

# The ultimate guide to intralogistics and production cost optimization



# Unlocking cost optimization potential in intralogistics and production processes

Consider this: Organizations that optimize their intralogistics and production processes can achieve a 15-30% increase in efficiency, leading to significant cost reductions across their operations. In turn, these gains unlock higher output and performance at constant cost levels, enabling organizations to scale without expanding their resource footprint.

In a world where margins are tight and competition is fierce, companies can't afford to leave such potential untapped. As the complexity of internal material flows continues to increase due to changing market demands, new product introductions and evolving customer expectations, companies that fail to optimize their intralogistics and production processes face rising operational costs, inefficient space utilization and extended lead times that directly impact their bottom line and customer satisfaction.

## But logistics professionals and decision-makers might not always know where to start.

- > How do you identify where the real opportunities lie?
- > How can you reduce operational logistics costs?
- > And how do you handle significant volume increases while maintaining efficiency?

If you're grappling with one or more of these questions, you're not alone. This comprehensive guide will walk you through the intricacies of intralogistics and production cost optimization, providing you with actionable insights and proven strategies to transform your supply chain.

Whether in manufacturing, retail, FMCG or any other sector, intralogistics has evolved from a supporting function to a strategic value driver critical for maintaining competitiveness and driving profitability. With the right approach to optimization, businesses can dramatically reduce process analysis time by up to 50% compared to other methods, accelerating their journey toward operational excellence. Let's dive in and explore how you can unlock this hidden potential in your intralogistics and production processes.

## Common concerns, by industry



### Automotive

- > How good are my processes?
- > How can I reduce my operational logistics costs even though I have a 3PL already?
- > Where is the space for integrating more variance?



### Consumer goods

- > I need a solution for a steadily increasing number of articles and finished goods.
- > What is slowing down my customer response time?
- > My logistics processes are not state-of-the-art. How much potential is there to optimize them?



### Retail / e-commerce

- > Where is the efficiency potential in the process chain?
- > How can I handle significant volume increases?
- > How mature are my logistics processes?



### Machinery

- > I have too many parts and too little space.
- > I know there is optimization potential but where is it in the system?

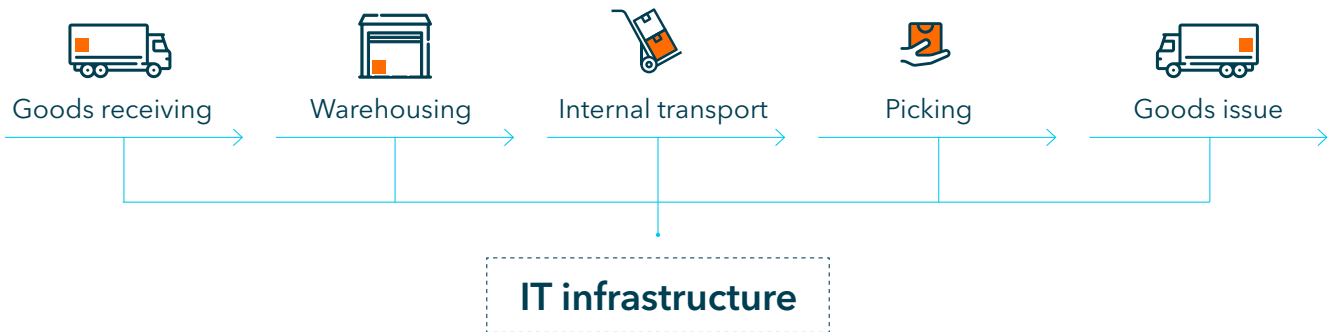
# Understanding the scope of intralogistics and production cost optimization

Before we delve into the “how,” let's clarify the “what.” Intralogistics and production cost optimization encompasses a wide range of activities and processes within your facility. It's not just about moving goods from point A to point B. It's about doing so in the most efficient and cost-effective manner possible while leveraging data-driven insights.

