thinxtra
The IoT Telco

FROM IOT TO ROI:

STACKING UP THE BUSINESS CASE FOR THE CONNECTED SUPPLY CHAIN

Your guide to unlocking the hidden value of IoT for Supply Chain Operations. Practical insights and lessons learned from real IoT deployments at scale.

Introduction

There is nothing like a great idea whose time has come. Long established practices are challenged and changed. In hindsight, these great ideas are typically so obvious, and we sometimes wonder why we did not adopt them faster. Similar to the emergence and rapid adoption of cloud computing as the new status quo, the Internet of Things (IoT) unlocks opportunities to lift operational efficiencies across the supply chain, and logistics operations, to an unprecedented level and speed.

The race is on.

This is particularly true for the Supply Chain industry, already poised to take advantage of IoT-enabled solutions at accelerated speed as the sector regroups post COVID-19. That will demand levels of resilience, control and flexibility like never before.

Many Supply Chain customers already demand the data insights from IoT-enabled supply chains to gain more control and visibility.

When we founded Thinxtra, The IoT Telco, our mission was to accelerate the adoption of IoT, to unlock large efficiency gains while building more sustainable business practices. We built and operate the national 0G IoT network infrastructure in Australia, New Zealand, Hong Kong & Macau, which is part of the global 0G Network, powered by Sigfox technology - a low power, wide area network (LPWAN) that reduces dramatically the cost and effort of deploying IoT solutions at scale, locally or globally.

Many forward-thinking market leaders already work closely with us or with other 0G Network Operators.

They benefit from this new transparency into very large numbers of assets as they move through the supply chain, which allows them to monitor location, movement, temperature, humidity, shock and many more parameters, across a broad array of assets that include IBCs, roll-cages, trailers, drums, beer kegs, containers and pallets.

And what having IoT-generated information at their fingertips means is that they can make these assets work smarter and harder.

Manufacturers, poolers, service providers and customers across the supply chain spectrum reduce loss and theft ratios, increase the utilisation of assets and ensure goods are shipped in the right conditions to expected schedules. Most importantly, more customer value is created. Real, fact-based data can be applied to solve problems and build better relationships.

However, without ROI, your IoT project is at risk of remaining a great idea, without substance or real business buy-in. Everybody dreams about connecting pallets or IBCs or trolleys to know where they are and how they are doing, but without a business case demonstrating clear ROI, projects never move beyond a proof-of-concept.

To make an IoT project real in the Supply Chain, new thinking is needed when it comes to how we collect and use data.

The secret is simple: small amounts of the right data, delivered as often as is required, to achieve the required outcomes. This essential point is often overlooked amid 'big data' buzz and hype surrounding new generation IoT network releases.

In the following pages, you will learn the steps needed to achieve a fit-for-purpose Supply Chain IoT solution. By fit-for-purpose we mean a solution that meets the specific requirements of your Supply Chain operations.The right questions to consider - from business outcome and cost perspectives, to the tactical operational considerations that can cause projects to become unstuck in their final stages - are all covered. Ultimately, you will gain the tools you need to start creating the business case that's right for your organisation with confidence. In harnessing the promise and incredible business and customer value of IoT for the Connected Supply Chain, I wish you every success.

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> **Use small amounts of the right data, pinging as often as is required, to achieve the required outcomes.**
>
> **Loïc Barancourt,**
> CEO, Thinxtra

How to Use This Ebook

This E-book shares a foundational summary of the key pillars of a fit-for-purpose IoT solution. One that fulfills both operational and cost requirements of Supply Chain operations. Of course, every business is different and the intent of this E-book is to provide you with a framework and questions you can apply to your IoT business opportunities and challenges, and how you might tackle them. For example, do you really need to know the location of an IBC, roll cage, or any other asset, every minute? Two or three pings a day will deliver the visibility needed to deliver a strong ROI. Thinxtra was born in IoT, and this E-book distills our insights over the last five years from countless real world projects across industries.

An IoT Telco, like Thinxtra, is a vital partner for Supply Chain leaders navigating these challenges. Working closely together, we know how to define every important aspect in the asset lifecycle, and find the right answers to your questions.

ROIs stack up for companies that know how to harness the power of **"Small Data"** to get control over assets and make informed decisions.

