

INTERACTIVE SESSION: TECHNOLOGY

UPS COMPETES GLOBALLY WITH INFORMATION TECHNOLOGY

United Parcel Service (UPS) started out in 1907 in a closet-sized basement office. Jim Casey and Claude Ryan—two teenagers from Seattle with two bicycles and one phone—promised the “best service and lowest rates.” UPS has used this formula successfully for more than a century to become the world’s largest ground and air package-delivery company. It’s a global enterprise with nearly 400,000 employees, 96,000 vehicles, and the world’s ninth largest airline.

Today UPS delivers 16.3 million packages and documents each day in the United States and more than 220 other countries and territories. The firm has been able to maintain leadership in small-package delivery services despite stiff competition from FedEx and Airborne Express by investing heavily in advanced information technology. UPS spends more than \$1 billion each year to maintain a high level of customer service while keeping costs low and streamlining its overall operations.

It all starts with the scannable bar-coded label attached to a package, which contains detailed information about the sender, the destination, and when the package should arrive. Customers can download and print their own labels using special software provided by UPS or by accessing the UPS Web site. Before the package is even picked up, information from the “smart” label is transmitted to one of UPS’s computer centers in Mahwah, New Jersey, or Alpharetta, Georgia and sent to the distribution center nearest its final destination.

Dispatchers at this center download the label data and use special software to create the most efficient delivery route for each driver that considers traffic, weather conditions, and the location of each stop. In 2009, UPS began installing sensors in its delivery vehicles that can capture the truck’s speed and location, the number of times it’s placed in reverse and whether the driver’s seat belt is buckled. At the end of each day, these data are uploaded to a UPS central computer and analyzed. By combining GPS information and data from fuel-efficiency sensors installed on more than 46,000 vehicles in 2011, UPS reduced fuel consumption by 8.4 million gallons and cut 85 million miles off its routes. UPS estimates that saving only one daily mile driven per driver saves the company \$30 million.

The first thing a UPS driver picks up each day is a handheld computer called a Delivery Information

Acquisition Device (DIAD), which can access a wireless cell phone network. As soon as the driver logs on, his or her day’s route is downloaded onto the handheld. The DIAD also automatically captures customers’ signatures along with pickup and delivery information. Package tracking information is then transmitted to UPS’s computer network for storage and processing. From there, the information can be accessed worldwide to provide proof of delivery to customers or to respond to customer queries. It usually takes less than 60 seconds from the time a driver presses “complete” on a the DIAD for the new information to be available on the Web.

Through its automated package tracking system, UPS can monitor and even re-route packages throughout the delivery process. At various points along the route from sender to receiver, bar code devices scan shipping information on the package label and feed data about the progress of the package into the central computer. Customer service representatives are able to check the status of any package from desktop computers linked to the central computers and respond immediately to inquiries from customers. UPS customers can also access this information from the company’s Web site using their own computers or mobile phones. UPS now has mobile apps and a mobile Web site for iPhone, BlackBerry, and Android smartphone users.

Anyone with a package to ship can access the UPS Web site to track packages, check delivery routes, calculate shipping rates, determine time in transit, print labels, and schedule a pickup. The data collected at the UPS Web site are transmitted to the UPS central computer and then back to the customer after processing. UPS also provides tools that enable customers, such as Cisco Systems, to embed UPS functions, such as tracking and cost calculations, into their own Web sites so that they can track shipments without visiting the UPS site.

A Web-based Post Sales Order Management System (OMS) manages global service orders and inventory for critical parts fulfillment. The system enables high-tech electronics, aerospace, medical equipment, and other companies anywhere in the world that ship critical parts to quickly assess their critical parts inventory, determine the most optimal routing strategy to meet customer needs, place orders online, and track parts from the warehouse to the end user.

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An automated e-mail or fax feature keeps customers informed of each shipping milestone and can provide notification of any changes to flight schedules for commercial airlines carrying their parts.

UPS is now leveraging its decades of expertise managing its own global delivery network to manage logistics and supply chain activities for other companies. It created a UPS Supply Chain Solutions division that provides a complete bundle of standardized services to subscribing companies at a fraction of what it would cost to build their own systems and infrastructure. These services include supply-chain design and management, freight forwarding, customs brokerage, mail services, multimodal transportation, and financial services, in addition to logistics services.

For example, UPS handles logistics for Lighting Science Group, the world's leading maker of advanced light products such as energy-efficient light-emitting diode (LED) lamps and custom design lighting systems. The company has manufacturing operations in Satellite Beach, Florida and China. UPS conducted a warehouse/distribution analysis to shape the manufacturer's distribution strategy, in which finished goods from China are brought to a UPS warehouse in Fort Worth, Texas, for distribution. The UPS warehouse repackages finished goods, handles returns and conducts daily cycle counts as well as annual inventory. Lighting Science uses UPS Trade Management Services and UPS Customs Brokerage to help manage import and export compliance to ensure timely, reliable delivery and reduce customs delays. UPS also helps Lighting Science reduce customer inventory and improve order fulfillment.

UPS manages logistics and international shipping for Celaris, the world's largest wireless accessory vendor, selling mobile phone cases, headphones, screen protectors, and chargers. Celaris has nearly 1,000 franchises in the United States, Canada and the United Kingdom. The company's supply chain is complex, with products developed in Georgia, manufactured at more than 25 locations in Asia and 10 locations in the U.S., warehoused in a Georgia distribution center, and shipped to franchisees and customers worldwide. UPS redesigned Celaris's inbound/outbound supply chain and introduced new services to create a more efficient shipping model. UPS Buyer Consolidation for International Air Freight reduces complexity in dealing with multiple international manufacturing sources. UPS Worldwide Express Freight guarantees on-time service for critical freight pallet shipments and UPS Customs Brokerage enables single-source clearance for multiple transportation modes. These changes have saved Celaris more than 5,000 hours and \$500,000 annually, and the supply chain redesign alone has saved more than 15 percent on shipments.

Sources: "A Good Call Becomes a Thriving Business," UPS Compass, February 2014; "High-Tech Manufacturer Masters Logistics," UPS Compass, January 2014; www.ups.com, accessed April 17, 2014; Steve Rosenbush and Michael Totty, "How Big Data Is Transforming Business," *The Wall Street Journal*, March 10, 2013; Thomas H. Davenport, "Analytics That Tell You What to Do," *The Wall Street Journal*, April 3, 2013; Elana Varon, "How UPS Trains Front-Line Workers to Use Predictive Analytics," *DataInformed*, January 31, 2013; and Jennifer Levitz and Timothy W. Martin, "UPS, Other Big Shippers, Carve Health Care Niches," *The Wall Street Journal*, June 27, 2012.

CASE STUDY QUESTIONS

1. What are the inputs, processing, and outputs of UPS's package tracking system?
2. What technologies are used by UPS? How are these technologies related to UPS's business strategy?
3. What strategic business objectives do UPS's information systems address?
4. What would happen if UPS's information systems were not available?

The technology supporting this system consists of handheld computers, bar code scanners, desktop computers, wired and wireless communications networks, UPS's data center, storage technology for the package delivery data, UPS in-house package tracking software, and software to access the World Wide Web. The result is an information system solution to the business challenge of providing a high level of service with low prices in the face of mounting competition.