## What is intralogistics?

Intralogistics refers to the organization, control, implementation and optimization of internal material flow and handling of goods within a facility. It's the backbone of efficient operations in manufacturing, distribution and warehousing.

## Key area of focus:



Each of these areas presents unique challenges and opportunities for optimization. By examining each in detail, we can identify inefficiencies and implement targeted solutions.

## A data-driven approach:

Modern intralogistics optimization relies on data-driven decision-making that leverages IT infrastructure like warehouse management systems (WMS), manufacturing execution systems (MES), transportation management systems (TMS) and IoT-enabled devices to provide insights into:

- > Operational bottlenecks
- > Equipment utilization rates
- > Order processing times
- > Storage efficiency
- > Labor productivity
- > Throughput times

By analyzing the data, organizations can move beyond intuition-based improvements to evidence-based optimization strategies that deliver predictable, sustainable results. This sets the foundation for the efficiency pillars we'll explore next.

**In an era of growing cost pressures and limited budgets, it's essential to leverage as much relevant data as you can.**

### Here's why:

- > Data is constantly being generated and is readily available
- > Data allows for a more precise, objective view of your operations
- > Data can reveal hidden inefficiencies that other audits fail to detect

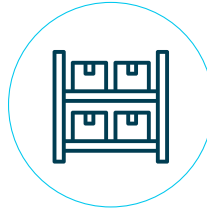
# The four pillars of efficiency

To truly optimize your intralogistics and production costs, you need to consider four key efficiency dimensions:



## Cost efficiency

How do your operational costs compare to industry benchmarks?



## Space efficiency

How effectively are you utilizing your available space?



## Throughput time efficiency

How quickly can you move products through your system?



## Material flow efficiency

How smoothly do materials move from one process to another?

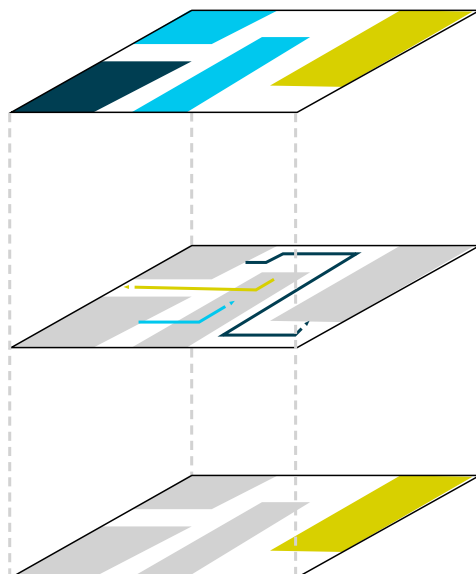
Efficiency in intralogistics cannot be viewed in isolation. To make meaningful improvements, each pillar of efficiency must be understood in the context of the organizational level it belongs to. The four key dimensions - cost, space, throughput time and material flow - unfold their full impact only when aligned with the appropriate scope of responsibility. Ultimately, improvements in space, throughput time and material flow all contribute to overall cost efficiency.

To effectively apply these pillars, it's important to consider how they map to different organizational levels. We define three interconnected organizational levels, each playing a unique role in the optimization process. Let's explore how each efficiency dimension aligns with these levels and what this means for practical implementation.

## Structure and organization

## Material and information flow

## Processes and equipment



## Cost efficiency: process and equipment

Cost efficiency is the outcome of well-designed and well-executed intralogistics. It reflects how effectively resources are used at the execution level. Here, process design, equipment integration and workforce efficiency come together to impact the bottom line across

all relevant cost categories: labor, space, equipment, IT licensing and inventory holding.

Key metrics in this domain include the cost per handling unit for processes and the logistics cost associated with each finished good.

### Expert insights

Jan-Moritz Metelmann  
Vice President, 4flow

"In our experience, companies that address all four efficiency dimensions in an integrated approach achieve 20-30% higher cost savings than those who optimize selectively."

