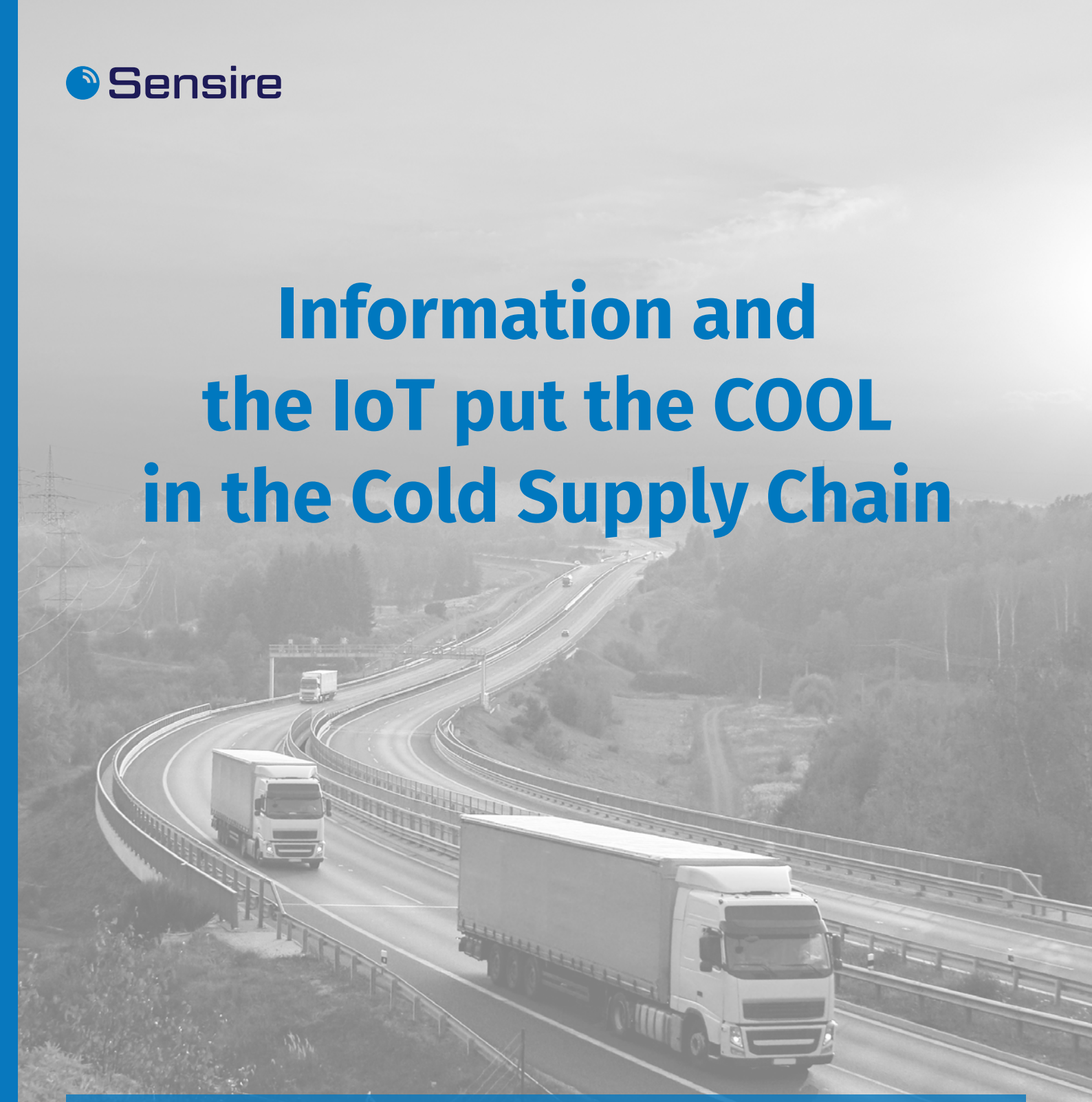
Sensire

Information and the IoT put the COOL in the Cold Supply Chain



Three crucial factors influence the success of end-to-end, real-time cold supply chain reporting success

By JP Asikainen

THE COLD SUPPLY CHAIN

The world is awash with data; it consumes billions of smartphone users every second, of every day, demanding real-time answers to a myriad of questions and acting as a real-time communication process that many companies can only dream of as being integral within their supply chain of processes and reporting.

