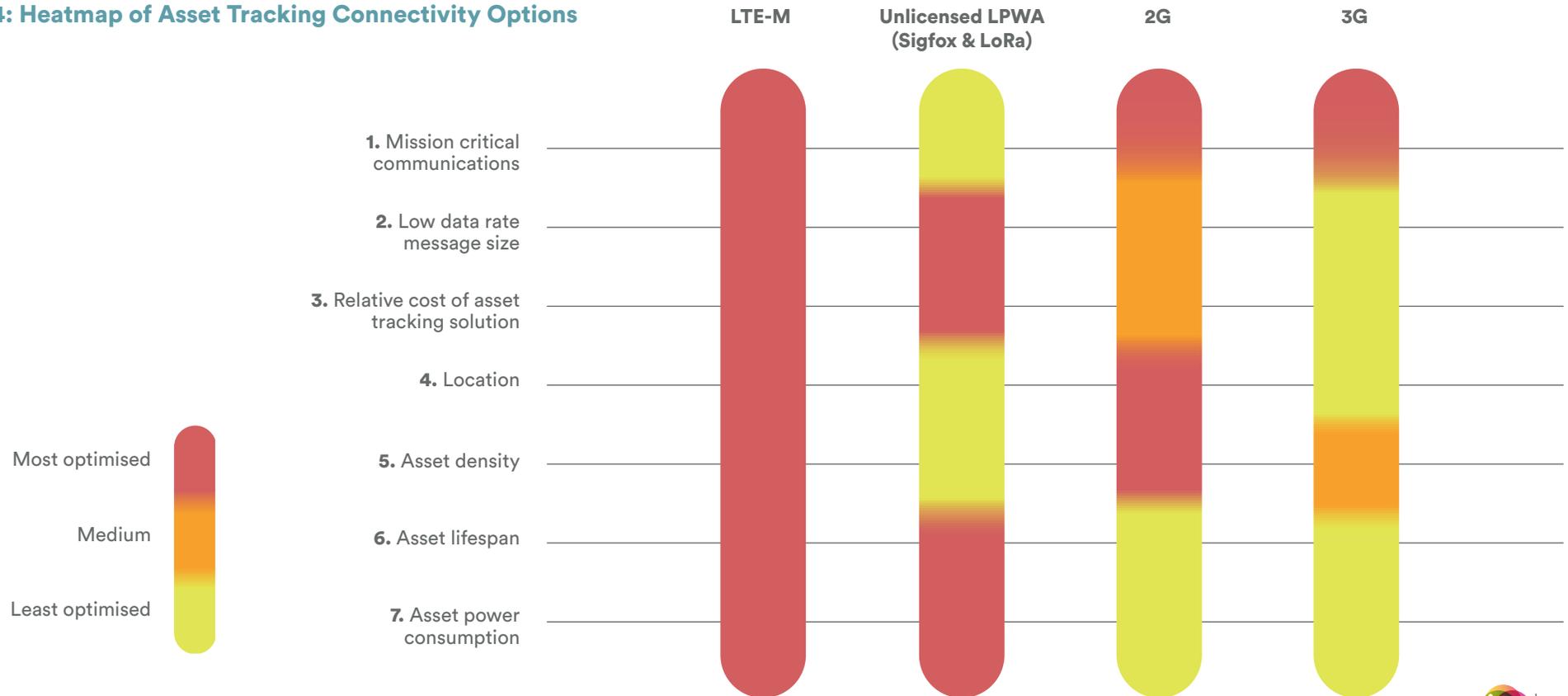
Asset tracking requires low data rate connectivity technology

Traditional cellular connectivity and short-range communications are well-established in asset tracking within the logistics supply chain. New licensed cellular low power wide area (LPWA) technologies reduces the threshold for cost/benefit calculation to enable other assets to be connected for track and trace application. There are two groups of LPWA technologies. Those that use unlicensed spectrum such as Sigfox and LoRa and those that use licensed spectrum that is cellular-based such as NB-IoT and LTE-M. The last are part of the 5G roadmap according to the GSM Association, which as a licensed and standardised technology, offer carrier grade connectivity reassurances.

Figure 4 below applies the 7 characteristics of asset tracking to 4 types of common connectivity options and illustrates that asset tracking is best served by LTE-M in terms of cost, performance and expected benefit.

Reading the heatmap vertically, LTE-M fulfils asset tracking requirements that the connectivity is suited to handle mission critical communications, the actual data transmitted, in relative cost of asset tracking solution, be used both indoors vs. outdoors and over and underground, communicate over long distances, to last more than 10 years, and to low power consumption. The heatmap can also be read horizontally. For example, asset tracking has mission critical requirements in certain industry vertical. As such, LTE-M, 2G and 3G fulfil this requirement by virtue of being offered on a licensed spectrum.

Figure 4: Heatmap of Asset Tracking Connectivity Options



1NCE offers simplicity to the value chain.

1NCE is the first dedicated Tier 1 MVNO providing fast, secure and reliable IoT network connectivity for low data B2B applications. As a native IoT company, 1NCE offers a “connect and forget” connectivity service that is well suited for asset tracking solution. This convenience gives sensor manufacturers, hardware manufacturers, solution providers, system integrators and application service providers an easy addition to their solutions to quickly build the needed revenue stream from their customers. 1NCE offers a predictable cost of connectivity to the value chain via its 1NCE Lifetime fee that covers all relevant costs that occur within the lifespan of the solution; costs such as SIM card, data volume, monthly

fees, activation fees, roaming charges and licence fees for using the connectivity management platform to manage and control IoT devices.

Most importantly, 1NCE offers simplicity in terms of making the optimal connectivity decision. It is positioned as expert in narrowband connectivity for IoT, with a simple and compelling commercial offer that applies not only to LPWA but also to 2G and 3G technologies, and which assists in the transition from these older technologies to LTE-M as required.

Check list for making connectivity decision.

Asset tracking has its unique characteristics that make the selection of connectivity skewed towards LPWA networks. LTE-M is optimal in terms of function, cost and benefit, especially as it is optimised to connect stationary or slow-moving things on reliable and secure licensed networks. 1NCE recommends making these 7 connectivity characteristics as a check list to guide you in making the right connectivity decision.

Figure 5: Checklist for Choosing Connectivity Access



Learn more about 1NCE Connectivity Solutions.
Get in touch! info@1nce.com