

The New Rules of Cold Storage Operations

How leading 3PLs are building the operational adaptability to compete in an increasingly volatile supply chain

Executive Guide

The future of cold storage belongs to operators that can absorb change without losing control.



Contents

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- 03 The warehouse can no longer compete on capacity alone
 - 04 Five forces reshaping cold storage
 - 06 Cold storage changed. The operating model had to change with it.
 - 08 Capacity is now measured differently
 - 11 Complexity has a cost
 - 14 Compliance determines which business you are prepared to win
 - 16 Automate what should be automated
 - 17 Growth reveals the foundation
 - 18 Coordination becomes the next competitive advantage
 - 19 How Datex approaches the challenge
 - 20 Build the operation your business will need next Contents

INTRODUCTION

The warehouse can no longer compete on capacity alone

Cold storage has always rewarded operational discipline. Temperature control, inventory accuracy, product integrity, and on-time delivery remain the foundation of every successful refrigerated warehouse. Today, those capabilities have become the cost of entry.

Competitive advantage is increasingly determined by something less visible.

Customers expect their logistics partners to support specialized workflows, tighter delivery windows, deeper systems integration, real-time visibility, automation, and value added services, often within the same facility.

Behind those expectations sit distinctly cold-chain requirements: FEFO inventory rotation, lot and shelf-life controls, catch-weight handling, recall readiness, multiple temperature zones, and customer specific rules that can vary substantially from one account to another.

Every new customer, service, product category, or vertical introduces another layer of operational decisions. The question facing executives is no longer how much product a warehouse can store. **It is how much business the operation can support without adding unnecessary cost, risk, or friction.**



That distinction changes how capacity should be measured.

Physical infrastructure determines how much inventory a facility can hold.

Commercial capacity reflects the customers, services, and markets the operation is equipped to support.

The organizations best positioned for long-term growth recognize that both matter, but only one can continue expanding after the building itself reaches capacity.

This guide examines the forces driving that shift, how leading cold storage providers are responding, and what executives should consider when evaluating whether today's operation can support tomorrow's opportunities.

"The most valuable capacity inside a cold storage warehouse may no longer be measured in pallet positions, but by the business the operation is prepared to support."

Five forces reshaping cold storage

The competitive environment surrounding temperature-controlled logistics is changing from several directions at once. Five external forces are placing new demands on cold storage operators. Together, they produce a common operational result: greater complexity.

01 Market consolidation

The industry's largest providers continue to expand their capacity and geographic reach. GCCA reports that its Global Top 25 temperature-controlled warehousing and logistics businesses operated 7.76 billion cubic feet of temperature-controlled space in 2026, up 6.3% from 2025. North American Top 25 capacity alone increased by 260 million cubic feet.

For regional and mid-market operators, competing with that level of scale facility for facility becomes increasingly difficult.

02 Rising customer expectations

Customers increasingly evaluate what a warehouse can do as closely as how much it can hold. Food manufacturers, retailers, meal-kit providers, specialty brands, and regulated businesses may bring different fulfillment profiles, inventory policies, reporting requirements, integration needs, and service-level expectations.

A new account can represent an entirely different way of operating.

03 Expanding customer, service and vertical requirements

Growth increasingly introduces different forms of work. New customers may require specialized handling, catch-weight processing, value-added services, or unique billing. Expansion into another vertical can bring entirely different inventory controls, documentation, workflows, and audit expectations.

More business no longer means simply handling more pallets.

04 Labor and automation realities

Automation can reduce repetitive work, increase throughput, and limit unnecessary movement in demanding cold environments. Yet automation cannot economically address every workflow, exception, customer requirement, or temperature-controlled environment.

People remain essential, particularly when priorities shift and exceptions occur.

05 Evolving compliance and traceability expectations

Lot control, recall readiness, customer audits, food-safety requirements, and increasingly detailed traceability expectations raise the operational stakes. Moving into more regulated products or verticals can add another layer of controls and documentation.

Compliance increasingly influences which business an operator is equipped to pursue.

The operational result:
Greater complexity

These forces do not act independently. They accumulate inside the operation as more workflows, rules, exceptions, information requirements, and customer commitments.

The strategic response:
Operational adaptability

The largest providers can optimize around scale, capital, and footprint. Mid-market organizations have another path available: responsiveness, specialization, faster onboarding, and the ability to operationalize requirements that larger competitors may be less interested in serving.