Solving the Business Problem: Start with the End in Mind.

The four questions Supply Chain professionals must consider when building a sound IoT business case are:

- What is the business problem we are trying to solve?
- What is the asset data we need to solve the problem?
- At what total cost will it come?
- Is the value unlocked by this data greater than the cost of data production?

Getting the right equilibrium means the total value gained from increased asset control and visibility matches and exceeds the cost of data production. The answers emerge during an interactive process that encompasses financial, operational and technical facets.

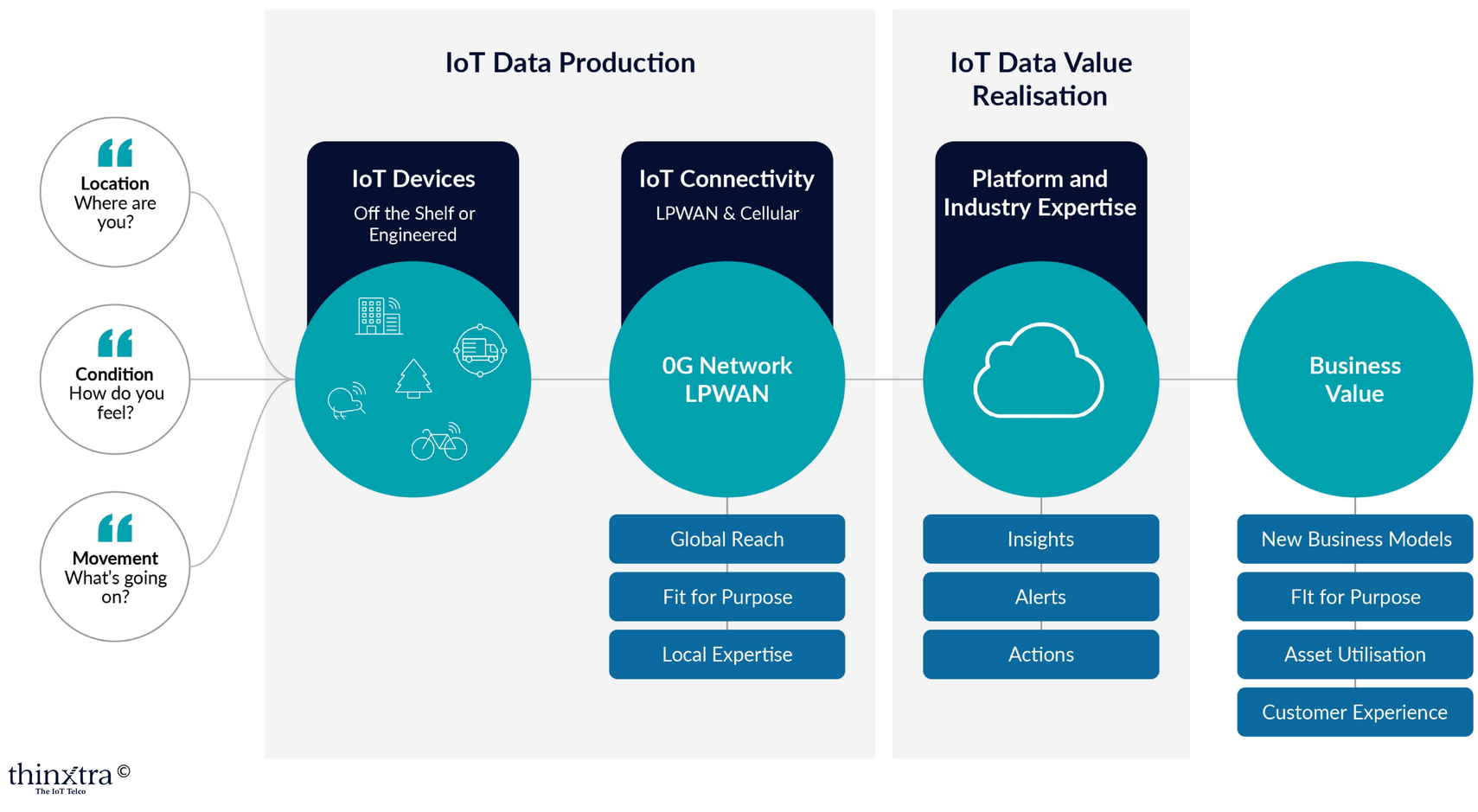
Across the many different applications and use cases Thinxtra has worked with over the last five years, a rule of thumb emerged:

> **ROIs stack up for companies that know how to harness the power of "Small Data" to get control over assets and make informed decisions.**

As hardware prices come down, market matures and new technologies such as Thinxtra's low-cost public Sigfox 0G Network are available, we have unlocked business cases with asset values starting at AUD$150.

