intellias

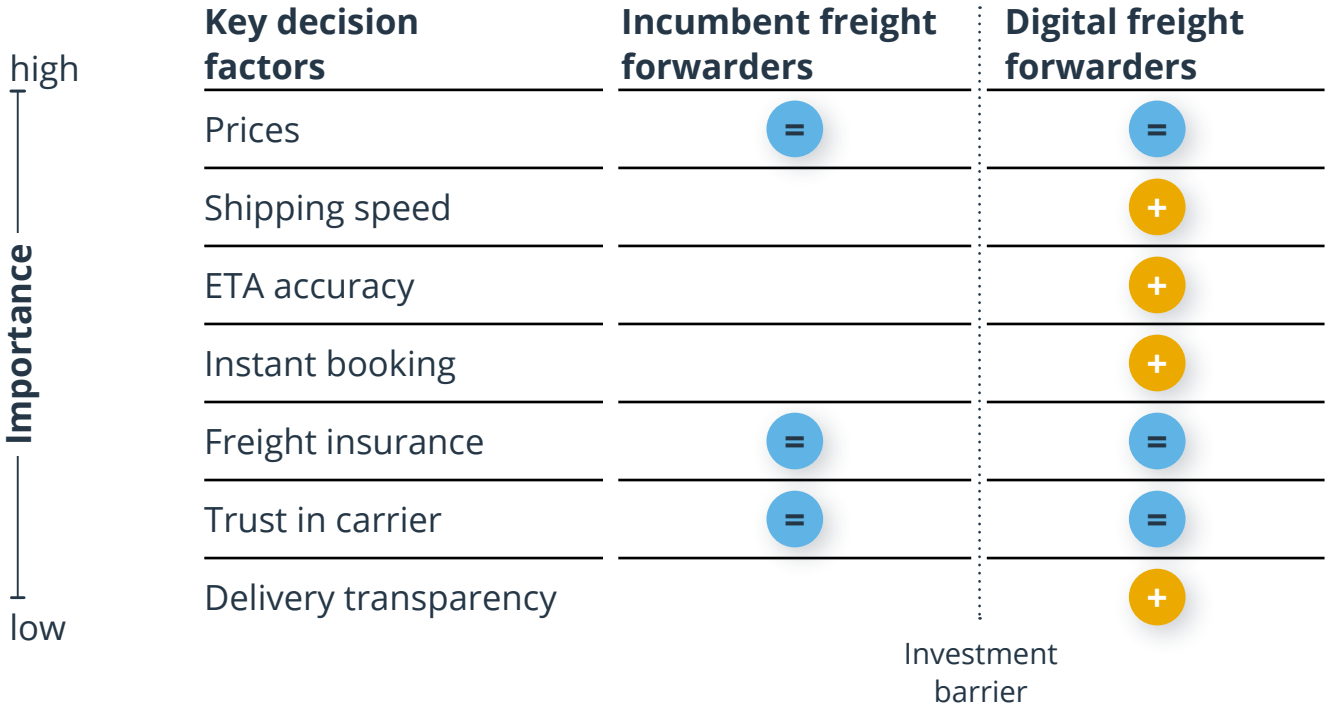
IoT in Supply Chains: Innovation from Every Angle

A strategic guide for transforming logistics businesses

CONTENTS

01 What does the technology-enabled logistics market look like?

The importance of technological innovation in supply chains is soaring. Still, traditional logistics companies often lack the established processes, IT infrastructure, and organizational structure to develop complete digital solutions at the level desired by customers. The reasons are clear: limited technological expertise, a lack of software engineering resources, and an inability to attract investment to digitize services. These obstacles to companies' digitalization strategies open doors for new competitors. Thanks to previously adopted technologies, startups and eCommerce platforms are gaining the edge in the race for logistics market share.