**"Scale favors the largest operators.
Complexity can favor the most adaptable."**

Cold storage changed.

The operating model had to change with it.

For years, refrigerated warehouses operated within a relatively stable business model. Product arrived on pallets, moved into temperature-controlled storage, and shipped to distribution centers through predictable workflows. The work demanded discipline, but the operating model changed slowly.

That environment no longer exists.

Today's facilities may process full pallets, cases, cross-docked inventory, direct-to-consumer orders, returns, inspections, relabeling, and value-added services within the same operation. Inventory may need to move according to FEFO, FIFO, customer-specific shelf-life requirements, or lot restrictions. Products may be tracked by weight as well as unit, case, or pallet. Different accounts may require different documentation, quality processes, billing rules, and reporting.

A single facility can therefore contain multiple operating models at once.

What appears commercially as one additional customer can represent dozens of new operational decisions involving labor, equipment, staging, inventory rotation, documentation, reporting, and billing.



Adding another spreadsheet, workaround, or manual process may accommodate the immediate request while making the overall operation harder to manage.

Leading organizations make those differences easier to configure and execute. They prepare the operation to accommodate new customers, services, and workflows without redesigning processes around every new requirement.

“Every new customer introduces another operating model.”

Case in point: Eskimo Cold Storage

Eskimo Cold Storage operates a 125,000-square-foot frozen facility capable of storing more than 16,000 pallets and moving an average of 10 million pounds in and out each week, according to a [Datex customer case study](#).

As the business grew, its early in-house inventory system could no longer provide the accuracy customers required. The replacement system was implemented in approximately 45 days and gave Eskimo real-time visibility into product location, quantity, lot ID, temperatures, expiration dates, weights, and other information needed to manage fast-moving frozen inventory.

What it proves: As volume and customer requirements increase, cold storage execution depends on an operating model capable of maintaining control across more inventory attributes and transactions.

Cold storage raises the consequences of unnecessary work. Products staged too long can create temperature and product-integrity concerns. Doors left open increase refrigeration demand. Equipment and electronic devices operate under harsher conditions. Employees perform demanding work while moving between temperature environments.

Executorial flexibility helps operators manage those realities without adding another manual layer.





Capacity is now measured differently

Cold storage executives have traditionally measured capacity in physical terms: pallet positions, cubic feet, dock doors, and temperature zones. Those metrics define the limits of the facility. They no longer define the limits of the business.

A prospective customer may request specialized labeling, different shelf-life controls, lot-level traceability, a unique billing model, retailer integration, or customer specific reporting. Another opportunity may come from an adjacent vertical with more demanding documentation, audit, inventory control, or validation requirements.

Space is available. The operation may still have to decline the opportunity.

This is where physical capacity and commercial capacity separate.

The distinction becomes particularly important when operators consider vertical expansion. A provider built primarily around food and beverage cannot assume refrigerated square footage alone qualifies it to support pharmaceuticals, life sciences, or other highly regulated products. The facility may be suitable while its workflows, controls, records, reporting, and compliance model are not.

The same issue can occur within food. Different products and customers may introduce new FEFO requirements, traceability rules, quality processes, handling instructions, or service expectations that the existing operation cannot support economically.

Organizations able to configure workflows, onboard customers quickly, and support new controls without extensive redevelopment can increase the commercial value of existing facilities before adding another building.



For mid-market providers, that creates a different competitive model.

The largest competitors can continue to win through scale, capital, automation, and geographic reach. Mid-market providers can compete through speed, specialization, responsiveness, and the ability to say yes to complex requirements.

SPACE AVAILABLE

Pallet positions
Temperature zones
Dock capacity

VS

CAPABILITY AVAILABLE

Workflows
Controls
Compliance
Reporting
Integrations
Customer requirements

"The warehouse can have the room and still lack the capacity to take on the business."

Case in point: Tobin Scientific

Tobin Scientific illustrates what a different vertical can demand operationally. The life sciences supports biopharma cold chain, ambient storage, transportation, and logistics while maintaining CGMP compliance and ISO accreditation. Its previous spreadsheet-based processes limited intelligent data capture and real-time customer visibility.

According to a [Datex case study](#), implementation of a new WMS was completed in six months and reduced order processing time from hours to minutes while improving inventory visibility, customer access to data, and cross-department communication.

What it proves: Vertical expansion requires more than suitable space. It requires the information, controls, and processes necessary to operate credibly in a different market.