The commercial world is even worse, with data being stored for compliance and legal reasons and generally much more so because companies fail to deploy end-to-end reporting systems that collect data which instantly turns into meaningful information, which allows a company to react quickly and positively.

Until recently, the cold supply chain has had one of the most complex and difficult to monitor processes; the movement of highly temperature sensitive products (blood, pharma, food) where temperature variations have often been discovered too late, with precious products being lost and costs increased due to having to re-manufacture/collect/ship replacements.

Three crucial factors influence the success of end-to-end, real-time cold supply chain reporting success:

1
Fragmentation
of cold chain
(lack of transparency)

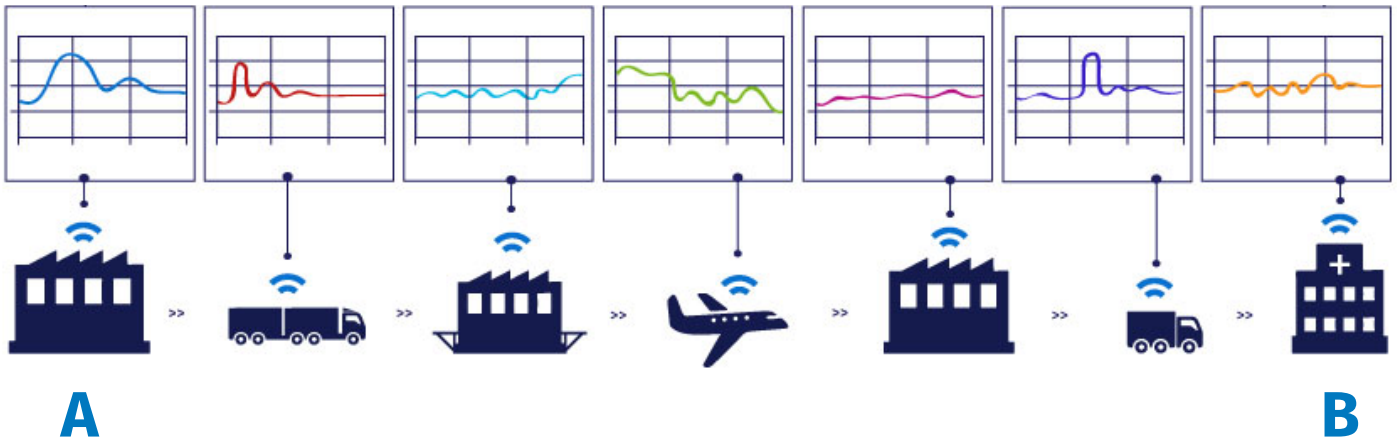
2
Doing the bare minimum
(tight budgets,
overstretched resources)

3
Lack
of automation
(human effect on visibility)

Before we look at the above in more detail, let us examine what might happen with the movement of a product from point A, typically the point of manufacture, to the recipient at point B.

Imagine we want to track the progress of a very expensive, highly temperature sensitive pharmaceutical, to the point it is ingested by a patient. It will pass through multi-modes of transport (land/air/land) and multiple 'touch points'.

Pharmaceutical manufacturers have many strict protocols within their manufacturing environment to ensure pristine product is ready to be shipped.



Let us keep it simple, as we move into a very complex transportation process.

Our box contains twelve drugs, each of which are individually wrapped before leaving the factory in Switzerland, destined for the USA. At the point they leave the factory, they are packed into a sealed box which has temperature monitoring capability. The box is put into a truck (an example being FedEx or UPS) and shipped to a cargo handler at Zurich airport. The road trip takes three hours as the truck has multiple pick-up destinations along the route.

