Pfizer makes some of the most important and advanced life-saving drugs in the world and is redesigning its global supply chain and delivery system to achieve agility in an increasingly complex and competitive global market.

The industry’s traditional approach to managing freight was becoming quickly overwhelmed by extreme changes in the marketplace, including pressures to cut costs, tapping into challenging but important emerging markets, and managing an increasingly vast array of new drugs in the supply chain. There are also the challenges associated with mergers of pharmaceutical manufacturers and their product lines.

Faced with this reality, Pfizer sought a healthy dose of the latest information technology to help facilitate and efficiently manage the transport of numerous drug shipments from manufacturing sites to anywhere in the world.

To do this, Pfizer essentially “virtualized” its supply chain so that its suppliers, customers and transport providers, in addition to itself, can track and trace the movement of materials anywhere using a common “cloud” technology platform.

While the network may change over time, no new integrations are required of Pfizer. The “cloud layer” insulates Pfizer from the underlying physical changes and allows network participants to be added or removed rapidly. The virtualization of the supply chain is what enables flexibility, responsiveness, and global information exchange across the entire Pfizer value chain. It captures, visualizes, analyzes and manages Pfizer’s complex supply chain network and gives the company and its partners a single version of the truth against which all stakeholders operate.

At the same time, Pfizer has used this technology integration to dramatically simplify its transportation purchasing to just three third party logistics companies — DHL, Panalpina, and UTi Worldwide.

Jim Cafone, vice president of supply network services at Pfizer, said the company employs GT Nexus to provide information...
Like other pharmaceutical companies Pfizer must contend with a number of major forces shaping the industry.

One is shrinking margins as some highly effective and popular drugs come to the end of their patent life.

An example is Pfizer’s popular statin drug Lipitor. Reportedly the best selling drug in the history of pharmaceuticals, Lipitor went off patent in December 2011. With the market open to competition from generics, worldwide sales of Lipitor amounted to about $1.4 billion in the first half of 2012, 42 percent less than the $2.4 billion in the first half of 2011.

At the same time, the company is seeing new demand for drugs coming from around the world, especially logistically challenged emerging markets.

Consolidation in the pharmaceutical industry has made companies larger and more complex to manage. Pfizer, for example, acquired several companies in recent years, including Wyeth in 2009, Pharmacia in 2003, and Warner-Lambert in 2000.

Pfizer also says there has been an exponential increase in the number of products in the past decade “as new therapies are introduced thereby creating the need for internal supply chain segmentation.” Pfizer sells 3,000 formulations, which are available in 35,000 stock-keeping units or SKUs.

Cafone said Pfizer is “exceptionally complex from a whole supply system perspective versus other companies in the health care space.”

The company has 89 manufacturing sites, 175 logistics centers, utilizes 500 third parties and sells products in just about every country in the world, he said.

The trade lanes over which the company’s products travel — from Pfizer’s own factories and those of its suppliers to the company’s “first paying customers,” whether they’re hospitals, drug wholesalers, retailers or government agencies — create a complex web.

With the GT Nexus/Unyson network Pfizer has virtualized this tapestry by creating what Cafone called a “device independent structure.”

“We can plug in and out of our network through various nodes of the supply chain via a common information layer,” he said. “What that means at the end of the day is that we can take products from the supplier and know when those products are available to ship.”

The system is flexible enough that the company can add or change suppliers or transportation companies, or business strategies as needed.

The cloud-based system gives Pfizer “the opportunity to do that much more quickly than we could if we had to rely solely on freight forwarder data,” Cafone said.

Thomas Berger, senior vice president and global head of industry vertical health care at Panalpina, said other drug companies are beginning to adopt cloud technology but “Pfizer is certainly a front runner. They are certainly trying to do it differently compared to others, in particular, when you think about the size of the company.”

When Pfizer merged with Wyeth “they looked at how they wanted to move forward and that helped them drive it from a global perspective. Their request was a global request, and we had to respond and say, we can do this on a global basis,” Berger said.

Cafone referred to the 3PLs that the company uses as “our transportation control towers.” When suppliers or Pfizer sites are ready to make a shipment, they upload information about cargo and where it’s going based on the customer’s requirements.

“We have complete visibility from origin to destination and every milestone along the path,” he said.

Cafone compared the system to the social networking site LinkedIn, where once a member has allowed someone into his or her network, updates he or she posts — say a job change — become available to all the members of their network.

Similarly, Pfizer’s system lets the authorized participants in its supply chain know when a shipment is ready for pickup, to trace its progress and be notified if there is an interruption in the supply chain.

“Everyone up and down the value chain is able to see it or react to it,” Cafone said. “Users put the information together in the way that they need to see it, whether we want to push an alert out or they want to pull an alert down out of the system. That is the flexibility the platform allows.”