Complexity has a cost

Operational complexity rarely arrives through a single strategic decision. More often, it accumulates through small accommodations made on behalf of customers:

A new report.	A unique label.	An additional inspection.	A different rotation rule.	A manual billing adjustment.
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Individually, each appears manageable. Together, they can create an increasingly expensive operating environment.

Activities performed outside established workflows can consume labor without being captured for billing. Accessorial services, inspections, relabeling, returns, special handling, blast freezing, and storage exceptions can quietly reduce margins when warehouse execution and commercial processes drift apart.

Catch-weight products provide a useful example. The operation may receive, store, pick, and ship product according to actual weight while commercial agreements apply charges according to different units, handling activities, or customer-specific rules. When the operational record and billing logic are disconnected, administrative effort increases and revenue can be missed.

The larger problem often appears through shrinking profitability, slower onboarding, growing administrative effort, and increasing dependence on spreadsheets and manual intervention.

Connecting warehouse execution more closely to commercial processes helps keep operational activity, customer commitments, and billing aligned as work occurs. Managers spend less time reconstructing what happened after the fact, while the business gains a clearer view of what each customer actually costs to serve.



"Invisible work rarely produces visible profit."

Case in point: Castellini

Castellini Group operates a 200,000-square-foot facility with seven temperature zones ranging from 50°F to -10°F, supporting refrigerated produce and home-meal fulfillment customers with different picking, shelf life, and value-added-service requirements.

As the business grew, its legacy WMS struggled to coordinate inventory, fulfillment, and billing for services such as dumping, grading, special storage, and sustainability activities. Castellini needed more dynamic pricing and better capture of accessorial work.

The resulting operating model gave the company greater billing flexibility while enabling accessorial charges to be captured as work occurred.

What it proves: Customer complexity becomes a profitability issue when the work required to serve an account is disconnected from the way that work is captured and billed.





NEW OPPORTUNITY



REQUIRED CONTROLS



CAN WE CONFIDENTLY SAY YES?



Compliance determines which business you are prepared to win

Compliance is often discussed as an obligation: requirements to meet, records to maintain, and audits to pass. For a growing cold storage provider, it is also a commercial capability.

The products, customers, and verticals an operation can support depend in part on the controls it can reliably execute and document.

Food operations already manage combinations of HACCP plans, customer audits, recall readiness, lot traceability, shelf life requirements, and food-safety documentation. **FDA's Food Traceability Rule** adds recordkeeping requirements for foods on the Food Traceability List, using Key Data Elements associated with Critical Tracking Events throughout the supply chain. Current federal direction states that FDA will not enforce the rule before July 20, 2028.



Requirements accumulate as the business expands.

That means compliance capability can become a growth gate. A provider may have suitable refrigerated space and strong operational performance yet remain unable to pursue a particular customer or vertical because the required controls, records, auditability, or workflows cannot be supported with confidence.

Visibility and traceability are therefore more than reporting functions. They establish the operational evidence required to demonstrate that inventory was handled according to defined rules and that affected product can be identified when an exception occurs.

For executives, the question is less about accumulating every possible compliance capability than understanding where today's capabilities define tomorrow's commercial boundaries.

The larger business issue extends beyond a single regulation.

A customer may require tighter lot controls or documentation than another account. A new product category may introduce different handling and traceability expectations. Expansion into life sciences can add CGMP requirements and, depending on the products and records involved, additional regulatory controls.

“Compliance capability increasingly determines which business an operator is prepared to win.”

Automate what should be automated

Automation continues reshaping cold storage because it can reduce repetitive work and unnecessary movement in one of warehousing's most demanding environments.

OSHA notes that workers in cold conditions can face risks including cold stress, hypothermia, and frostbite and that cold conditions may exacerbate musculoskeletal disorders. In cold environments, reducing unnecessary travel and repetitive physical work can create value beyond throughput alone.

Conveyors, automated storage and retrieval systems, autonomous mobile robots, scanners, sensors, and vision technologies can improve consistency and throughput when the task and environment support the investment. Frozen and deep-freeze operations, however, introduce their own realities. Equipment must perform reliably while employees continue managing the exceptions technology cannot anticipate.

Customer priorities shift. Equipment fails. Inventory arrives unexpectedly. Lots are placed on hold. Transportation schedules change. Last-minute orders still have to move.

