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BUSINESS**UPS's \$20 Billion Problem: Operations Stuck in the 20th Century**

As the package giant tries to satisfy America's 21st-century shopping-and-shipping mania, it is striving to bring its delivery network out of a past era

By *Paul Ziobro*

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MESQUITE, Texas—In the sticky Southern heat, hundreds of workers streamed in for the 11 a.m. shift last month at United Parcel Service Inc.'s UPS -0.36% ▼ local package-sorting facility, one of dozens nationwide that help it move millions of parcels daily.

In a windowless room, a 30-year-old analog control panel about the size of a chest freezer monitors operations, with rows of green and red lights indicating when something goes awry in the building's web of conveyor belts.

"Thirty years ago, this was top-notch," UPS plant engineering manager Dean Britt said of the control panel. Today, the panel's computing capabilities "can probably fit on your phone," he said, "and not even a good phone."

The site, and other similar UPS facilities, haven't automated much over decades—despite a rush of new warehouse technology in many industries. Today, the company is paying a price.

As UPS tries to satisfy America's 21st-century shopping-and-shipping mania, parts of its network are stuck in the 20th century. The company still relies on some outdated equipment and manual processes of the type rival FedEx Corp. discarded or that newer entrants, including Amazon.com Inc., never had.

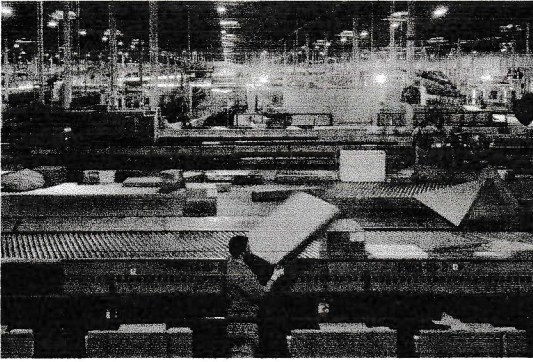
UPS says about half its packages are processed through automated facilities today. At FedEx, 96% of ground packages move through automated sites. UPS workers are unionized; FedEx's ground-operations workers aren't.

Now, the century-old delivery giant is playing catch-up. As part of that effort it plans capital spending of more than \$20 billion over the next three years. Much of that will go toward opening new automated facilities, UPS says, and technology upgrades to route packages around bottlenecks. It is a bigger annual expense, adjusted for inflation, than when UPS broadened from a ground operation and built up its cargo airline in the 1980s.

UPS says it plans to process all packages, aside from some larger ones or those that travel a short distance, through automated hubs by 2022. "We definitely need to do these kinds of things to remain competitive," says UPS's chief information officer, Juan Perez.

The reason for the intensive push is the way in which UPS's business has been flipped on its head. The bulk of its shipments once went to corporations or retailers. Now, its brown-clad U.S. drivers deliver more than half of its packages to homes, thanks to e-commerce. Drop-offs at suburban homes generally aren't as profitable as delivering large orders to an office or downtown shop, UPS says.

UPS embraced e-commerce early even though some executives worried about chasing lower-



UPS's automated distribution facility in Fort Worth, Texas, where humans only occasionally intervene. PHOTO: BRANDON THIBODEAUX FOR THE WALL STREET JOURNAL

margin deliveries, say some former UPS executives. Bottlenecks caused by online orders have led to delays and sent some industrial, health-care and other corporate shippers into the arms of FedEx, they say.

UPS also faces competition from Amazon, which is building out a delivery network of planes, trucks and vans to handle more of its online orders, especially in cities and suburbs. UPS spokesman Steve Gaut says the company has won business customers from rivals in recent years and declined to discuss Amazon's strategy. "There is tremendous opportunity" in delivering online orders, he says, "irrespective of how other companies may shift their strategies with respect to UPS."

Profit margins at UPS's domestic unit fell to 12.1% last year from 13.5% in 2013, while the unit in the same period added more than \$6 billion in revenue, which hit \$40.7 billion last year. Investors, accustomed to UPS's low spending, sent its stock tumbling in January after executives disclosed they would increase capital outlays.

"You have to do it," says Jerome Dodson, chairman of Parnassus Investments, owner of roughly \$800 million of UPS shares, speaking of capital spending, "but I was amazed as to how high it was."