Why is this so significant for the Supply Chain industry?

It means that assets and/or goods in the lower value brackets such as IBCs, roll cages, drums, kegs can be connected to IoT supported by a robust long term business case.



Minimizing the cost of data production with a fit-for-purpose solution is essential to maximising realised value in Supply Chain Operations

The Three Step Approach to Make the Business Case Work: "A-Day-In-The-Life-Of-Your-Asset"

At Thinxtra, we have distilled many years of experience across many diverse use cases, and developed an IoT specific methodology called 'a-day-in-the-life-of -your-asset'.

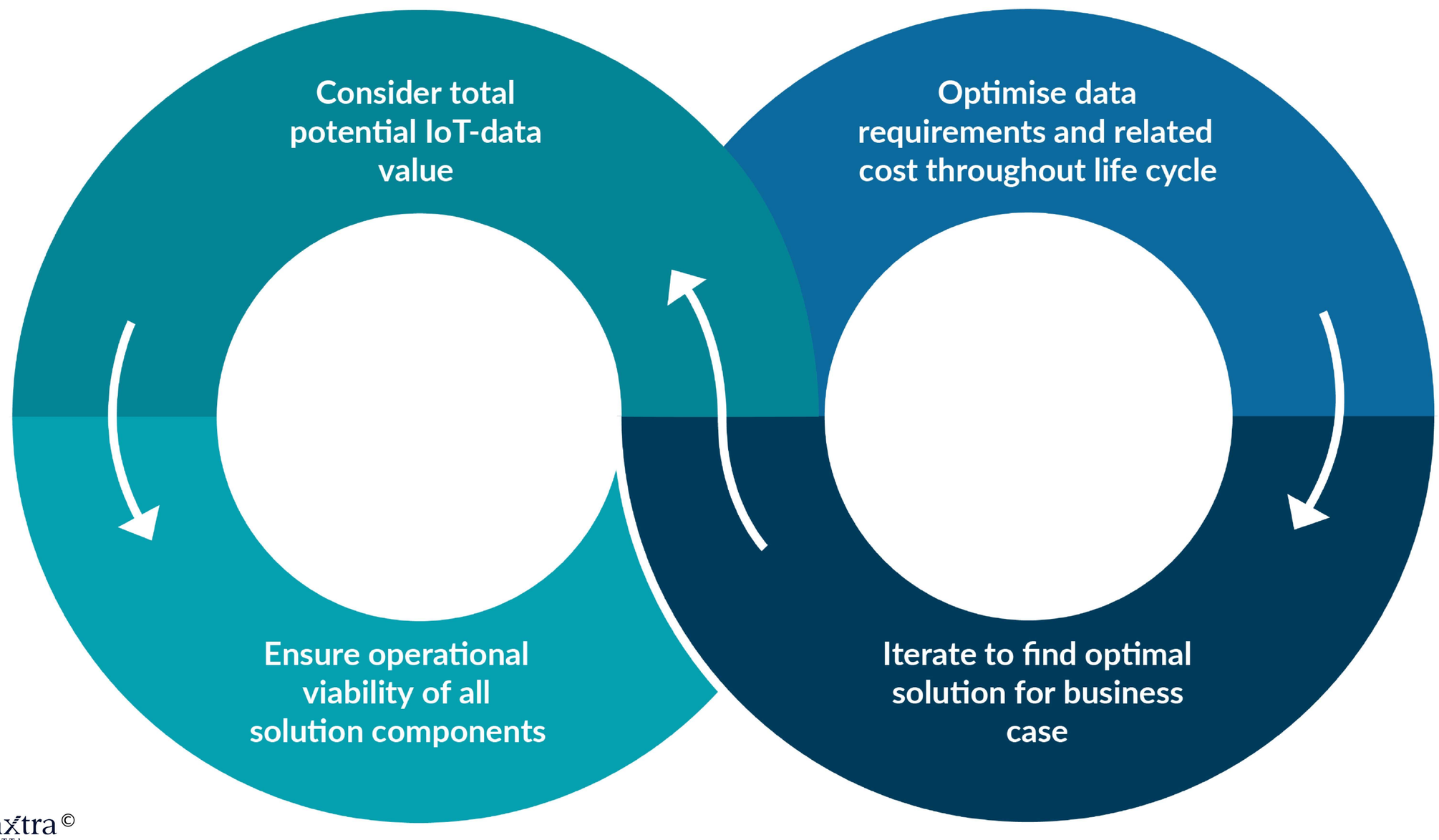
The methodology aligns the three key ROI inputs:

- Value of Data
- Operational Feasibility
- Optimisation of Total Cost of Data Production.

By bringing it all together, through an iterative process, you can realise how to make your assets work smarter and harder for you, within your economic feasibility thresholds.

The iterative approach to finding a fit-for-purpose IoT solution that is financially and operationally viable calls for a close examination of an asset's operational and data requirements, throughout its lifecycle, alongside a comparative analysis of data production cost.

From there we discover possible viable solutions and then adjust data production requirements, based on the data value proposition, to find the best fit-for-purpose solution that delivers optimal business benefit.



1

Discover All Value that can be Generated with IoT-Data From Your Assets

a. Start with the Business Problem and how it relates to asset information

Successful supply chain IoT projects begin with an organisation defining a specific goal and only then work to identify or develop the best solution.

We recommend supply chain organisations be clear on what business problems the IoT solution is to solve. This varies widely from one organisation to the other. It can be about reduction of loss ratios, cost to service customers, need to increase asset utilisation to increase Return on Capital, or simply about differentiating their offering to reduce churn through better customer experience.

Often, there is a recurring theme: operational costs are inflated because location information of assets while moving through the supply chain is unknown. Having insights into asset utilisation, can inform decisions about whether more assets must be purchased or leased to run the business, or whether capex savings are possible by using existing assets more efficiently. These insights help improve the customer experience and create highly valuable and differentiated service offerings.

Loss of assets is just the tip of the iceberg. On average this accounts for less than a third of mass-IoT business cases in the supply chain.

b. Determine the Value of the Data to define specific Data Requirements

The IoT is more about data than the name suggests. Core to successful IoT deployments is what the data generated across your supply chain organisation can tell you about your business. Data from connected assets help run and optimise a supply chain by enabling faster, better quality decision-making. Monitored assets share updates on key tracking criteria, such as location, temperature or humidity, at regular, defined intervals or at predefined events. The data answers questions such as: Are the assets, and goods they are carrying, in the right place, in the correct quantity, in the right condition, at the right time, and on schedule?

Data produced from devices attached to assets is used to trigger automated supply chain workflows or alert stakeholders - customers, operations managers, logistics partners and even drivers - to take action. For example: an Operations Manager can see at which distribution centres what number of roll-cages are needed to meet demand, and can anticipate shortages (if a given player in the supply chain is keeping too many roll-cages for too long, pre-emptive actions can be taken).

Understanding the data requirements is essential to identifying the relevant data sources, the insights needed and determining what the best device fit is.

2

Ensure Operational Viability and Fitness for Purpose of Your Solution

Now that you have a solid idea of the business and data requirements to achieve the outcomes you seek for your business case, you need to carefully consider which IoT solution you will use to collect information from your assets, as they move through the supply chain, which will then be turned into the insights you need.

In simple terms, if the solution doesn't pass the harsh test of reality in day-to-day operations it will fail. Unfortunately, the pitfalls are not obvious and often don't reveal themselves until the solution is deployed in the field.

Connecting an IoT tracker sending three times a day location data seems clear and easy. Yet, for the solution to deliver this information, a deep dive into the operational detail is required.