## Space efficiency: structure and organization

Space efficiency is fundamentally about how well your physical space is organized and utilized. This strategic dimension involves layout planning, zoning and the vertical use of space to maximize value generation within your facility's footprint.

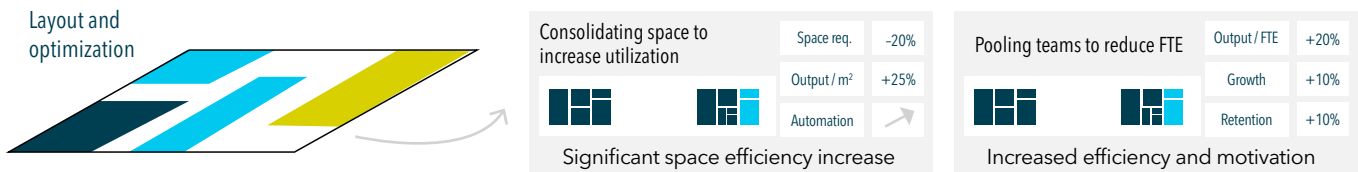
Key metrics for assessing space efficiency include the ratio of value-added activities to non-value-added activities, as well as the throughput relative to the total space available.

**Example:** Through consolidation and organization efforts, a facility reduced its space requirements by 20% while increasing output

per square meter by 25%. This improvement was driven by increasing the ratio of value-added to non-value-added activities: more efficient workflows and streamlined processes, less unnecessary storage and excessive movement. The more productive use of space directly enhances operational efficiency and maximizes the facility's footprint.

### 4flow best practice

Don't forget to look up – vertical utilization through high-bay racking systems can significantly increase storage capacity without expanding your building.



## Throughput time and material flow efficiency

Throughput time efficiency is a function of the speed and rhythm of internal order and material handling processes, which can be measured by the lead time for each part family, the overall order cycle time and the involvement of personnel in these processes.

Material flow efficiency focuses on the smoothness and effectiveness of material movement. It's about minimizing travel

distances, balancing capacities and ensuring logical flow paths. This efficiency is assessed through key metrics such as the utilization of handling equipment and the distances traveled between different zones.

### Optimization strategy

Use heat-map analysis to visualize traffic hotspots and flow bottlenecks. These insights are often low-hanging fruit for layout or routing improvements.

# Five steps for reducing costs

Now that we understand the key areas and efficiency dimensions, how do we put this knowledge into action?

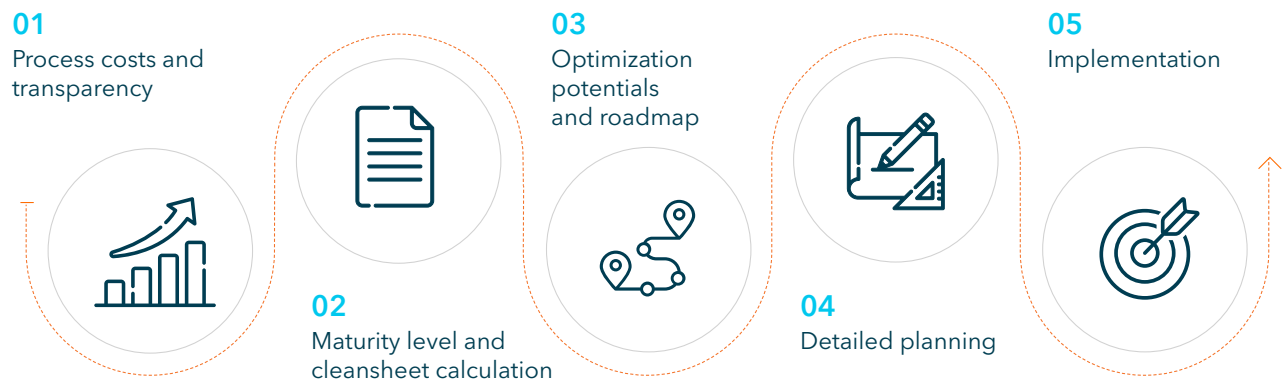
Enter the logistics cost efficiency audit, a comprehensive, data-driven approach to identifying and realizing optimization potential.

