



## Purchasing Consolidation for NetSuite

*"Explore converted our concept of a custom purchasing workbench into a reality. This concept allows us to compile several hundred requisitions from 55 locations across the country and consolidate purchase orders to suppliers by "ship to" location. Our requested design of a zip code overlay reduced our logistical costs as well. Explore did an amazing job in managing the project requirements and dramatically enhanced NetSuite's out-of-the-box functionality. Explore was available & responsive to our needs and delivered a large project in a short timeframe."*

*- Larry Carls, Vice President-Procurement/Strategic Sourcing, ITS Technologies & Logistics*

**Background:** ITS Technologies and Logistics is a leading provider of intermodal terminal services, including but not limited to lift equipment maintenance, trailer and chassis maintenance, etc. The company handles over 5 million lifts per year and operates over 55 facilities across the United States and Mexico.

Employees at each location often need to order parts to do their job so they have been given the ability to submit purchase requests. With over 18,000 items and over 2000 vendors to choose from, it can be difficult for all employees to know which vendor and/or price would be best suited for any requested item. The knowledge would be overwhelming and the process would be inefficient for ITS.

To streamline the process of requesting items, employees have been given the ability to create requests without having to specify a vendor or price. Instead, the final decision rests with the Corporate Purchasing Department. The Corporate Purchasing Department is responsible for analyzing all purchase requests, finalizing the most appropriate vendor and price, consolidating requested items by vendor and location and finally creating the purchase orders that are sent to the vendors.

To help streamline this process, ITS engaged Explore Consulting to develop a custom application that makes it easier to select the best vendor and pricing, create consolidated purchase orders and leverage their

domain expertise and established supplier relationships.

**Issues:** NetSuite assumes that all items on a purchase request will be fulfilled by a single vendor. While this is not a flaw in the product, it may not meet the needs of larger organizations. With 60 locations, over 2,000 vendors and over 18,000 items, ITS' requirements went beyond the functionality that NetSuite provides.

Another problem to solve was how to use NetSuite, while moving all purchasing tasks to the Corporate Purchasing Department, where the buyers are highly skilled in their jobs. The buyers have a more holistic view of the purchasing needs of the entire organization, where they can take advantage of price leveraging and established national contracts. This is knowledge that would be difficult and expensive to impart to all requesters in the company. Additionally, ITS buyers have the insight to identify items from multiple requests, but supplied by the same vendor. With this knowledge, they can combine requisitions into single purchase orders, saving time and money and simplifying the process of tracking orders.

**Solution:** To meet the needs of ITS, Explore Consulting converted an ITS concept of automating and consolidating purchase requisitions from over 55 locations into a purchasing workbench solution. This allows the buyers to consolidate multiple purchase