Jagiela said Pfizer tracks hundreds of shipments on a daily basis in all parts of the globe.

Don Maltby, an executive vice president at Unyson, said the dashboards that his company provides “display summary information about Pfizer’s logistics in an easily understandable graphic form,” for example, pie charts that show market share of ocean carriers or the density of shipments from India to Europe or any other trade lane.

Pfizer logistics experts can use those charts to find opportunities for increased consolidation of shipments, if products can be combined from several locations, or reduce the frequency of certain shipments altogether.

Because that data is available electronically, they can share it with other Pfizer suppliers, say the manager of a factory, and drill down into the data to look at information relating to a single shipment.

Cafone said it also allows the company to investigate various “what if” scenarios — for example, how a rise in oil prices will affect European surcharges and whether the company should reroute cargo.

Outsourcing And Control. Having the ability to track and trace shipments has become increasingly important as pharmaceutical companies like Pfizer outsource production, often to overseas firms.
“There is always a decision a company makes as to what expertise do you want to keep inside the company and what expertise do you want to source from outside the company,” Cafone said. “The Pfizer position is that if someone can do it better on the outside then they ought to be doing it.

“Very little of our product is made in a single facility anymore,” he added. “Twenty years ago everything was made within the four walls of the company and typically made within the four walls of a single asset.”

He also said “20 years ago you could have a manufacturing plant in every country where you did business. In today’s world we don’t have that because you can’t afford the capital any longer. And the technical expertise required in the manufacturing processes is such that you cannot replicate them all around the world.”

Today few products are made within the walls of a single plant and “as a result our supply chains are quite extended,” with products often shipped in bulk form for further processing at other facilities on a global basis.

At the same time, Cafone said Pfizer has redundancy built into some of its manufacturing processes.

“The problem is that as you outsource, you can lose control if you do not manage it effectively,” he noted. “With the supply chain, the weakest link can be inside or outside of Pfizer.”

In manufacturing, Pfizer may use outside firms to produce the active pharmaceutical ingredients (APIs), turn those compounds into a tablet or other drug, or package the finished drug. Some products are made entirely inside Pfizer, some by outside suppliers, and some are a mixture, Cafone said.

The amount of outside manufacturing can be measured in a variety of ways — by revenue or SKU count, for example — but Cafone said it amounts to about 50 percent.

Ed Silverman, who writes about healthcare on the blog Pharmalot, said Pfizer reflects a broad trend in the pharmaceutical industry toward more outsourcing, one that is expected to continue to grow unless safety issues arise or economics change.

Most outsourcing is done in China and India, though Silverman explained there is some increased activity in Latin America and Eastern Europe. India and China are particularly attractive markets for manufacturing because the countries have their own, large domestic markets.

Incidents such as the contamination of heparin in 2008 at a Chinese factory that was incorporated into a Baxter International drug have made supply chain integrity a hot topic. “Logistics or supply chain as the industry calls it is increasing important,” Silverman said.

Pfizer said in its 2011 annual report it applies “rigorous systems of quality assurance, including inspections and audits of both Pfizer-owned facilities and other facilities in our supply network, and insist that quality systems include direct oversight of the ‘chain of custody’ of suppliers.” In 2011, the company conducted 213 supplier assessments and 139 onsite evaluations of suppliers.

When it comes to transportation management, Cafone said Pfizer is “not in the business of buying trains, planes, and automobiles. We don’t actually need to own the external supplier, the transportation provider, the customs broker, but we have a means of communicating with them through this information layer.”

The cloud system gives Pfizer complete traceability of products as they move through the company’s supply chain.

In addition, Pfizer takes product security extremely seriously.

“We have overt and covert security techniques on a product basis — anti-tampering, those sorts of things,” Cafone said. “We have robust security practices all of our providers must adhere to.”
Pfizer’s Standards of Care define the policies and procedures providers must follow for Pfizer products. The company’s ability to track shipments with its cloud-computing system aids in that effort.

“If a move is supposed to take three days and it has gone beyond that, we want to know what’s happening,” Cafone said. “When you have visibility of data you can use it for a whole series of things.” That includes the ability to track ingredients that might be classified as dangerous goods or temperature sensitive, for example. "The standards of care for pharmaceutical products are becoming ever more rigorous. About 25 to 30 percent of the material Pfizer ships are temperature-sensitive “cold chain” products.

A growing number of new drugs contain biological ingredients such as proteins or nucleic acids that must be stored and transported within narrow temperature ranges if they are to retain their efficacy.

Angelos Orfanos, DHL’s president of life sciences and healthcare customer solutions and innovation, said there has been a change in the cold-chain business in recent years.