A successful cost-optimization project starts with a structured foundation that establishes a project baseline and ensures alignment among stakeholders. A high-level assessment of logistics operations clarifies what such a project requires and delineates the scope of

optimization efforts. Key activities during this preparatory phase include understanding the logistics characteristics and performance drivers that significantly influence operational efficiency; outlining the necessary data requirements for subsequent analysis; and defining the methodology and overall project approach.

Once this groundwork has been laid, organizations can confidently follow a step-by-step approach to comprehensively identify and realize optimization potential.

## The five-step approach



### Step 1



#### Process costs and transparency

The first step makes use of data analytics to create full visibility into existing logistics processes and their associated costs. Data experts help identify and synthesize relevant information from diverse sources across your organization and use it to create standardized visualizations of all your processes.

#### Focus areas

- > Evaluation of current layouts, material flows, technologies and IT infrastructure
- > Mapping and analysis of logistics concepts and workflows
- > Identification of process-related cost structures and inefficiencies

#### Key benefit

A comprehensive process flow diagram that visualizes operational interdependencies and highlights cost-critical zones

## Step 2

2



### Maturity level and cleansheet calculation

This step introduces benchmarking to assess current performance against best-practice standards. It also includes cost modeling to define financial targets and identify gaps between current and optimized scenarios.

#### Focus areas

- > Assessment of process maturity using a structured value-creation reference model
- > Execution of a cleansheet calculation to determine target process costs under ideal conditions

#### Key benefit

A quantifiable gap analysis that highlights the difference between current costs and optimized target scenarios

#### Cleansheet calculation

A cleansheet calculation breaks down costs into their fundamental components, allowing organizations to identify potential savings and set target costs based on ideal conditions. This approach enhances transparency in expenses and supports informed decision-making, ultimately driving cost efficiency and alignment with strategic objectives.

## Step 3

3



### Optimization potentials and roadmap

Building on the insights from the maturity analysis, this step identifies and prioritizes opportunities for optimization and improvement. The goal is to create a roadmap that balances efficiency gains with feasibility of implementation.

#### Focus areas

- > Evaluation of process strengths and weaknesses
- > Derivation of targeted optimization measures
- > Prioritization of initiatives based on their impact and complexity

#### Key benefit

A priority matrix that ranks actions by potential benefit and ease of execution, providing a clear pathway for optimization

## Step 4

4



### Detailed planning

This step translates the optimization roadmap into actionable plans. It involves specifying the prioritized measures and preparing them for execution through structured and detailed planning.

#### Focus areas

- > Detailed planning of prioritized measures, including resource allocation and timelines
- > Development of an implementation schedule with clear milestones
- > Creation of technical specification sheets to guide deployment

#### Key benefit

A ready-to-execute planning framework that aligns with the operational and financial objectives of the organization

## Step 5

5



### Implementation

The final step focuses on executing the planned measures to achieve the desired optimization outcomes. This step ensures that the improvements are implemented comprehensively and effectively.

#### Focus areas

- > Execution of the planned measures across all relevant areas
- > Pilot testing to validate the measures' effectiveness
- > Full-scale deployment and commissioning of the optimized processes

#### Key benefit

Comprehensive implementation of optimization measures, ensuring that improvements are fully realized and integrated into the organization's operations

## Integrating change and project management

Effective intralogistics optimization relies not only on technical analysis and process improvement but also on strong organizational alignment. Consistent coordination and stakeholder involvement are critical across all project steps to achieve sustainable results.

