LOKAD + worten

Optimizing Omnichannel Retail

at worten

worten

Worten, a leading Portuguese retailer with over 300 stores and 40,000 SKUs, partnered with Lokad to revolutionize its supply chain. By implementing probabilistic forecasting and advanced optimization, Worten enhanced inventory management, reduced stockouts, and achieved high user adoption, all while significantly boosting customer satisfaction.

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Executive Summary

Worten, a leading Portuguese electronics and appliance retailer with over 300 stores and 40,000 SKUs, embarked on a transformative journey to modernize its supply chain. They partnered with Lokad to address the complexity, uncertainty, and operational demands of their vast omnichannel retail network.

Traditionally, Worten's inventory management relied on deterministic forecasts and manual processes, which proved insufficient for managing the enormous variety of products and distribution channels.

Lokad introduced a new perspective and approach through its probabilistic forecasting, enabling Worten to evaluate the full range of possible future outcomes. Instead of working with a single predicted value, Worten now employs scenario-based simulations, quantifying the financial return of stocking decisions across thousands of SKUs and hundreds of stores.

By combining these probabilistic forecasts with advanced stochastic optimization algorithms, Worten can systematically define inventory allocation, order timing, and replenishment decisions to balance constraints such as warehouse capacity and store-space limitations.

This advanced modeling directly translates into measurable gains. Worten achieved a **17.8% reduction in stock-outs**, which drove revenue growth and margin improvements—evidenced by a **0.78% revenue increase** and a **0.63% rise in front-office margin**.

Simultaneously, overall store **stock levels** were **reduced by 7.8%**, as well as a **double-digit reduction in inventory net of facing**. This freed up cash flow and improved stock rotations by several percentage points. Worten also realized a 5% improvement to their Net Promoter Score (NPS), now boasting a 42.1% NPS compared to 37% in 2023.

Importantly, Worten transitioned away from spreadsheets and manual overrides, instead now using **automation** and intuitive **dashboards** that yield substantial time savings for more than 50 employees. This enhanced operational efficiency enables staff to focus on strategic initiatives rather than manual tasks.

Worten's successful collaboration with Lokad sets the foundation for future growth. Of particular interest, Worten intends to expand its spare parts and maintenance services in Portugal. Given Lokad's extensive expertise in the automotive aftermarket and aerospace MRO sectors, the partnership is well positioned to continue delivering substantial value.

Introduction

Worten is a leading Portuguese electronics and appliance retailer, operating over 300 stores and a robust online platform with extensive product selections. Worten's omnichannel operations are made even more difficult given the sheer volume of products in their offering—over **40,000 SKUs**. Frustrated by the limitations of mainstream approaches, Worten decided it needed a paradigm shift and thus engaged Lokad to help start the retailer's quantitative supply chain revolution.

Background

In the early 2020s, Worten found itself at a supply chain crossroads. It did not want to rest on its laurels, yet evolving was proving difficult. Bruno Saraiva, Worten's Head of Stock and Space Management, believed the problem stemmed from reliance on **old-school supply chain approaches**—ideas that were simply **incapable of meeting the complexity** and uncertainty of Worten's supply chain operations. This realization presented Worten with significant philosophical, technological, and operational challenges.

Inventory decisions were often based on a combination of Excel spreadsheets and manual intervention—an approach that overlooked the true complexity of Worten's supply chain needs. This led Bruno and his team to reflect on the true nature of the problem they were trying to solve. Rather than ignoring the uncertainty of future demand—a common feature of classic time-series forecasting—Worten decided they needed to actually model it. That meant rethinking their inventory decisions **probabilistically**.

In turn, this philosophical and mathematical realization presented significant technological and operational challenges. Worten wanted a software solution that could handle the **combinatorial complexity** of decision-making for the **giant's omnichannel retail network**. Moreover, these decisions needed to account for Worten's enormous array of constraints, drivers, and customer promises. Operationally, Worten did not want to be stuck in a never-ending software implementation limbo where the costs and lead times grow year-on-year (unfortunately quite common in enterprise software upgrades/migrations).