It is a cold day in Zurich with autumn making an appearance and the temperature never getting above 12°C. Our box is removed from the truck and sits in a warehouse, waiting to be packed into the hold of the aircraft, along with other items. Finally, it is transferred into a ULD (Unit Load Device) and loaded onto the aircraft, bound for Miami in the USA. Has our box exceeded its temperature limit? I have no idea as we do not have real time monitoring and nor does the pilot, so he cannot refer to any information given to him during the flight.

Various parts of an aircraft can be temperature regulated but some are not; is our box in a 'good place' within the aircraft? We have no idea, as we do not have real time monitoring.

Ten hours later, our box is being unloaded in 28°C of glorious Miami sunshine and is moved to a customs warehouse, awaiting clearance. Six hours later still, our box clears customs and is picked up by a courier and delivered to the designated hospital. The road trip takes three hours total time having left the airport, due to heavy traffic and the need for the delivery van to make numerous delivery stops en-route, in some pretty hot weather.

Finally, the hospital takes receipt of the box and immediately transfers the goods to the cold store room. Only then, if indeed they have the right equipment, can they check if the box has ever exceeded the recommended temperature.

Do you think it arrived in the appropriate condition to be given to a patient?

Let us look more closely at the reasons why our box was not monitored real-time and how to resolve the challenges of real-time monitoring across the cold supply chain:

1 LACK OF TRANSPARENCY

Imagine you are attending a major sporting event. You have the benefit of only one view, from wherever you are located at the event. Now imagine, if you were watching that same event live on television, with the full advantage of benefits such as; playback, analysis, slow motion etc. Through television and a multitude of options therein, you have much more of an understanding of what has actually happened, and what is happening real-time.

The cold supply chain needs the 'live television' approach. Suppliers and customers need real-time, uninterrupted coverage. Today, data is dispersed, complex and unreliable. Suppliers and customers have differing, incomplete systems that often produce too much data but provide little in the way of pro-active information!

The lack of continuous real-time monitoring means that by the time the customer receives the product, it is too late to rectify any problems. The result being the product is rejected, costing all parties time, money and often delayed services to the ultimate recipient when the item in question is temperature sensitive drugs or human blood.

2 DOING THE BARE MINIMUM

The path of least resistance is often confused with doing little or nothing in order to rectify corporate system inadequacies. Many corporations are cutting back on internal IT developments and those that remain are usually fully deployed, just maintaining and supporting outdated, sub-optimal ERP systems. The lack of resource and pressure to maintain makes it difficult for in-house ERP groups to consider deploying large and often complex, new third-party systems. The solution is to select a SaaS solution with end-to-end, real-time monitoring reporting and analytics, with standardised interfaces into existing legacy systems for a rapid implementation and visible ROI.

3 LACK OF AUTOMATION

Too much of the cold supply chain today is dependent on manual inputs, be it from carriers, couriers, 3PL's and/or any other intermediary who touch the shipments on their way from supplier to customer. Human input often equals human error, or incomplete data which creates mis-leading information, which in turn can be very costly if the goods are ultimately rejected by the customers, because they believe that at some point the goods may have been exposed to an unacceptable temperature range. The IoT (Internet of Things) resolves this problem.

IoT allows the real-time connectivity of many different data sources (from sensors, gateways etc) and when deployed with dedicated IoT networks such as NB-IoT and LTE Cat-M1 it can work virtually anywhere in the world and if, in the event of a temporary signal drop out, allows for immediate updating, once coverage has resumed and continues to report real-time thereafter.

