



DEFYING THE LAWS OF FULFILLMENT

THE **KIVA** MOBILE FULFILLMENT SYSTEM



Meeting the Fulfillment Challenge

Every distribution center (DC) strives to attain flexible, efficient order fulfillment but struggles with the limitations of current tools. Now Kiva Systems has created an innovative model that eliminates the constraints of existing methods and puts you back in control of your warehouse.

The Kiva Mobile Fulfillment System™ (Kiva MFS™) uses a breakthrough new approach to order fulfillment—one that

simultaneously improves productivity, speed, accuracy, and flexibility. With the Kiva MFS, operators stand still while the products come to them. Pallets, cases, and orders are stored on inventory pods that are picked up and moved by a fleet of mobile robotic drive units. As a result, any product can go to any operator at any time. The DC is now completely dynamic, self-organizing, and adaptive.

OLD LAW OF FULFILLMENT There are tradeoffs to be made among productivity, flexibility, and accuracy.

NEW LAW OF FULFILLMENT Achieve greater productivity while increasing flexibility and accuracy.

Delivering a New Fulfillment Equation

Increased Speed | The Kiva approach increases the overall velocity of your building—workers work faster and orders leave the building faster.

Triple labor productivity | With no walking or waiting, operator output triples compared to other automated solutions. Plus, inline inspection ensures that higher output comes with higher accuracy.

Reduce cycle times | Fulfillment happens in real time. Because you no longer need to batch or wave orders through the building, an order that once took hours to complete now takes just minutes.

Load trucks faster | The Kiva MFS enables your shipping schedule to set the agenda for the building. You fill orders based on what is needed for the next truck, not on where products are stored. When the dock door opens, finished orders show up immediately—and the truck leaves on time.

Greater Flexibility | Unlike other forms of high-speed automation, the Kiva MFS provides greater flexibility across all areas of your facility.

Add new products effortlessly | Since there are no dedicated locations, you can avoid re-profiling and re-slotting the DC when you add a new product line or when demand shifts.

Vary throughput | Each worker fills orders independently, so you can staff only the labor needed for a specific output at a designated time.

Expand or move capacity | Because nothing is bolted to the floor, the Kiva MFS is easy to move and expand. To increase capacity, you simply add more stations, inventory pods, and drive units. If you relocate to a new facility, just roll the Kiva MFS equipment onto a truck and move it.

Lower Costs | The Kiva MFS lowers both capital and operating expenses throughout your DC.

Labor cost | Increased productivity means that labor costs drop for picking, re-slotting, replenishment, quality control, and other areas.

Capital cost | The Kiva MFS costs dramatically less than other automated systems. By using one set of equipment and software to receive, pick, and sort, you eliminate the need for conveyor and expensive sortation equipment.



OLD LAW OF FULFILLMENT Fast and slow moving products need different fulfillment processes.

NEW LAW OF FULFILLMENT Fast and slow moving products can be handled in one simple process with equal speed and ease.



OLD LAW OF FULFILLMENT It takes 12 to 18 months to bring a new DC online.

NEW LAW OF FULFILLMENT It takes a few weeks to design and install a material-handling system.



One Solution for Your Entire DC

| Split-Case Picking | Kiva ItemFetch™ enables operators to pick items from cases into totes or cartons. Mobile robotic drive units bring inventory pods to workers who use a simple pick-to-light/put-to-light interface to fill each order — the operator completes the entire order without moving. In addition, you control the sequence in which items are retrieved, allowing heavy-to-light box loading or pick-to-plan-o-gram for store restocking.

| Shipping Sortation | Kiva OrderFetch™ allows completed split-case orders to move directly to the shipping area at the right time, in the right sequence. Split-case orders are picked into cartons or totes on shipping pods. When the orders are complete, the pod is either temporarily stored or travels directly to the dock door, where it is combined with other split-case and full-case orders to fill a particular truck.

OLD LAW OF FULFILLMENT Orders must be grouped into batches and waves for picking.

NEW LAW OF FULFILLMENT Orders can be processed individually and filled in real time.

| Case Picking | Kiva CaseFetch™ gives operators random access to any pallet in the DC, allowing them to pick full cases as well as individual items. When a pallet enters the building, it is placed onto a pod base that is moved to storage by a mobile robotic drive unit. This system also allows for dock-to-stock of mixed-pallet receipts, where cases are stored in smaller case-reserve locations.

| Mixed-Pallet Building | In addition to case picking, Kiva CaseFetch enables an operator to build mixed or rainbow pallets with a variety of full cases, layering the pallet according to any specified sequence. This mixed pallet can then be routed directly to the shipping dock to be loaded onto a specific truck.

| Split-Case Replenishment | Kiva CaseFetch automatically delivers cases to stockers for replenishment of the forward picking area. This real-time replenishment process dramatically reduces forward stockouts, while improving storage efficiency.

