



## Overview

**Country or Region:** United States

**Industry:** Transportation and Logistics—  
Materials handling

## Customer Profile

Headquartered in Orlando, Florida, Intelligent Global Pooling Systems (iGPS) is the first company to provide manufacturers and retailers with an RFID-tagged, all-plastic pallet pool.

## Business Situation

iGPS needed an efficient, precise way to track and manage its innovative and valuable plastic pallets in real time across global supply chains.

## Solution

With the help of its technology partner, Xterprise, iGPS built an advanced tracking and management system that takes advantage of radio frequency identification (RFID) technologies.

## Benefits

- Tracks assets in real time
- Prevents losses and theft
- Optimizes pallet use
- Enables accurate invoicing
- Eases inventory management

## Pallet Rental Company Modernizes Shipping Industry with Plastic and RFID Tracking

“RFID gives us a data-driven audit trail so we can track our assets and satisfy our customers. The time-stamped data alone is far better than anything that has existed until now.”

Walter Kerr, Chief Information Officer, iGPS

Intelligent Global Pooling Systems (iGPS), based in Orlando, Florida, has revolutionized the pallet-rental business. Its innovative plastic pallets offer dramatic economic and environmental improvements over the 1 billion wood pallets in use in the United States. But iGPS pallets cost twice as much as typical wood pallets, so tracking them is crucial. The company and its solution partner, Xterprise, used radio frequency identification (RFID) software from Microsoft and other vendors plus RFID hardware to build a best-of-breed asset-management application. Now iGPS can manage its pallets across extended customer supply chains in real time, deploy pallets more efficiently, prevent losses, and invoice customers with unprecedented accuracy. What’s more, iGPS customers can track and manage product inventories precisely and with better visibility without directly implementing RFID technology.



## Situation

Consider the humble shipping pallet. This lowly yet essential asset constitutes one of the biggest hidden costs in supply chains today. To eliminate the costs and headaches of buying, tracking, and managing pallets, many corporations prefer to lease pallets from “pooling” companies. Pallet pooling is a big business, with gross revenues of U.S.\$14 billion annually worldwide.

More than 97 percent of the 600 million replacement pallets produced in the United States every year are made of wood, according to *Modern Plastics Worldwide* magazine. As forests disappear, wood pallets get costlier. Wood pallets also pose other challenges. The International Plant Protection Convention requires that wood pallets for the import/export trade be fumigated or heat-treated to prevent the spread of insects. Wood pallets used to ship meat and other foods are often scrapped to prevent cross-contamination by mad cow disease, bird flu, and other pathogens. Wood pallets are heavy, and with oil prices constantly rising, transporting pallets adds unrecoverable costs to commercial transactions. Further, almost all wood pallets are tracked manually, with millions of them lost every year.

In 2006, a group of pallet-pooling veterans founded a business that promised a paradigm shift away from wood pallets. Intelligent Global Pooling Systems (iGPS), based in Orlando, Florida, introduced a pool of 48-inch by 40-inch pallets made of plastic for customers in the grocery, beverage, home-improvement, pharmaceutical, and consumer-electronics industries. iGPS pallets are more attractive for displays, 100-percent recyclable, lighter to lift, more durable, consistently sized, and far easier to clean and maintain than wood.

But the iGPS pallets cost 2.5 times as much to produce as comparable wood pallets,

which made it imperative that the company track them efficiently to offer a cost-competitive alternative to wood pallets. The founders of iGPS considered that problem right from the start and came up with a bold solution. They would build real-time inventory management technology into every pallet they leased.

## Solution

To make the solution work, iGPS needed a trustworthy tracking infrastructure that could extend across a variety of supply chains. To provide that infrastructure, iGPS hired a solution partner, Xterprise, based in Dallas, Texas, which had developed many “high-definition” supply chain solutions that are enabled by radio frequency identification (RFID) technology.

On the hardware level, Xterprise helped iGPS find the best RFID tags on the market. In January 2007, iGPS ordered 4.5 million RFID tags from several manufacturers—one of the largest orders for RFID tags ever placed. Xterprise worked with a pallet manufacturer to figure out how to embed four RFID tags in every iGPS pallet. Each tag includes an identical Electronic Product Code (EPC) Global Reusable Asset Identifier (GRAI), which gives every iGPS pallet a unique, traceable identity for the life of the pallet. Putting four identical tags in each pallet ensures that at least one works, no matter how much pounding or what temperatures the pallet experiences during its life in the supply chain. iGPS requested that bar codes be placed on each pallet, as well, for customers who want to continue using bar-code data collection technology. Xterprise also helped iGPS select the best fixed and mobile RFID readers from Alien Technology and Motorola, most of which run either the Windows Mobile® or Windows® CE operating system.