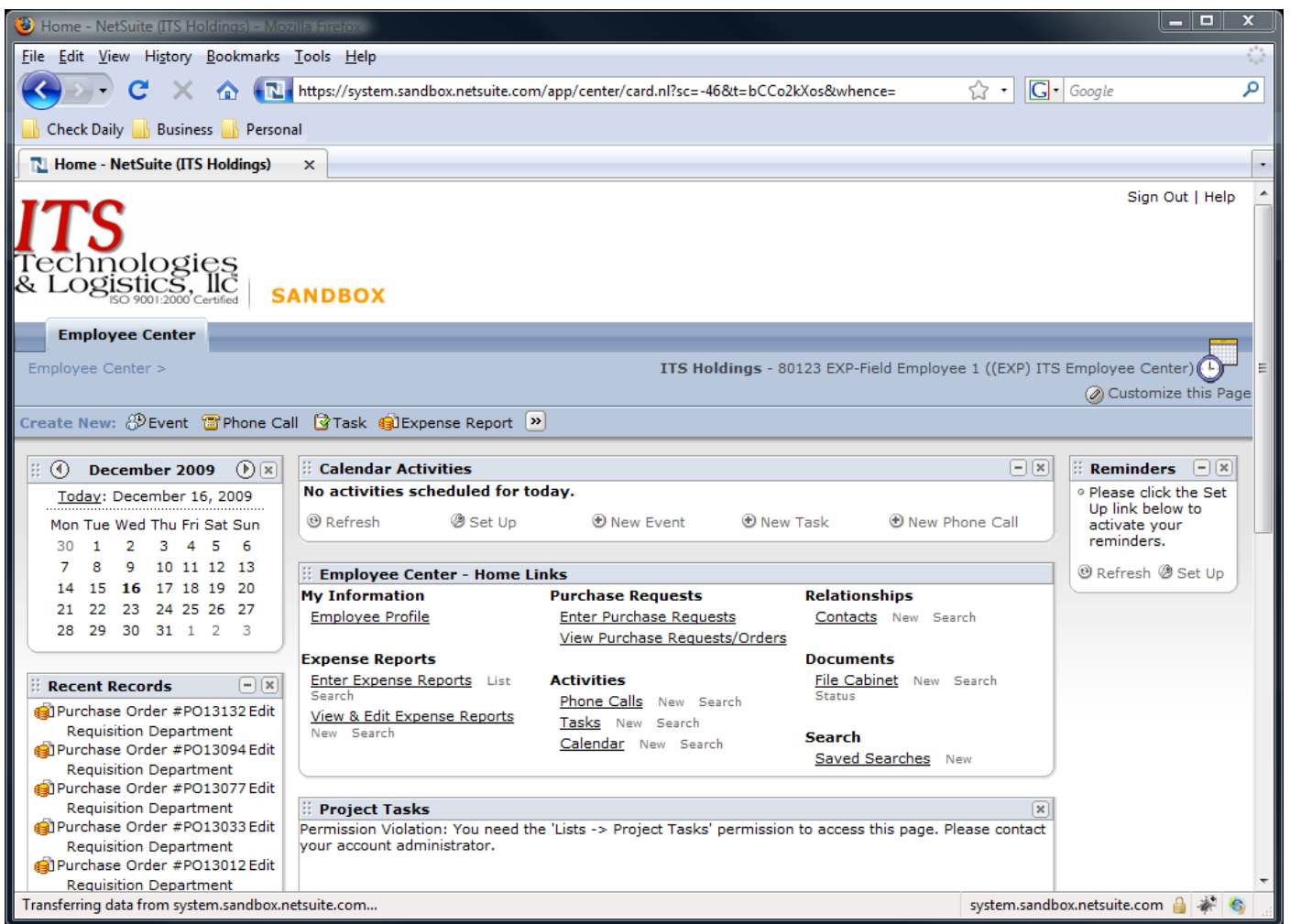
requisitions into one supplier purchase order with the same “ship to” location. The solution includes:

- Customizations to the purchase order functionality in NetSuite
- Custom web-based Purchasing Workbench application
- [NS Connector](#) to integrate the purchasing workbench with NetSuite
- [Explore Mobile FSR](#) to enable supervisors to review and approve purchase requests from their mobile devices

Before discussing the implementation in more detail, it is helpful to understand how the request-to-order process works.