Those moments require operational judgment.

Successful organizations apply automation where it creates clear economic and operational value while maintaining the people, information, and processes required to manage exceptions. The operating platform connects those environments by supplying the inventory data, workflows, business rules, and priorities automated systems depend upon.



Case in point: Central Storage & Warehouse

Central Storage & Warehouse operates five Wisconsin facilities with frozen and refrigerated capabilities. As customer demand grew, CSW needed a more proactive way to forecast labor requirements, schedule loads, and prioritize work across daily shifts.

CSW, Datex, and Endeavor Labs used two years of WMS data to develop predictive models designed to forecast shipment labor requirements and improve labor scheduling and throughput planning.

What it proves: AI and automation create greater value when they are applied to a defined operating problem and supported by reliable operational data.

"Automation creates leverage. Judgment creates advantage."



Growth reveals the foundation

Growth puts the operating model under pressure.

Another customer comes onboard. A new service is introduced. Automation expands. A second facility opens. The company considers an adjacent vertical with different inventory, reporting, or compliance requirements.

The first warning signs may be easy to overlook. Onboarding takes longer. Workarounds multiply. Development queues expand. Employees spend more time reconciling exceptions.

Eventually, technology decisions become business decisions because they influence which opportunities the organization can pursue and how quickly it can pursue them.

This matters in a market where scale continues to expand.

GCCA's 2026 data shows the Global Top 25 increased temperature-controlled capacity by 460 million cubic feet in a single year. Mid-market operators do not need to replicate that scale. They do need a compelling alternative.

The ability to respond faster, specialize more deeply, and operationalize requirements that others cannot or choose not to serve creates room for a different kind of growth.

The executive question becomes straightforward:

**“Can the operation support the business
we intend to become?”**



Coordination becomes the next competitive advantage

Cold storage operations will continue adding automation, connectivity, AI, and customer integration. Each new capability also creates another dependency.

Automated equipment relies on accurate inventory and task data. FEFO logic depends on reliable dates and product attributes. Customer portals depend on timely execution. Recall readiness depends on trustworthy lot records. AI recommendations depend on information that accurately reflects warehouse activity.

Technology added in isolation can create another system employees must reconcile.

Software increasingly provides the coordinating layer. Buildings are long-lived assets. Automation is capital-intensive and designed around defined physical processes. Software can evolve more readily as customer requirements, workflows, and technologies change.

AI follows the same principle. It can help experienced operators identify patterns, anticipate constraints, improve labor planning, and flag exceptions. People remain accountable for customer commitments, product integrity, and commercial outcomes.

The objective is coordination: people, processes, data, automation, and customer systems working from a common operational foundation.

**"The next technology will matter.
The ability to integrate the next technology will matter more."**

How Datex approaches the challenge

Adapt to change. Operate with confidence.

Every cold storage operation reflects years of operational knowledge, customer relationships, and continuous refinement. Warehouse technology should reinforce that investment while giving the business room to evolve.

Datex approaches warehouse management from the perspective of complex, multi-client 3PL operations where customer requirements, workflows, billing structures, inventory rules, compliance expectations, automation, and integrations continue to change.

Footprint® WMS supports configurable workflows, customer-specific operating rules, billing, reporting, inventory management, lot and shelf-life controls, and the visibility required to coordinate sophisticated warehouse operations.