On the software level, Xterprise used its Xterprise Asset Manager (XAM) application—

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Dean Frew, President and Chief Executive Officer, Xterprise

previously developed for the Reusable Transport Item (RTI) market—as the basis for developing the iGPS intelligent Stock Use and Movements (iSUM) system. iSUM tracks and manages iGPS pallets across the supply chain. It uses customized implementations of Microsoft® BizTalk® Server 2006 R2 with BizTalk RFID—a platform to enable RFID plug-and-play device management, application integration, and event processing—along with Microsoft SQL Server™ 2005 database software. By using Microsoft components, Xterprise was able to build iSUM in months instead of years.

“We started discussions with iGPS in July 2006,” says Dean Frew, President and Chief Executive Officer of Xterprise. “We competed requirements for the iSUM application in August, and by the 20th of October, we were managing inventory as pallets came off of the production line at a rate of more than one pallet a minute. iGPS didn’t have three years to plan and put together a gigantic system. Using our XAM application, BizTalk RFID, and a service-oriented architecture gave us a huge advantage in time-to-market. We could move quickly and use what we’d done before to build a scalable solution that was tailored to our customer’s needs.”

iSUM relies on “edge servers”—hardware and software in far-flung warehouses, distribution centers, and retail stores—to collect RFID data and send it to a central server in a Grand Rapids, Michigan data center. The edge servers filter data, manage events and workflow processes, and send data by using BizTalk Server 2006 R2 with BizTalk RFID, along with SQL Server 2005 Standard and Express Editions. The iGPS RFID source-tagging system relies on the Xterprise Automated RFID Module (XARM), which is built on top of BizTalk RFID and SQL Server.

iGPS has adopted Microsoft Dynamics™ AX 4.0 business software to manage enterprise

functions such as general ledger and reporting. While BizTalk RFID enables connectivity to heterogeneous line-of-business applications, Microsoft Dynamics AX 5.0 has native RFID functionality.

Customized Xterprise business applications provide other services. Xterprise’s XAM takes data from the edge servers and then updates orders and manages inventory on the central server. XAM uses SQL Server Reporting Services to deliver standard or customized reports, and it uses SQL Server Analysis Services to provide online analytical processing reports. Another, Xterprise AnalytiX uses SQL Server Integration Services to extract and transform raw RFID data into valuable business information to help save money, improve inventory use, and operate more efficiently. Xterprise built these applications on top of BizTalk Server 2006 R2 with BizTalk RFID and SQL Server by using the Microsoft Visual Studio® 2005 development system and Microsoft .NET Framework.

## Benefits

As the owner of the world’s first all-RFID-tagged, all-plastic pallet pool, iGPS enjoys many advantages. iGPS can track its assets anywhere in real time, prevent asset losses and theft, use pallets more profitably, invoice customers more accurately, and even help customers track their products. Walter Kerr, Chief Information Officer of iGPS, says, “Everyone thinks they understand the pallet-pooling business because it looks so simple, but it’s one of the most complicated business models imaginable. We’re constantly tracking millions of dollars worth of homogenous assets that are in someone else’s possession. RFID gives us a data-driven audit trail so we can track our assets and satisfy our customers. The time-stamped data alone is far better than anything that has existed until now.”

“Our pool is self-reconciling. When you rent a pallet from us, iSUM keeps track of it transparently and in real time, so there are no surprises or disputes at the end of the year.”

Walter Kerr, Chief Information Officer, iGPS

#### **Tracks Assets in Real Time**

With the precise tools that iSUM provides, iGPS can track its assets anywhere and at all times, even where RFID would not have worked well or at all before. In the past, when a truck arrived from a pallet supplier, a pallet customer rarely knew if it contained the number of pallets listed on the invoice. It was usually too time-consuming and difficult to count the pallets. With iSUM, they're counted quickly and automatically as they're unloaded and rolled in front of an RFID reader. Concrete and liquids, commonly found in supply chains, can throw RFID readers off. Even in those circumstances, iSUM's redundant RFID tags make its readings nearly 100 percent accurate. So do its rule-building tools, which rely on BizTalk RFID. If a forklift driver moves a pallet back and forth in front of a reader, iSUM will identify the pallet and count it just once.