Different countries and varying regulators are imposing new rules to ensure the quality of drugs, leading to more tracking and tracing. At the same time, he said tracking cargo has become more important as the value of drugs have increased. He noted many biological-based drugs have higher values.

Supply Chain Consolidation. As Pfizer restructured its supply chain in recent years, DHL acquired two of the company’s warehouses in Vonore, Tenn., and Reno, Nevada. DHL converted those facilities into multi-user warehouses, so that Orfanos said Pfizer has converted warehousing from a fixed to a variable expense.

By reducing the number of 3PLs it employs, Pfizer has been able to reduce its transportation spend by about 10 percent and utilize the support of about 40 people externally from the three preferred freight providers.

It has also reduced the number of accessorial charges it’s subject to from about 400 globally to a consolidated set of 30.

Cafone said DHL, UTi, and Panalpina “embrace this concept along with us and brought resources to bear on our behalf... to ensure that our standards of care are adhered to from a product perspective and that the information is made available to the cloud so that we can analyze it using the analytics platform.

“Every company in the world would like to track and trace products the way we are able to when we buy something from Amazon.com,” he said. “The problem is if we do that within a service provider like FedEx or UPS or the Postal Service, you can track and trace within their own engines, but you can’t go to the UPS Website and say ‘give me the FedEx information.’”

Cafone said when Pfizer sought to select global 3PLs “the typical provider would say ‘we can do exactly what you described here, but we want you to do it in our proprietary system.’”

But he added “the more proprietary the system, the more you are locked into that provider and that means you’re not flexible, you’re not agile. You cannot plug and play.

“What we sought to do in this whole virtualization was to be ‘device agnostic,’ meaning while the network may change over time, no new integrations are required by Pfizer and allows network participants to be added or removed rapidly,” Cafone said.

The company decided to use the GT Nexus system as an engine “we can plug anyone into. Our network is incredibly flexible,” he said.

Pfizer demanded the 3PLs it selected agree to send the information that is required to its cloud system every time they handle a Pfizer product.

“Our network is so dynamic,” Cafone said. “We may have an emergency health need in some emerging market, and we don’t have time to talk to somebody about plugging into their propriety system. We want a tool that is device agnostic.”

While DHL, Panalpina and UTi were willing to work with Pfizer, he said other companies insisted Pfizer would have to use their tools, so the company declined to do business with them, even though in some cases they were very large 3PLs.

Cafone said several others could not operate in that fashion, but said once they developed the capability that they hoped to be able to do business with Pfizer in the future. Cafone said that might be something the company would entertain in the future, adding there could be particular trade lanes where Pfizer might like to use a different company.

For now, most of the company’s transportation in Asia is handled by DHL, which also does some work in the United States and handles all of Pfizer’s external suppliers worldwide. Panalpina handles the transportation work in the Americas and all three companies do some work in the Europe, Middle East and Africa region.

Branded Vs. Generic. As a pharmaceutical manufacturer, Pfizer makes a variety of both branded, patented products and generic drugs.

In the branded world, Pfizer may be the only manufacturer of certain drugs for diseases such as hemophilia and cancer, and Cafone noted “the patient absolutely needs them because they are lifesaving.”

For those products, the company strives for “100 percent service levels, no questions asked. With oncology drugs you can almost assume air transportation, shipments tracked and traced completely.”

With generic drugs, where Pfizer may compete with many suppliers, logistics managers “are more likely to employ ocean transportation and consolidation.”

But Cafone said “at the end of the day we’re all about servicing the patient and their critical healthcare needs — that trumps everything.”

“If there is a critical drug shortage, for example, where a competitor’s drug is not available and demand climbs, and Pfizer would normally ship a similar product from Germany to Singapore with a transit time of 30 to 40 days, it might drop that rule and instead move product by air in 12 hours, regardless of the cost.

Cafone indicated there is increased interest in logistics among upper management at pharmaceutical companies in part because of geopolitical events and natural disasters, such as the 2010 eruptions of the Iceland volcano Eyjafjallajökull, the 2011 Tohoku earthquake and tsunami in Japan, and this year’s Hurricane Sandy.

But he said there is also an increasing recognition that “not only is Pfizer selling a product, but a trusted supply chain. And a trusted supply chain means we have visibility end-to-end, limited number of trusted partners in DHL, Panalpina, and UTI and robust standards of care.”

Cafone foresees the day when Pfizer will be able to use its supply chain as a sales tool. It will be able to go to, for example, an emerging market or a non-governmental organization and say “not only do we have the right product innovation, but we also have a great supply system innovation.

“That’s where we believe this is going,” he said.