- Incumbent freight forwarders fulfill the basic demands of their customers but lag behind digital freight forwarders in key decision factors in challenged market segments
- Large freight forwarders recognize the danger and are already investing in their transformation
- Smaller freight forwarders lack the funds to adapt their business model
- Consequently, incumbent players who are not able to match the services of digital competitors lose market share

intellias

02 Where is the place of IoT at various stages of the supply chain?

The Internet of Things is becoming one of the most practical and efficient technologies for improving almost every stage of the supply chain. Still, introducing innovation and scaling it throughout a supply chain requires a lot of effort from logistics providers. They cannot transform their established processes or implement a particular technology on the spot. Innovation happens slowly, as logistics companies have to nurture a technological culture within the organization. To implement IoT in a way that will benefit and not overwhelm them, logistics providers need to start where the risks are minimal. They should consider where to innovate first and decide how to scale technology step by step. That is a balanced strategy to implement IoT and then apply it to more and more processes throughout the supply chain.

Sourcing and planning	Logistics	Augmented workforce	Customer engagement
Demand modelling and forecasting	Autonomous delivery	Robotic process automation	Customer analytics, trend sensing, dynamic pricing analytics
Inventory optimization	Cold chain management	Intelligent connected wearables, location and sensor information	Omnichannel experience, eCommerce platforms
Supply chain analytics	Asset tracking	Connection to infrastructure, electronic workforce, document/data access, remote expert support	Artificial intelligence/ machine learning in customer service avatars and bots in ‘simple’ sales and service interactions
Supplier contract analytics	Inbound and outbound logistics analytics	Learning/ knowledge management	
Procurement volume analytics	Warehouse optimization		
	Fleet/vehicle management		

03 What empowers IoT technology for supply chain visibility?

While implementing IoT in supply chain management, logistics companies can rely on other technologies to assemble a complete ecosystem for efficient innovation. By uniting IoT with the most recent trends in automation, connectivity, and data processing, the logistics industry can get closer to automated and intelligent workflows without manual operations. This will make supply chains more responsive to customers' needs, more efficient, and more resilient for all stakeholders. Creating such an ecosystem requires brave experimentation that relies on engineering capabilities, partnership flexibility, and a readiness to share responsibility with proven technology innovators.

IoT is empowered by three key technologies:

Artificial Intelligence (AI)

Programmable intelligence enabling devices to learn, reason, and process information like humans

5G Networks

5th generation mobile networks with extremely fast near-zero latency for real-time data processing

Big Data

Volumes of data from numerous internet-connected sources that are too large for normal processing methods

04 Practical use cases of IoT throughout the supply chain

On their digital journey to IoT-empowered supply chains, logistics providers have to admit they need assistance. This assistance may start from an overall look at their technological readiness, initial digital consulting, and discovery of technological solutions for particular business needs. Often, logistics providers may lack engineering resources and expertise to develop IoT solutions fast enough, with sufficient quality, and within their budgets. These needs lead them to partner with digital technology providers who have expertise and experience with IoT technology. Here are some practical use cases from world-leading logistics providers, fleet management companies, and technology innovators who are partnering with Intellias to invent transparent and resilient supply chains.

FOR RETAILERS:

Customer-centric analytics and demand forecasting

The client: A multi-platform marketplace carrying over 5000 product lines and ranked among the top 500 Amazon sellers.

Business challenge: Outdated technologies and accumulated issues spurred the need to look for an engineering partner to bridge technological gaps.

Technology solution: A business intelligence tool for viewing drill-down reports on sales and profits, managing prices and listings, collecting historical statistics, and forecasting revenue based on behavioral patterns. Integration with global marketplaces like Amazon and eBay allows the client to automatically make informed decisions about product listings.

Business outcome: Modernization of the platform allowed the retailer to provide top-notch service to their 5 million customers and expand their global footprint to chase new revenue streams.

Technologies: EclipseLink / GlassFish Server / Hibernate / Java EE / JSF / MySQL / SVN

Read the full case study

FOR FLEET MANAGERS:

Telematics and vehicle data analytics

The client: A leading fleet technology innovator from the US with over 2 million in-vehicle software installations.