> Through the external events I was attending, I could feel that a **new way** of managing and **optimizing inventory was emerging**. The challenges Covid brought to our supply chain reinforced my conviction that it was time to move out of our comfort zone and keep learning.
>
> **Bruno Saraiva,**
> **Head Management, Worten**

▲ **Bruno Saraiva, Head Management (Worten) and Conor Doherty, Communication Director (Lokad)**

Diagnosing the Situation

Worten used conventional inventory methods, relying on **manual decision-making** over **advanced automation**. This made quick restocking and maintaining high product-availability much more difficult, which naturally impacted customer satisfaction.

To properly grasp the scope of Worten's supply chain complexity, one must also bear in mind the sheer scale of Worten's operations:

✔ **40,000** SKUs in catalog

✔ **300+** stores

✔ **>1 billion** euros of turnover

✔ **Physical and online** retail

✔ **At-home and in-store** delivery for customers. E.g., ordering online or in Store A, then receiving the product either in Store A (at that time or later), in Store B, or even at home.

Add to this the steep expectations Worten sets for itself in terms of customer service: customers should be able to buy/pre-order an item even if it is currently out-of-stock in a given store. If an item is out-of-stock in Store 1, a customer should still be able to buy it and have it transferred to Store 1 from the nearest available store/warehouse. This level of retail flexibility and dependability means stockouts and delays are critical pain points.

In short, Worten needed a solution that could:

✔ **Manage** their complex supply chain network of 300+ stores, 40,000 SKUs, and 1000+ suppliers.

✔ **Balance** their inventory across an omnichannel retail environment.

✔ **Generate** their necessary store replenishment and purchasing decisions on a daily basis, and under real-world constraints (store space limitations, warehouse capacity, etc.)

Crafting the Solution

Worten collaborated with Lokad to overhaul and **revolutionize their supply chain**. An initial step in this journey was transitioning away from Worten's previous deterministic approach to forecasting (e.g., demand). "Deterministic" means predicting a single value based on the assumption that the future can be known (e.g., the number of units customers will buy next week).

This **deterministic approach is flawed** as it ignores the full range of possible future values (e.g., customers could buy 1 unit, 2 units, 3 units, or even 0). It also means that a company cannot estimate and compare the financial rewards of different scenarios, such as the economic return of selling 7 units versus 10 units versus only 1.

In reality, your chances of selling 3 units versus 4 units might be very similar, but the **economic returns** could be significantly different (once you consider your constraints and drivers, e.g., MOQs and lot multipliers).

For this reason, Lokad uses **probabilistic forecasting** as it provides the scenario simulation companies like Worten need to make better supply chain decisions.

> Lokad applies probabilistic forecasting to all relevant sources of **uncertainty**—including customer demand, supplier lead times, supplier service level, returns, etc.

Importantly, Lokad's **supply chain scientists** (SCS—the people who design and execute the decision-making algorithms) then combine the probabilistic forecasts with advanced stochastic optimization techniques to simplify Worten's supply chain decision-making processes.

This allowed Lokad's SCS team to:

✔ **Forecast** the totality of Worten's demand scenarios for 40,000 SKUs.

✔ **Generate 45,000+** inventory decisions on a daily basis.

✔ **Automate decision-making** across multiple warehouses, an online platform, and 300+ stores across several regions (Portugal, Canary Islands, Azores, and Madeira).

✔ **Optimize (financially)** Worten's Reorder and Allocation Logic (RAL).

✔ **Replace spreadsheets** with intuitive dashboards to monitor supply chain health.

Implementing the Solution

The intricacies of implementing Worten's supply chain solution could fill an entire academic paper, however there are a few particularly interesting details worth outlining here.

In a **two-echelon system** (distribution center and stores), having enough stock at network level is not enough to fully meet **network demand**. For example, if Store A is about to run out of stock while others are not, the warehouse needs to supply Store A.

For each product and sourcing point, Lokad represents downstream stock levels as a fraction of upcoming network-level demand already met by existing downstream stock. These several layers of existing stock then act as a **stochastic** (random) **equivalent** of **Worten's multi-echelon network**, allowing Lokad to model it as a single-echelon.