OLD LAW OF FULFILLMENT Adding a new product to the DC is risky and disruptive.

NEW LAW OF FULFILLMENT Any type of new product can be added with no downtime or fuss.

Advanced Technology

The Kiva Mobile Fulfillment System is based on recent advances in a variety of underlying technologies.

Navigation The robotic drive units navigate by reading optical markers in a grid pattern on the floor. So you don't have to bury wires in concrete or install expensive infrastructure.

Power The drive units are battery powered and operate for up to eight hours on a single charge. When these batteries begin to run low, the drive unit automatically drives to a charging station on the floor and plugs itself in—no human is needed.

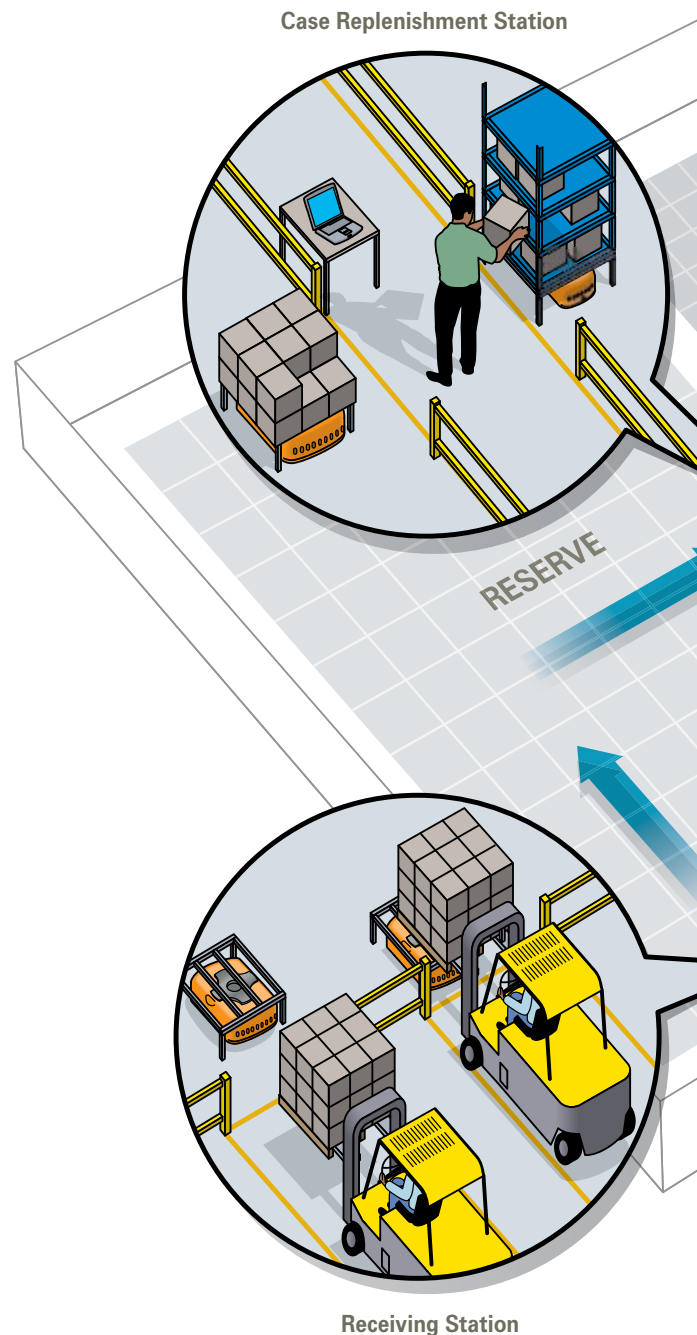
Communication The Kiva MFS server communicates with the drive units over a WiFi wireless network, which is easy to set up and coexists with other wireless networks within the building.