#### Key success factors are:

- > Excellent project management among all stakeholders
- > Actively engaging departments and decision-makers
- > Aligning optimization with overarching business objectives
- > Nurturing support from top management
- > Involving unconvinced or skeptical team members
- > Ensuring sufficient IT resources

**Optimization initiatives will be most effective when the entire organization supports them. Success depends on the people involved, whether it's executive leadership or shop-floor teams. Structured change management and early buy-in are essential to drive implementation and long-term impact.**

# Unlocking savings: some common initiatives

Intralogistics optimization is a strategic lever that functions across industries to drive long-term cost reduction. When every element - from personnel and layout to inventory and equipment - is optimized in alignment, the result is a leaner, more responsive intralogistics operation.

### Expert insights

Dr. Laura Gellert  
Principal Data Science, 4flow

"Intralogistics generates enormous amounts of data every day. In our projects, we help our customers systematically use this data to create transparency, identify causes and translate insights into concrete efficiency gains."



### Personnel

Restructured employee pooling and more efficient workforce allocation



### Space

Automation of material flow and storage, space re-allocation and area consolidation



### Inventory

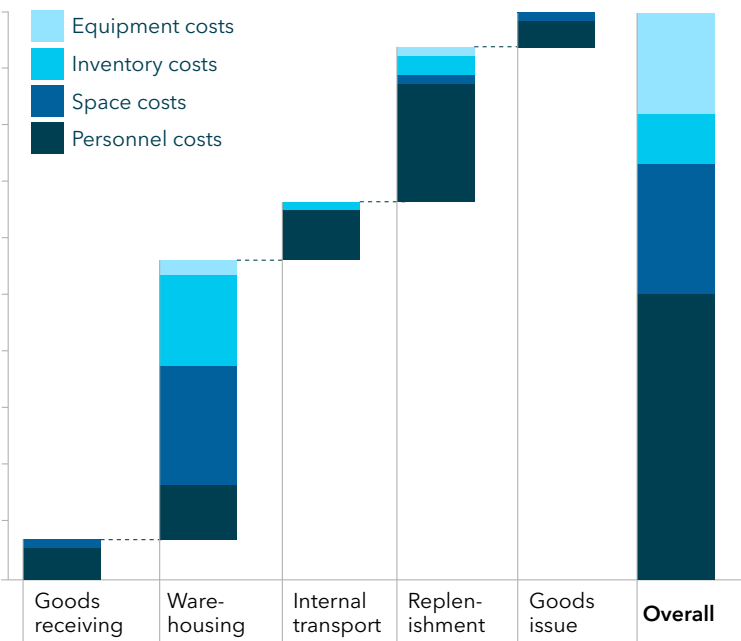
Demand-based ordering, elimination of obsolete stock



### Equipment

Optimized equipment selection, improved utilization and process efficiency

## Breakdown of costs by intralogistics process and cost driver



### Did you know?

On average, comprehensive logistics cost audits reveal a total savings potential of 14.7% without compromising service levels or operational reliability.

## Common cost-saving initiatives

- > Automating storage solutions and using targeted rack configurations to increase space utilization
- > Adjusting range and safety stocks to optimize inventory and improve space efficiency
- > Using robotics to automate manual processes and improve throughput time
- > Applying digital software solutions to optimize material flow efficiency (e.g., WMS, automated replenishment control, transportation management systems)
- > Restructuring employee pooling and allocation for a more agile workforce

# Optimization in action

## Case studies

### Cleaning systems manufacturer

#### Challenge

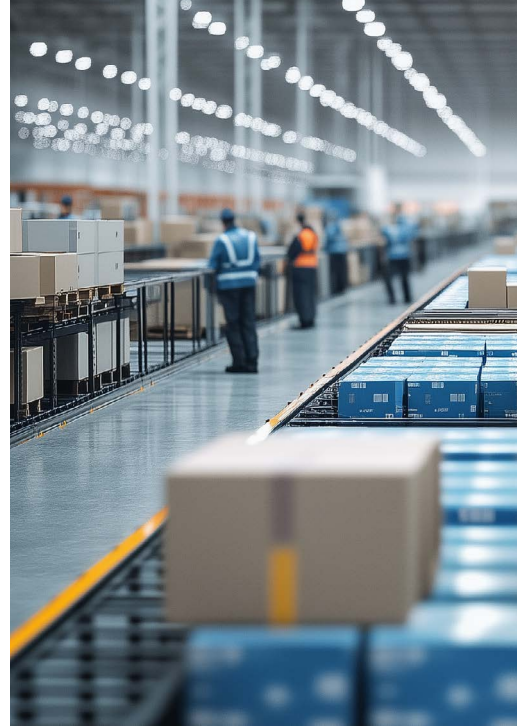
An unstructured layout and excessive handling steps caused long throughput times and inefficient use of space.