Lokad then calculates the **economic impact** of replenishing warehouse stock by estimating the probability of avoiding stockouts thanks to each additional unit. This helps to determine if buying more units at the network-level is worthwhile—simulating whether it will further flow to stores or fulfill web demand from the warehouse.

> To accomplish this, the SCS team has to **process massive amounts of data** and satisfy strict Worten warehouse deadlines. In terms of scale, Lokad optimizes scheduling and daily computations for over **35 million product-location combinations**, ultimately helping Worten's supply chain team to make **financially sensible inventory decisions**.

Beyond the scientific challenges, the **change management** of a supply chain initiative like Worten's was considerable.

Worten also participated (and continues to participate) in weekly meetings and quarterly in-person roadmaps where the milestones of the project are discussed and assessed with quantitative KPIs. This is also the setting for discussing new priorities and aligning project direction.

LOKAD

> Effective change management can, in fact, be the difference between a successful implementation and a failed one. Luckily, Worten's top management team kick-started the project with an open mind, eager to **embrace Lokad's probabilistic perspective**. This enticed Worten operational teams to double-down on Lokad workshops and tutorials, notably leveraging Lokad's **white-boxing dashboards**. This proactive attitude made it much easier to generate end-user engagement, resulting in a shared feeling of ownership of the project. This is definitely the key factor that allowed for a smooth and progressive Go-Live.
>
> **Elliot Langella,**
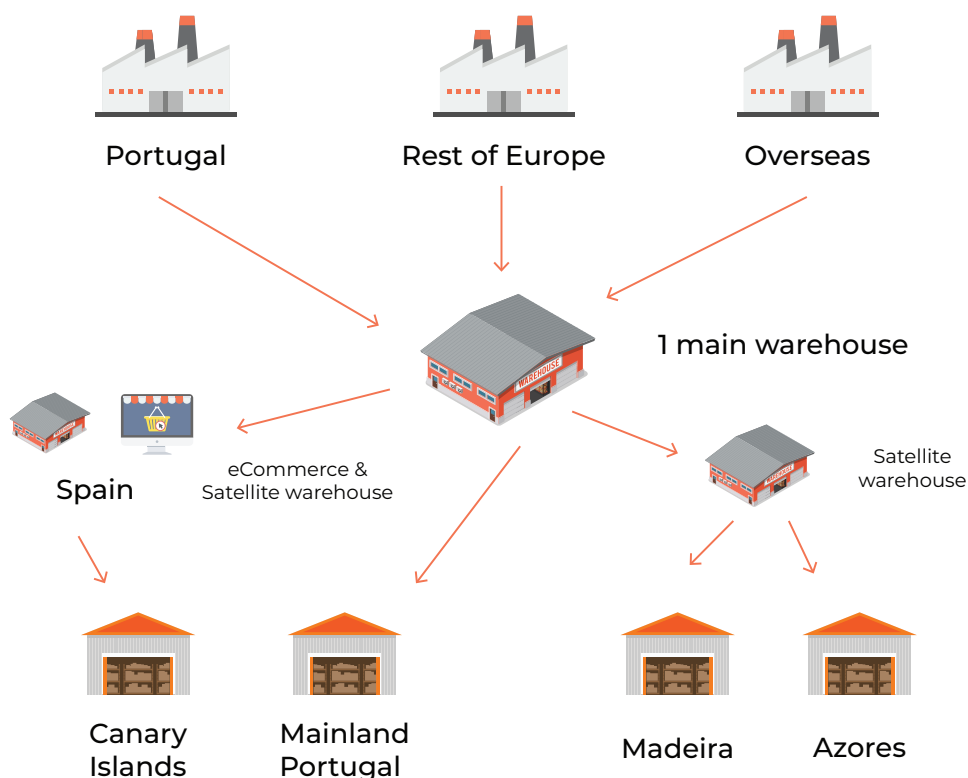> **Executive Supply Chain Scientist (Lokad)**