Key questions to ask when deciding how to connect IoT trackers to assets:

- Do you want location information when the asset is "leaving", "arriving", or "in transit"? Where will it go: domestic or international, indoors or outdoors, on road transport, with shock or vibration, heat exposure, in hot, cold, or even freezing temperatures? Yes, standard batteries do not fare well in commercial freezers.
- When communicating, will the device be indoor or outdoor? Interestingly, GPS does not work indoors, but Wifi based geolocation works very well
- Do you want data from assets that are in storage and don't move at all?
- Do you want to know when assets "leave" geographical boundaries?
- What temperature will the device be exposed to? For how long? Will it be immersed in water? If so, for how long will it be immersed?
- Will the device get cleaned? If so, with what? Using high jet pressure or caustic chemicals or other means?
- Ideally, you don't need to change batteries. If you have to, how will you change batteries?
- If the tracker stops functioning or loses coverage - how can your software platform capture it?
- What is the ideal battery life for this asset so you can "set & forget" about any maintenance?
- How will the device be mounted, by whom, when and at what cost?
- Where can you mount it on the asset? Do we know that the device can perform there (with no barriers to radio frequency sensor connectivity) and also be shielded from physical damage whilst in operation? Has the mounting arrangement been validated? Getting down to final considerations like what screws will be used is just as important as the big picture.

3

Uncover Ways to Optimise the Cost of Data Production: Apply "What If" Data Scenarios

The list is long and presents only some of the questions which are highly dependent on the context of your supply chain. Yet, once we start thinking about it, these practical considerations become very obvious.

The **"a-day-in the-life"** of an asset approach uncovers all these different variants specific to a given environment.

Once identified and documented, the evaluation criteria for the right solution is well understood so that it is fit-for-purpose for the business case. Unless the solution is robust enough to support "a day in the life" of the assets they will be attached to over many years, the solution is not operationally viable.

Only with the clarity of operational requirements, can you evaluate the technology options. We can now assess the right solution architecture spanning the device, the network, the data platform, the integration requirement and the process flow. We recommend a technology agnostic approach, with operational viability at its core.

Every technology and hardware choice included in each IoT solution bring different strengths and weaknesses, which emerge when applied to different supply chain environments and requirements. But operational viability is non negotiable. In other words, technology follows operational needs.

To reach the right equilibrium between financial thresholds and operational requirements calls for an iterative process of asking "what if":

"What if we use more data?" Will the solution deliver measurable incremental value? How much this extra data will cost me over the life of the project ?

"What if we use less data?" Will the solution come at lower cost while delivering the value we seek? Or maybe 80% of the value we seek?

These questions may seem obvious. However, once you discover that the difference between one message per day or a message every minute can make a 1000% difference in cost over the life of the solution. This makes, or breaks, business cases.

This "what-if" scenario investigation can only be applied after the value of the data items and the operational relevance are deeply understood.

Through this "what-if" scenario analysis, your business will be equipped to make educated decisions and find the right balance between Total Cost of IoT data production and the value it creates for your business.

Insights From Global Logistics Leaders

Three Examples of Real Implementations

As noted earlier, successful IoT solutions are built on a customer centric partnering approach between IoT Network provider, device and data platform providers as well as process oriented system integrators, or alternatively by an end-to-end IoT solution provider.

With the following three examples we share insights from local and global deployments of leading supply chain and logistics organisations.

What they have in common is their adoption of the “less is more” thinking when it comes to their IoT strategy, which they consider to be essential to their future in our world of rapid technological change that is disrupting businesses across all industries.

LOSCAM

Removing the Pitfalls of Poor Asset Management

Loscam is a trusted name for providing pallet pooling and returnable packaging solutions in Australia, China, Indonesia, Malaysia and many other countries.

After a decade of trialling expensive, complex and incomplete asset tracking alternatives from various traditional providers, Loscam deployed an end-to-end IoT-enabled solution operating long range, long battery-life 0G-enabled devices to address the need for increased visibility and control of their IBC assets.

Loscam's vision to offer their customers a highly attractive "track & trace" solution became reality.

Within four months, Loscam and their customers gained valuable, and in some cases quite surprising insights about the real movement of their assets through the supply chain. For example, 5% of units were incorrectly delivered to a competitor's warehouse and 8% of units moved outside the customer's logistics provider network.

Ultimately Loscam's track & trace solution increased operational efficiency and asset utilisation reducing the number of units needed by 25%.