#### **Prevents Losses and Theft**

Before, a dog food maker might send a pallet of rations to a wholesale store. A local feed store owner might buy the whole shipment and drive away with the pallet. Like millions of others every year, the pallet was gone—and the pooling company would probably never know when or if it was returned. RFID technology changes that. iGPS can triangulate between where a pallet last appeared and when and where it was returned, to help iGPS find and plug supply-chain leaks. The iSUM system can also monitor inventory history and send an alert if it appears that theft is taking place at a specific location, saving money for iGPS and its customer. On a larger scale, with the data-mining tools in iSUM, iGPS can see loss and theft patterns and make strategic adjustments. Kerr says, “Our asset control is much better than any other pooler's. In a Sarbanes-Oxley world, that's a big deal.”

#### **Optimizes Pallet Use**

With the data-mining tools in iSUM, iGPS can also figure out where its pallets typically get delayed in the supply chain and take action to accelerate them. iGPS learned that its pallets often slow down in the retailer network. Because iGPS can tell exactly when a pallet enters and leaves the retail network, it can offer retailers incentives to return pallets within set time limits. Kerr says, “Before RFID, we couldn't do that. Our trip time now is less than two-thirds that of a traditional pallet pooling company.”

#### **Enables Accurate Invoicing**

One of the biggest problems in traditional pallet pooling has been inaccurate billing. Because of faulty visibility on pallets in the supply chain, billing was more art than science. A pool operator might want to bill a customer for lost pallets, for instance, without accurate records to back up the billing claims. The customer had to accept the bill on faith or look for another pool operator, which was hard to do in a business with few competitors. With iSUM, faith-based billing is passé.

Accuracy in billing reduces friction between iGPS and its customers. “Our pool is self-reconciling,” Kerr observes. “When you rent a pallet from us, iSUM keeps track of it transparently and in real time, so there are no surprises or disputes at the end of the year.”

#### **Eases Inventory Management**

iSUM provides other benefits to pallet renters. Customers can use it to locate and recall defective products while they're still in transit, before they hit store shelves. And pallet renters can take advantage of iSUM by using bar-code readers, which are ubiquitous in the supply chain, without investing in RFID readers or infrastructure. Every iGPS pallet

includes a permanent bar code, which iSUM links to the pallet's GRAI. Because of that link, customers can still track an iGPS pallet through the supply chain using just a barcode reader and Web access. What's more, customers no longer have to spend money affixing bar codes to product shipments, because iGPS already puts bar codes on its pallets.

Despite the company's concessions to bar-code users, Kerr believes that bar-code technology will soon be a thing of the past. "There are tremendous capital outlays and procedural problems in using bar codes," Kerr says. "If you can eliminate them and still have unitized tracking numbers, why not do it? If putting a bar code on every unit of shipped products cost you five cents a load before, and you shipped 50 million loads a year, you'll get significant savings from using RFID—in an industry where margins can be tight."

iGPS is constantly exploring new ways to use RFID to help its customers. For example, the company can connect RFID tags to temperature- or movement-sensitive sensors bolted to pallets to let manufacturers know when fragile products are damaged by temperature changes or rough handling. With new capabilities like that, iGPS is keeping very busy adding some of the largest corporations in the world to its pool. One customer is developing a new warehouse management system. Kerr says, "They could be the first manufacturer in the world that skips the bar-code paradigm and goes straight to RFID. So we're seeing a lot of successes. I can promise you this: The RFID-enabled pallet will revolutionize the supply chain. Five years from now, it'll be the norm."

## For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to: [www.microsoft.com](http://www.microsoft.com)

For more information about Xterprise products and services, call (972) 690-9460, x300, or visit the Web site at: [www.xterprise.com](http://www.xterprise.com)

For more information about iGPS products and services, call (800) 884-0225 or visit the Web site at: [www.igps.net](http://www.igps.net)

## Microsoft Server Product Portfolio

For more information about the Microsoft server product portfolio, go to: [www.microsoft.com/servers/default.aspx](http://www.microsoft.com/servers/default.aspx)

### Software and Services

- Microsoft Server Product Portfolio
  - Microsoft BizTalk Server 2006 R2
  - Microsoft SQL Server 2005
- Microsoft Dynamics
  - Microsoft Dynamics AX
- Microsoft Visual Studio
  - Microsoft Visual Studio 2005
- Windows CE
- Windows Mobile
- Technologies
  - BizTalk RFID
  - Microsoft .NET Framework
  - SQL Server Analysis Services
  - SQL Server Integration Services
  - SQL Server Reporting Services

### Hardware

- Alien fixed RFID readers
- Alien RFID inlays
- Zebra RFID label printers
- Motorola mobile RFID readers
- Avery Dennison RFID inlays
- Dell server computers

### Partners

- Xterprise