> Lokad didn't just come in with a rigid plan; they were patient, willing to adjust for each stock manager's pace, and committed to keeping things safe and smooth. Their approach felt like a **reassuring mix of agility and structure**. They identified potential risks from the start, and whenever an issue arose, they didn't sidestep it— they tackled it directly and improved every time.
>
> **Sandra Lourenco,**
> **Area Manager & Director - Stocks (Worten)**

> Working with Lokad has been like having a partner who not only stands beside you but also pushes you forward. They truly **put themselves in our shoes**, understanding our constraints while also encouraging us to rethink what's possible. It's confidence-inspiring to collaborate with a team that clearly knows the way forward—and takes the time to explain each step with Worten's best interest in mind.
>
> **Hélder Alves,**
> **Area Manager & Director - Stocks (Worten)**

Worten's Supply Chain Network

Portugal   Rest of Europe   Overseas

1 main warehouse

Spain   eCommerce & Satellite warehouse   Satellite warehouse

Canary Islands   Mainland Portugal   Madeira   Azores

Results

The success of Worten's collaboration with Lokad is measured across several criteria and KPIs, including change management, inventory performance, and customer satisfaction.

✔ **Successful end-user buy-in and high user-adoption** of Lokad's solution and philosophy. Dozens of working hours saved per user per week (50+ people). **No more Excel and manual overrides.**

✔ **17.8% reduction in stock-outs.** This resulted in an additional 0.78% generated revenue and a 0.63% increase of front-office margin for the retail business.

✔ **7.8% reduction** of overall stock value held in stores

✔ **Improved free cash-flow** by buying at the right time and improving stock rotations by several percentage points.

✔ **Double-digit reduction** of inventory net of facing (e.g., display and test units) at stores. This reduced cash flow needed to keep the retail business running.

✔ **5% improvement to Net Promoter Score.** Worten now boasts a 42.1% NPS, compared to 37% in 2023.

Feedback

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The **impact** Lokad has had on our supply chain metrics is **undeniable**. Stock-outs have reduced considerably, and our average stock levels are leaner. I expect these results will again improve with next year's initiatives... [Lokad's] dispatch approach for promotions is equally impressive; we can fine-tune stock sent to stores just before a promotion, ensuring optimal timing **without surplus inventory**. The control Lokad provides has made a visible difference in our ability to execute with precision and avoid waste.

Sandra Lourenco,
Area Manager & Director - Stocks (Worten)

"

Lokad has completely reshaped how we work. Worten sets the strategic direction, and **Lokad handles the execution**, down to the specific dispatch parameters for each SKU. We really like how they integrate inventory and warehouse operations; we can now directly factor warehouse capacity and store-space limits into inventory planning. This really streamlines the process for us. With Lokad, our teams **save time every morning**; we can just log in to their platform and see the day's big picture. This means no more [Microsoft] Excel. This frees us to focus on strategic issues rather than manual tasks.

Hélder Alves,
Area Manager & Director - Stocks (Worten)

LOKAD

The Future of Worten's Supply Chain Revolution

The next steps for Bruno and his team are **even bigger**: Worten intends to expand its **spare parts** and **maintenance services** in Portugal, and bolster its refurbished offering in the region. Given Lokad's credentials in the automotive aftermarket and aerospace sectors (servicing some of the world's largest airlines and MROs), the collaboration is geared to deliver further substantial value as Worten enters the next chapter of its revolution.

According to Bruno, the next phase will focus on two streams. First, business services and strategic growth opportunities; second, extended collaboration with the Commercial Team & Category Management through inventory optimization in order to leverage **Lokad's AI capabilities**.

> Collaborating with Lokad has been **transformative** in numerous ways - notably strengthening the Stock Team's expertise. We're convinced Lokad will help us grow beyond the current structure and unlock enhanced processes to sustain a **robust growth**.
>
> **Bruno Saraiva,**
> **Head Management (Worten)**

Glossary

KPI	Key performance indicator
MOQ	Minimum order quantity
MRO	Maintenance, repair and overhaul
NPS	Net Promoter Score
SCS	Supply Chain Scientist
SKU	Stock-keeping unit