#### Optimization approach

- > Value stream mapping from goods receiving to shipping
- > Development of optimized material flow scenarios, incorporating growth forecasts
- > Evaluation of all scenarios based on cost-benefit analysis

#### Results Achieved

- > Reduction in throughput time: 50%
- > Reduction in space requirements: 33%
- > Overall cost reduction: 15%



### Packaging film manufacturer

#### Challenge

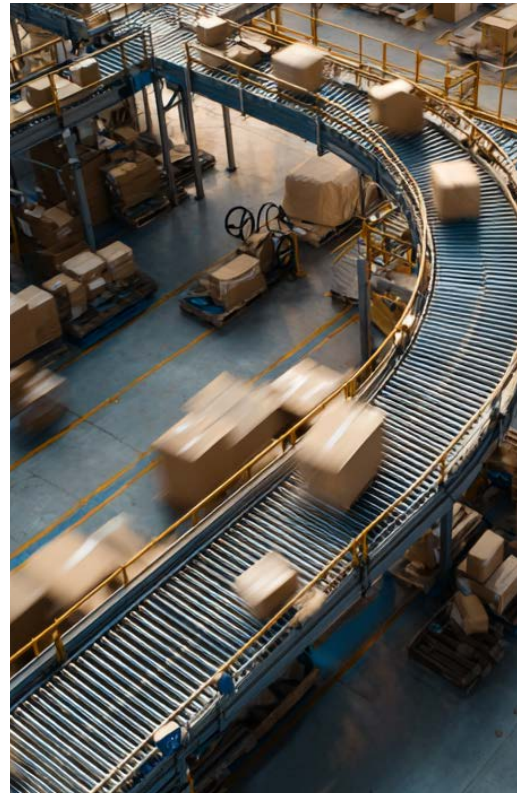
An expanded plant structure and production-driven handling steps led to inefficient material flows and excessive staffing requirements.

#### Optimization approach

- > Comprehensive analysis of material flows, internal logistics and space utilization
- > Identification of key inefficiencies with actionable improvement measures
- > Business case calculations for each proposed action

#### Results Achieved

- > Reduction in personnel costs: 15%
- > Total cost savings of approximately 20%



# Key takeaways

## Accelerating your journey

Optimizing intralogistics and production costs is a multifaceted but highly rewarding undertaking that can transform your operational efficiency.

### Embrace data-driven optimization

Use real-time data, predictive analytics and digital technologies to drive smarter, more precise decision-making.

### Address all efficiency dimensions

Focus holistically on space, throughput time, material flow and cost to identify impactful opportunities.

### Leverage structured approaches

Develop a clear roadmap that guides you from inefficiency detection to the prioritization and implementation of cost-saving initiatives.

### Stay ahead of emerging trends

Integrate advancements in AI, IoT, cobots and sustainability to future-proof your supply chain.

### Plan and align budget early

Addressing budget questions as early as possible ensures quicker and smoother implementation down the line.

### Commit to continuous improvement

Optimization is not a one-time event; it's an ongoing journey aligned with your evolving business needs.

## Authors



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### Interested or have questions?

Contact us.

Get in touch to have your questions answered or to schedule your personalized logistics cost efficiency audit. Together, we can shape the future of your intralogistics and drive your business forward with confidence and clarity.