**Request-to-Order Process**

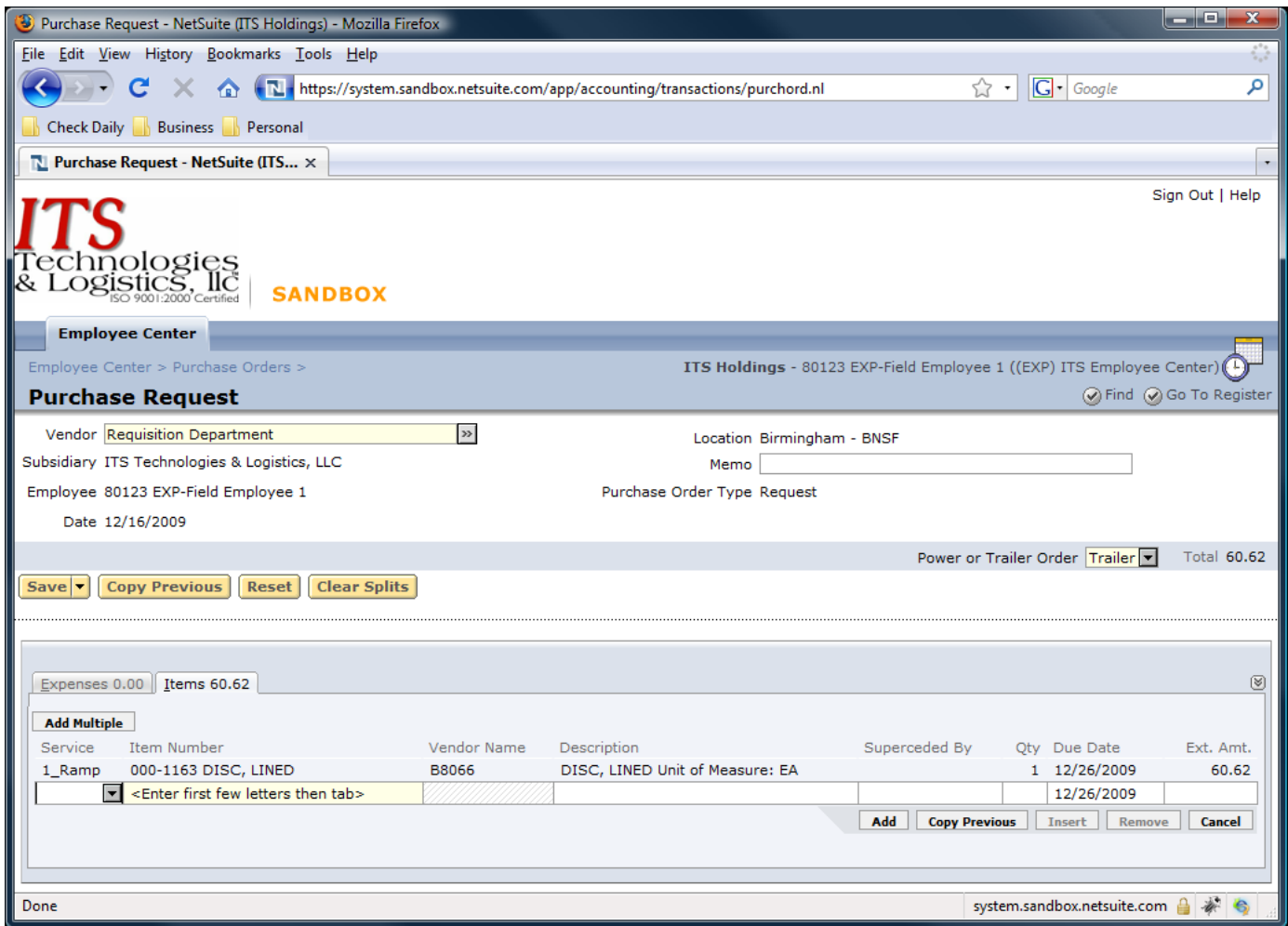
The request-to-order process starts when an employee logs into NetSuite and is taken to the Employee Center (Figure 1). In the Employee Center the employee clicks the “Enter Purchase Requests” hyperlink to start a new purchase request.



**Figure 1: Employee Center**

The purchase request screen (Figure 2) is actually a custom purchase order form. It is customized to bring maximum simplicity to the employee, helping him or her create a purchase request with maximum

efficiency. The employee simply needs to specify the type of order (either power or trailer), add the items and their quantities and click the Save button.



**Figure 2: Purchase Request Screen**

By default, the vendor for the entire request is set to the Requisition Department, ensuring that the order is actually never sent directly to a vendor. When the user saves the request, the system attempts to select a vendor and price for each item on the order. So it is entirely possible and probable that a request must be fulfilled by multiple vendors. This is where the Corporate Purchasing Department comes in.

Once a request is created and approved, it is automatically made available in the Purchasing Workbench. When a buyer starts the Workbench, all approved requests with un-fulfilled order lines are imported into the Workbench. The buyer is presented with a list of requested items that have been requested by employees in locations for which a particular buyer is assigned and accountable for processing the requisition.