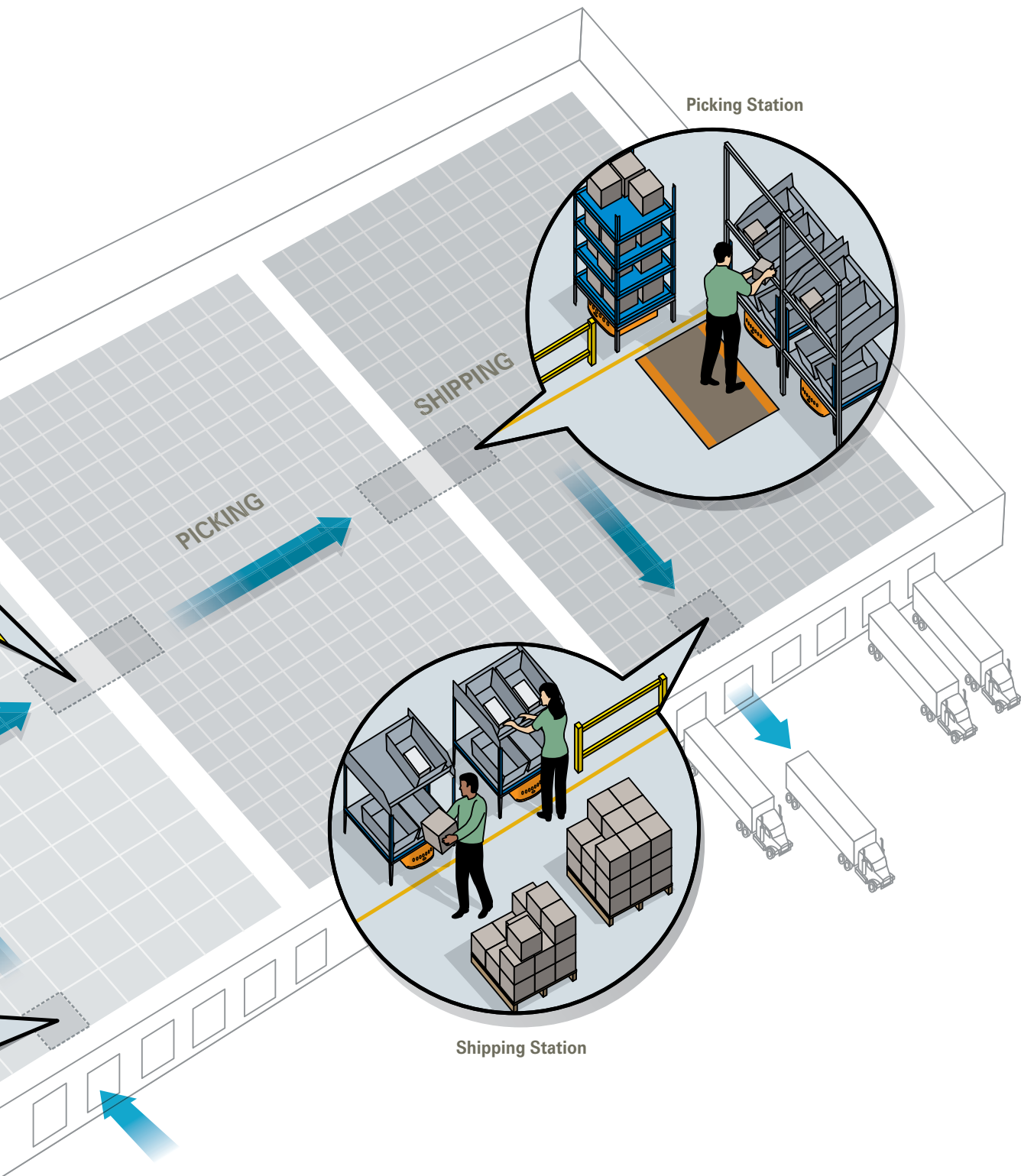
Software The Kiva MFS control software decides which order goes to which operator, which drive unit retrieves which pod, and which path a drive unit should take to reach its goal. Running on redundant clustered servers with battery backup, the control software is the power behind the Kiva approach.

New Laws for a New DC

With the Kiva MFS, your DC is transformed into a flexible environment where products flow swiftly and efficiently from dock to stock to order. Workers quickly come up to speed, operate independently, and produce consistently accurate orders. New SKUs are added to the building without effort, and customer orders are filled in real time. You can add new capacity whenever you need it, wherever you need it.

Welcome to the new Laws of Fulfillment.





OLD LAW OF FULFILLMENT Rush orders require special handling.

NEW LAW OF FULFILLMENT Rush orders are filled immediately without expediting.