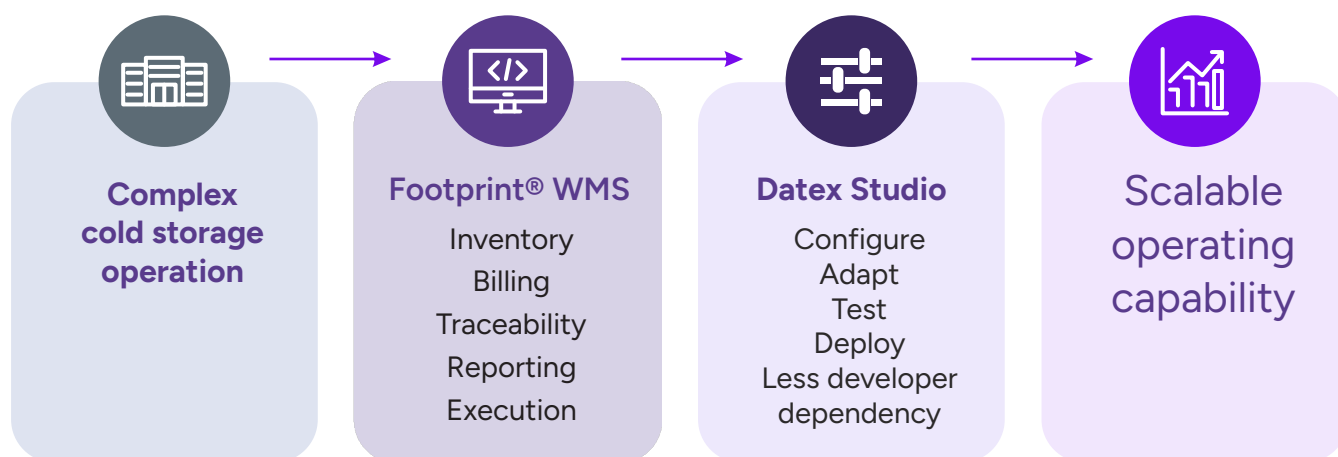
Datex Studio extends that flexibility by changing the traditional customization equation. Its lowcode toolset enables 3PLs to configure client- or facility-specific screens, workflows, and rules without relying on developers for every operational change. Organizations can build, test, and deploy changes while remaining upgradeready, giving operations **greater control** over how Footprint WMS evolves as customer and business requirements change.

That distinction matters in multi-client cold storage. A new customer may require a different workflow. A new service may require different data capture. A new facility or vertical may introduce another set of rules. When each change requires traditional custom development or a vendor change request, responsiveness can become constrained by the technology intended to support it.

Datex Studio is designed to reduce that dependency. Datex Studio enables warehouses to configure workflows, build integrations, and extend functionality without the constraints associated with traditional WMS change orders and rigid vendor roadmaps.

Combined with Footprint WMS, that gives cold storage operators an operating foundation designed to evolve as the business does.

From Complexity to Capability



“Technology should expand the business, not constrain it.”

Build the operation your business will need next

Cold storage has always demanded operational excellence. The environment in which that excellence must be delivered is changing.

Customers expect more. Fulfillment models continue to diversify. Traceability and compliance expectations are evolving. Automation is expanding. Consolidation continues to increase the scale of the industry's largest competitors.

Mid-market providers do not have to compete by becoming smaller versions of those organizations.

Their opportunity lies in what they can do differently: onboard a specialized customer faster, accommodate another inventory model, introduce a new service, integrate another technology, or pursue an adjacent vertical without creating disproportionate operational friction.

That leads to the most important question in this guide:

What business are you unable to say yes to today because of the way your operation works?

The answer may reveal a workflow, data, compliance, integration, or technology limitation. More often, several are connected.

Understanding those constraints gives leadership a clearer view of where modernization can create business value. The goal is an operation capable of supporting more choices as the market changes, rather than quietly determining which opportunities must be declined.



Closing thought

**“The future of cold storage belongs to operators that can absorb change
without losing control.”**

Leadership questions

- 1 Which customers, services, or verticals would be difficult for our operation to support today?
- 2 Where are customer-specific requirements creating work we are failing to capture, control, or bill?
- 3 Could we support a substantially different inventory, traceability, or compliance model without rebuilding our processes?
- 4 Can our operating platform accommodate the automation, integrations, and technologies we expect to introduce over the next five years?
- 5 Is our current operating model helping us say yes to higher-value opportunities, or deciding which opportunities we must decline?





End notes

1. [Global Cold Chain Alliance. "GCCA's 2026 Global Top 25 List Released."](#) News release, April 29, 2026.
2. U.S. Food and Drug Administration. "FSMA Final Rule on Requirements for Additional Traceability Records for Certain Foods." Content current as of July 24, 2026.
3. [Occupational Safety and Health Administration. "Warehousing -Hazards and Solutions."](#) U.S. Department of Labor.

Build for what comes next.

Cold storage will continue to change. Customer requirements will become more complex. Automation will expand. New technologies, services, verticals, and operating models will emerge.

The opportunity belongs to organizations prepared to respond.

What could your business say yes to if your operation were easier to adapt?

[Explore what improved operational adaptability could mean for your business.](#)



Datex provides warehouse management software for complex, multi-client, and regulated warehouse operations. At the center is Footprint® WMS, supported by Datex Studio and Footprint Analytics to help warehouse operators manage complexity, adapt faster, and scale.

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