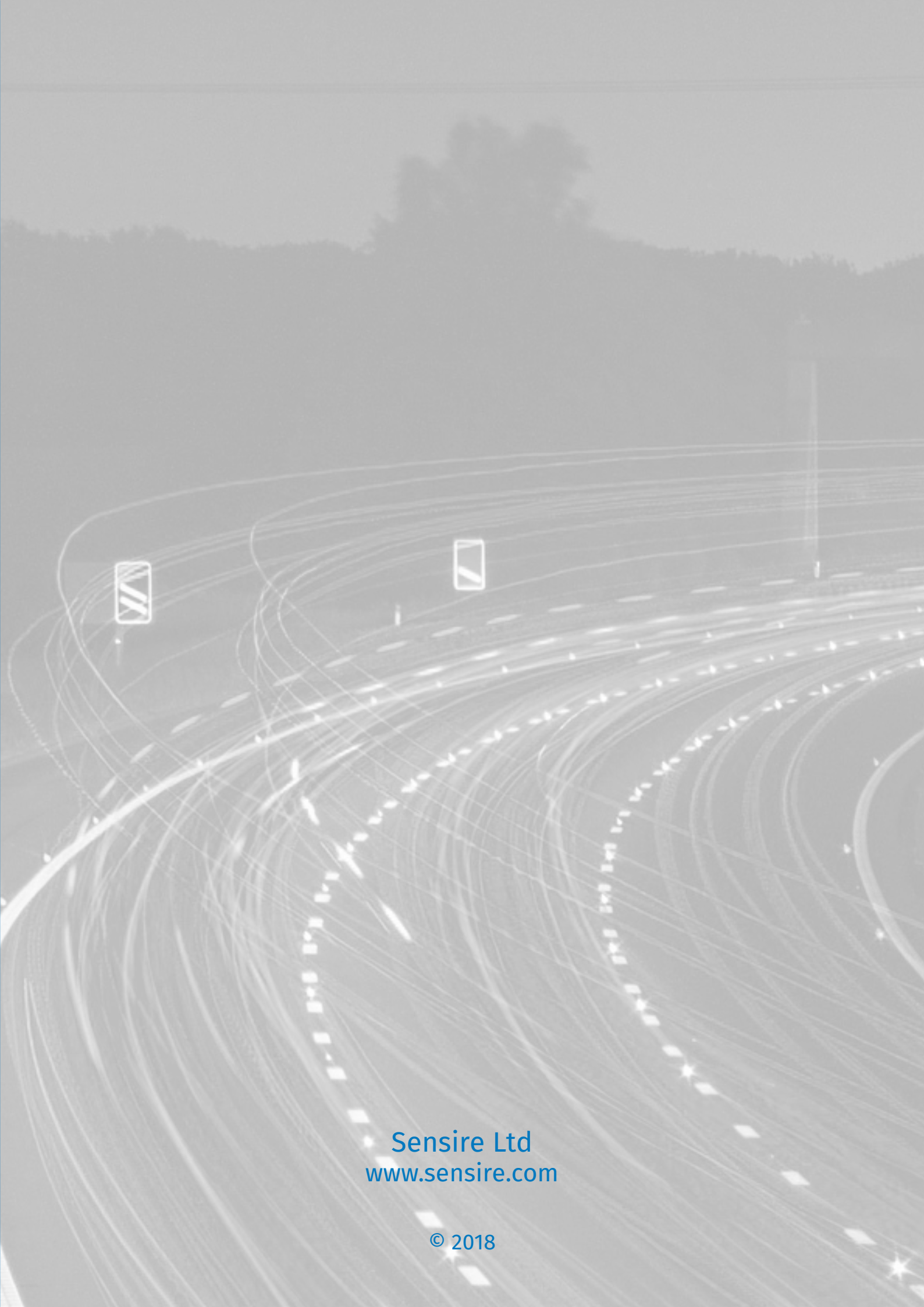
Frequency of updates can be as often as five minutes, with most efficiencies and costs occurring at ten minute reporting intervals. With certain solutions however, this can even be achieved real-time within the hold of an aircraft.

NB-IoT sensors can be fitted to any type of thermo box/container and with a battery life of several years, they will report highly accurate and consistent analytical information including temperature variance, humidity and location, throughout the journey and without the need for any human intervention of data recording. Such a solution is a huge step forward in driving valuable information to both suppliers and customers with real-time analytics and indisputable metrics as to temperature variation.

SUMMARY

Current technology can be adopted by suppliers and customers alike, to radically improve their visibility and transparency throughout the cold supply chain, through the quick and straightforward deployment of SaaS type solutions, with significant and early return on investment.

Jp Asikainen is a fifteen year veteran of cold supply chain logistics and holds patents on a number of novel designs and processes for the industry. He is also founder and CEO of Sensire, a cold chain SaaS software solutions provider.



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