UPS is negotiating with the International Brotherhood of Teamsters to renew a five-year contract, which expires July 31. Representing 260,000 UPS drivers, sorters and other workers, the union wants UPS to hire more full-time workers to help handle the surge in packages. It has opposed technology such as autonomous vehicles and drones and is wary of projects that do work with fewer employees.

"The problem with technology is that it does ultimately streamline jobs," says Sean O'Brien, a Teamsters leader in Boston. "It does eliminate jobs. And once they're replaced, it's pretty tough to get them back."

FedEx, with no unionized workforce in its ground network, doesn't have to worry as much about labor strife. And because it built its ground network more recently, it hasn't had to retrofit older facilities with automation. "For an older hub, automating is like heart surgery," says Ted Dengel, FedEx Ground's managing director of operations technology. "We can drop automation in before a package hits a facility."

UPS acknowledges that its older base and unionized workforce present challenges that rivals such as FedEx don't have.

Blue chip

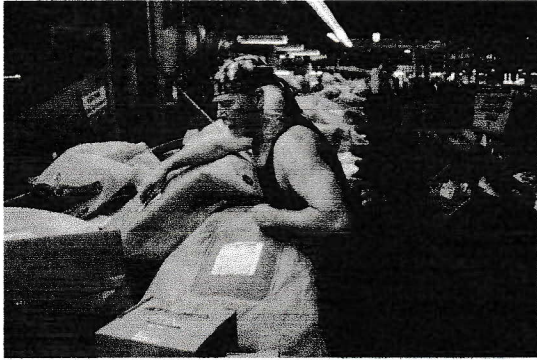
UPS founder James E. "Jim" Casey spoke about the dilemma of change 70 years ago. "A hard part of management's problem," he said in an annual speech, "is to know when to make changes and when to hold fast to what is good."

UPS grew out of Mr. Casey's small Seattle bicycle delivery service, American Messenger Co., in 1907. It used Model T Fords to deliver local department-store orders, eventually crossing state lines and building a company that now has a fleet of more than 100,000 vehicles and nearly 600 aircraft. He was chief executive for five decades and a director until his 1983 death at 95.

The company avoided flashiness and was known for its steady approach to business. It was employee-owned until an initial public offering in 1999. A reliable blue chip, it rewarded public shareholders with steady performance, dividend payments and share buybacks.

Then e-commerce happened.

As online-shopping volume grew, UPS relied on what a former UPS executive calls “a Band-Aid” approach to upgrading its network, patching it up by adding extra shifts or extending hours, or retrofitting parts of older buildings with new equipment. UPS says the union hasn’t impeded spending on automation. The cost and size of the machines needed to automate an older facility are now low enough to allow UPS to retrofit older facilities and build new ones, it says.



A UPS worker in Mesquite takes incoming bags of parcels and distributes them to the next process. PHOTO: BRANDON THIBODEAUX FOR THE WALL STREET JOURNAL

The company’s prior capital-spending strategy was appropriate when e-commerce growth created a 2% uptick in volume in 2015, says UPS finance chief Richard Peretz. But America’s appetite for online shopping only grew. “When you’re under 2%,” he says, “you’re thinking a lot different about putting up these buildings than when you’re up 4 or 5%.”

In short order, facilities such as the 34-year-old Mesquite hub emerged as weak links. While some 80,000 UPS delivery drivers fan out almost every day, UPS relies on an unseen army of workers to process packages through its sorting centers, some who work in ways that haven’t been updated much since the founder ran the business.

In Mesquite, the process starts with unloading boxes from trucks onto conveyor belts. A worker must align each box so a scanner can read the delivery label on the front, top or one side. That’s in contrast to the more-modern six-sided scanners used in newer hubs, which can scan a package no matter how it is loaded on the belt.

The packages move inside to a line of about 50 workers. Nine conveyor belts turn—three along the ground, three waist-high and three just overhead. A sorter must pick a package, quickly decipher the label and place the box onto the correct belt. Around the corner, a worker sorts packages down chutes, where loaders fill truck trailers.

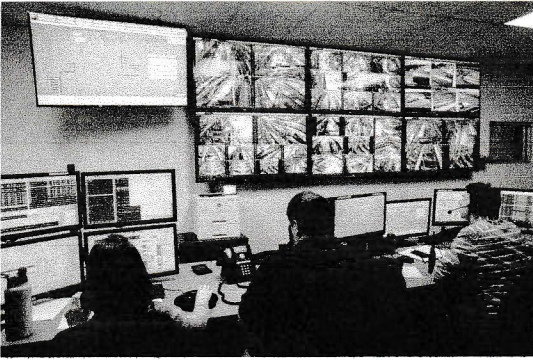
By contrast, automated sorting facilities use scanners to read a box’s destination and equipment called shoe pucks push packages down the proper chute.