Business challenge: Adopting the latest telematics trends in logistics to equip fleet managers with a complete platform for monitoring daily operations and optimizing vehicle performance.

Technology solution: A fleet management platform with real-time GPS telematics, detailed mapping, route and mileage monitoring, diagnostic alerts, and a unified dashboard to visualize data aggregated from vehicles in the field. All data from fleet vehicles is synchronized via Google Cloud for drill-down analysis and efficient decision-making.

Business outcome: A powerful fleet telematics system for large fleets that can handle over 100,000 vehicles and years of fleet history with a granularity of data points every 30 seconds.

Technologies: Angular / AWS / Google Cloud / InVision / Java / Node.js / React / Sketch

Read the full case study

FOR WAREHOUSE AUTOMATION:

An IoT platform for industrial robots and exoskeletons

The client: A software development company that delivers transformative solutions for a European manufacturer who builds and maintains exoskeletons for industrial use.

Business challenge: Around 540 million people worldwide suffer from lower back pain caused by physical strain from lifting and carrying loads at work. Our client wanted to reduce the risk of workplace accidents and occupational disability among warehouse staff.

Technology solution: A proprietary IoT accelerator that serves as the development platform for handling and analyzing huge amounts of device sensor data. It makes it possible to manage device fleets and capture high throughput sensor data generated by industrial robots and exoskeletons to get insights on device use patterns and adjust exoskeleton to users' specific needs.

Business outcome: The IoT accelerator streamlines the development of highly customizable and cost-efficient industrial applications for various businesses in the logistics, warehouse management, construction, and manufacturing industries.

Technologies: C++ / Docker / Golang / GraphQL / GRPC / InfluxDB / Jenkins / Kubernetes / OpenAPI / PostgreSQL / RabbitMQ

Read the full case study

FOR DELIVERY SERVICES:

An IoT platform for a unique eCommerce experience

The client: One of the world's leading meal subscription providers who delivers tens of millions of food kits monthly and operates across Europe, the US, Canada, and Australia.

Business challenge: Demand for catering and food delivery services has soared during the pandemic, prompting our client to speed up development of a fully operational IoT and eCommerce automation platform for high-tech smart fridges in offices.

Technology solution: A one-stop catering platform for offices that integrates IoT technology into an eCommerce experience. Connected vending machines are equipped with cameras and sensors to monitor a refrigerator's temperature, condition, and contents. Users can select a flexible subscription for meals via a mobile app with AI recommendations.

Business outcome: Catering services using smart fridges are providing a strong response to food insecurity during the pandemic, allowing our client to keep up with the growing demand for meal delivery. They continue to invest in technology that helps maintain safe and quality service and minimize disruptions to the food supply chain.

Technologies: .NET Blazor / .NET Core / Azure services / DPS / MQTT / PostgreSQL / SQLite / UWP / Windows 10 IoT Core

Read the full case study

ABOUT INTELLIAS

An IoT technology enabler for logistics businesses

Intellias empowers logistics services and solution providers with a wide range of technologies, strategic approaches, and engineering resources to deliver practical innovation throughout the supply chain.

Get to know Intellias at a glance

1600

Engineers: 73% senior and middle

19

Years of engineering experience

10

Offices around the world

Forbes #1

Among IT services employers in Ukraine

Where we apply IoT in supply chain

- Inventory management
- Fleet management and telematics
- Predictive maintenance
- Asset tracking and monitoring

Our custom IoT software development services for supply chains and logistics

- Solution discovery and digital consulting
- Rapid prototyping and MVP development
- Architecture design and implementation
- API development and integration
- Solution operation, support, and maintenance

intellias

Streamline IoT technology implementation for transparent and aligned supply chains.

Get in touch

info@intellias.com

Intellias HQ: Panasa Myrnoho 24,
Lviv 79034, Ukraine

+38 (032) 290-36-90