Increased visibility, transparency and a partnering approach forged better win-win working relationships.

The first IoT-enabled Track and Trace deployment with Thinxtra was a lightbulb moment for us. We knew tracking location was important but suddenly realised that tracking other data generated by the device could add enormous extra value to customers.

Daniel Bunnett

Executive Vice-President for Australia and New Zealand, Loscam

Transforming the Supply Chain with 250,000 Roll-Cages Across Europe Connected to the IoT

Further afield, the German-based international courier, parcel and express mail service DHL deployed 250, 000 logistics trackers in six months to track roll cages on the 0G network.

> 6 months - time it took to roll out
> 250, 000 IoT devices on DHL roll cages

Roll cages have to be available in the right quantities at customer warehouses, 35 different German DHL parcel centres and other countries to enable DHL's seamless delivery service.

Precise location insights mean DHL can optimise asset utilisation by ensuring the right availability in each location and avoid shortfalls or bottlenecks.

Reduced inventory, storage cost and lower long-term cost of operation have enabled DHL to respond in a timely and efficient way to changing delivery demands and stock levels.

Improved Asset Utilisation and Operations Through Greater Visibility from IoT Enabled Tracking

In the automotive industry, Michelin improved intercontinental sea-freight flow and transformed its tyre shipment efficiency with the help of IoT-enabled containers tracking cars, bicycles and vehicles across 170 countries.

The manufacturing giant - which services 14% of the global tyre market - was facing the challenge of suboptimal routes, a lack of visibility and complex administration across many supply chain partners.

The solution is an all-inclusive tracking service charged per shipment. It includes IoT trackers, and an analytics platform, connected via the long range, low-power, low cost 0G Network, powered by Sigfox technology. Michelin is seeing the benefits of end-to-end visibility in its intercontinental supply chain and the value the service creates for its customers.

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40%

Increase in ETA projection accuracy of Michelin's shipments

10%

In overall lead times, shortening transit times

Conclusion

With supply chain customer expectations increasing rapidly, companies who will thrive are not the largest, biggest operators, they are those that are most adaptable who can see the risks and opportunities and then respond to them.

The question is no longer if IoT will play a role. The market demand for IoT solutions gives the answer loud and clear. The real question is how to embark on the IoT journey that will keep your seat at the table competitive amid lightning fast market evolution, driven by pressure to build resilience, flexibility and remote control capabilities.

In many ways, it's a change of paradigm. Next gen IoT-enabled efficiency projects in the supply chain that require data from 1,000s of non-powered assets often need to shift their thinking from BigData and 5G to Small Data and 0G to make their ROI work.

The adoption of IoT in the supply chain is quickly gathering pace now that the business case is proven. When approached the right way, it delivers higher asset utilisation, new business models and ultimately, better customer experiences - benefits impossible to ignore.

Yes there are risks in operational deployment, however, like any shift, good project and change management can mitigate those. The possibility of doing less through remote tracking and monitoring, such as scanless asset flows, contactless administration and inventory checks, frictionless monitoring across the supply chain are just too compelling. It won't be a question if IoT will be the new status quo, the question is when, and the race is on.

Finding the right IoT solution for your business is vital to minimise risk and reap the rewards.

This is why we built Thinxtra, The IoT Telco.

Now is the time to turn IoT into ROI.

Where To Start?

Thinxtra accelerates business efficiencies by connecting assets and making them work smarter. With our partners, Thinxtra delivers fit-for-purpose Internet of Things (IoT) solutions in ANZ, HK and Macau.

Born in IoT, we are passionate about contributing to a profitable and sustainable future through large-scale operational efficiencies.

IoT creates real business value and we know how to deliver it through market leading local IoT expertise with global reach to the world's largest 0G Network, powered by Sigfox technology and spanning 70+ countries.

Benefit from new business models, better customer experiences and higher asset utilisation.

Thinxtra offers scalable IoT solutions delivered using hyper-efficient, long-range devices and nationwide infrastructure, integrated with existing operations that make your assets work smarter and harder in your Supply Chain.

Ask us for an assessment to unlock the real value of IoT for Supply Chain Management.

REQUEST A FREE IOT ASSESSMENT

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