A medium-size package at Mesquite gets four “touches,” as warehouse operators refer to acts of handling. Each touch adds a chance for a sorting error or damage. With 40,000 pieces processed an hour out of Mesquite, even rare human misfires can add up. Mis-sorted packages can add an extra day to a delivery, UPS says.

Automated hubs

All FedEx ground hubs are automated. Typical of its processes is how packages are handled in a one-year-old facility in Edison, N.J., where FedEx workers touch most packages twice—for the unload and the load.

Amazon’s operations, too, bristle with automation. It has been years ahead of many logistics firms in warehouse automation, from driverless forklifts to robots that bring shelves to workers.



Monitoring the automated UPS sort facility in Fort Worth. PHOTO: BRANDON THIBODEAUX FOR THE WALL STREET JOURNAL

UPS's effort to catch up can be seen 36 miles from Mesquite in Fort Worth, where machines scan boxes, sort them by destination and send them to outbound vehicles. New equipment such as six-sided scanners mean workers don't have worry about which side is up. The facility, with 750 workers, can process about the same number of packages daily as Mesquite, which has 1,170. In Fort Worth, packages get two touches.

The building's brain is an air-conditioned control room where 10 UPS employees sit before a wall of flat-screen monitors showing live video feeds. The computer system detects jams and other malfunctions. Workers can reroute where the conveyors send packages. "There's no human element" in rerouting a package in the building, says UPS engineer Travis Jensen. "There's a keyboard." A few workers walk alongside the belts to do tasks such as replacing any package that falls off, a rare occurrence.

Newer automated hubs are slowly arriving at UPS. It is adding about 5 million square feet of automated processing capacity, or 6.7% in additional capacity, to its network this year.

UPS says automated equipment isn't enough. Jack Levis, UPS director of process management, oversees about three dozen employees adding a layer of software over UPS's sorting network that would help manage package flows, including between automated facilities and older ones.

Such capability is critical as it handles more packages, including during the peak holiday season. The technology would divert additional packages from heading to areas overwhelmed by volume. "Imagine systems that will predict problems before they happen," Mr. Levis says. "You'll look like Sherlock Holmes."

Some analysts and consultants say the upgrades are overdue, especially as UPS has in recent years faced capacity crunches during the holiday season. In 2017, UPS was overwhelmed for a few days after Thanksgiving while FedEx was able to more easily reroute traffic. UPS says an unexpected surge in online orders backed up the network temporarily.

Morgan Stanley analyst Ravi Shankar says investors have questioned how UPS got by with less spending than FedEx, asking, "What took you guys so long?"

While UPS spends heavily on automation, FedEx is winding down a period of heavy investment in its ground network, having spent about \$10 billion since 2005. The Memphis, Tenn., company started as an express airline in the 1970s, adding ground deliveries in 1998 with the acquisition of Roadway Package System, which was created in 1985 to rival UPS by using new bar-code-scanning technologies. UPS began using bar codes the next year.

FedEx is now honing its network of 37 ground hubs in the U.S. and Canada, paring back in some places. It mothballed its \$259 million ground hub in Indianapolis. It built its Edison, N.J., ground hub to be flexible: It uses only about a third of the building's space, with room to expand in short order with whatever equipment it may add. It installed a sorting system quickly last year ahead of the holiday season.

The setup lets FedEx adjust its network based on the more volatile flows of online orders, something UPS hopes to do more adeptly with increased automation.

On Atlanta's west side, UPS's spending is taking shape in a 1.2 million-square-foot hub. Inside the concrete frame, engineers are testing six-sided scanners while contractors weld chutes and line the rafters with wires. The building, if all remains on schedule, will handle truckloads of holiday orders this year from Amazon and other retailers. It will be UPS's second-largest U.S. ground hub after one in the Chicago area.

Martha Molina, 50, a UPS sorter in Mesquite for the past 20 years, says she isn't worried about the addition of automated sort centers that require fewer workers. "It's something that we need to do to progress."



Loading packages into a truck at UPS's Mesquite facility. PHOTO: BRANDON THIBODEAUX FOR THE WALL STREET JOURNAL

Write to Paul Ziobro at Paul.Ziobro@wsj.com

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