The screenshot shows the ITS Purchasing Workbench interface in a Mozilla Firefox browser. The page title is "ITS Technologies & Logistics, LLC Purchasing Workbench". The main heading is "Purchase Requests". There are buttons for "Refresh Data", "Mark All", "Unmark All", "Review and Submit", "Logout", and "Change Password".

On the left side, there are filters for "Location" (Chicago 47th - NS), "Vendor" (CAPACITY OF TEXAS, INC), "Item" (- All -), "Requisition Date Between", "Due Date Between", "Requesting Employee" (- All -), and "Buyer" (- All -).

| Select                              | Requisition Date | Due Date   | Request Num. | Location          | Vendor                 | Employee            | Item Number | Item Description          | Qty | Unit Cost | Ext. Cost |
|-------------------------------------|------------------|------------|--------------|-------------------|------------------------|---------------------|-------------|---------------------------|-----|-----------|-----------|
| <input checked="" type="checkbox"/> | 12/14/2009       | 12/16/2009 | PO13175      | Chicago 47th - NS | CAPACITY OF TEXAS, INC | Julliano, Edward A. | 000-0037    | 000-0037 VALVE, CHECK     | 5   | 5.0000    | 25        |
| <input checked="" type="checkbox"/> | 12/14/2009       | 12/16/2009 | PO13175      | Chicago 47th - NS | CAPACITY OF TEXAS, INC | Julliano, Edward A. | 000-0195R   | 000-0195R CYLINDER, CLAMP | 1   | 0.0000    | 0         |

At the bottom right, it says "6 Items". At the bottom center, there is a copyright notice: "Copyright 2009 ITS Technologies & Logistics, Inc. All rights reserved. Site developed by Explore Consulting." The browser status bar at the bottom left says "Done".

**Figure 3: Items Selected to be Ordered**

Inside the Purchasing Workbench, a buyer is not limited to requests originating from locations for which he or she is the designated buyer. In fact, buyers can view and filter the requests by myriad criteria including location, vendor, item, date the requisition was created, date the items are requested to be received, the requesting employee and even other

buyers. As options are selected, the list of requests is narrowed down to meet the criteria. When both a location and a vendor are specified, the buyer can then select one or more items from possibly multiple requests to be included on a new consolidated purchase order (Figure 3).

After items are selected to be ordered, the Workbench creates a preview purchase order and displays it to the buyer (Figure 4), allowing the buyer to examine the

order, go back and make changes if needed, and finally creating the actual purchase order in NetSuite.

The screenshot shows a web browser window titled "ITS Purchasing Workbench - Mozilla Firefox". The address bar displays "http://web1.exploreconsulting.com/its/purchasingworkbench/workbench.aspx". The page header includes the ITS Technologies & Logistics, LLC logo and the text "Purchasing Workbench". Below the header, there are buttons for "Create Purchase Order in NetSuite", "Return to Workbench", "Logout", and "Change Password". The main content area displays a "Consolidated Purchase Order (Preview)" with the following details:

Date: 12/16/2009  
Purchase Order Type: Consolidated  
Location: Chicago 47th - NS  
Vendor: 5251 - CAPACITY OF TEXAS, INC  
Ship From: 401 CAPACITY DR.  
LONGVIEW, TX 75804

Ship To:

| Item Description          | Qty | Unit Cost | Requisition Date | Due Date   | Ext. Cost |
|---------------------------|-----|-----------|------------------|------------|-----------|
| 000-0037 VALVE, CHECK     | 5   | 5.0000    | 12/14/2009       | 12/16/2009 | 25        |
| 000-0195R CYLINDER, CLAMP | 1   | 0.0000    | 12/14/2009       | 12/16/2009 | 0         |

Copyright 2009 ITS Technologies & Logistics, LLC. All rights reserved.  
Site developed by Explore Consulting.

**Figure 4: Previewing a Consolidated Purchase Order**

Once the order is created in NetSuite, the purchase order is sent to the vendor automatically through an auto fax third party arrangement.

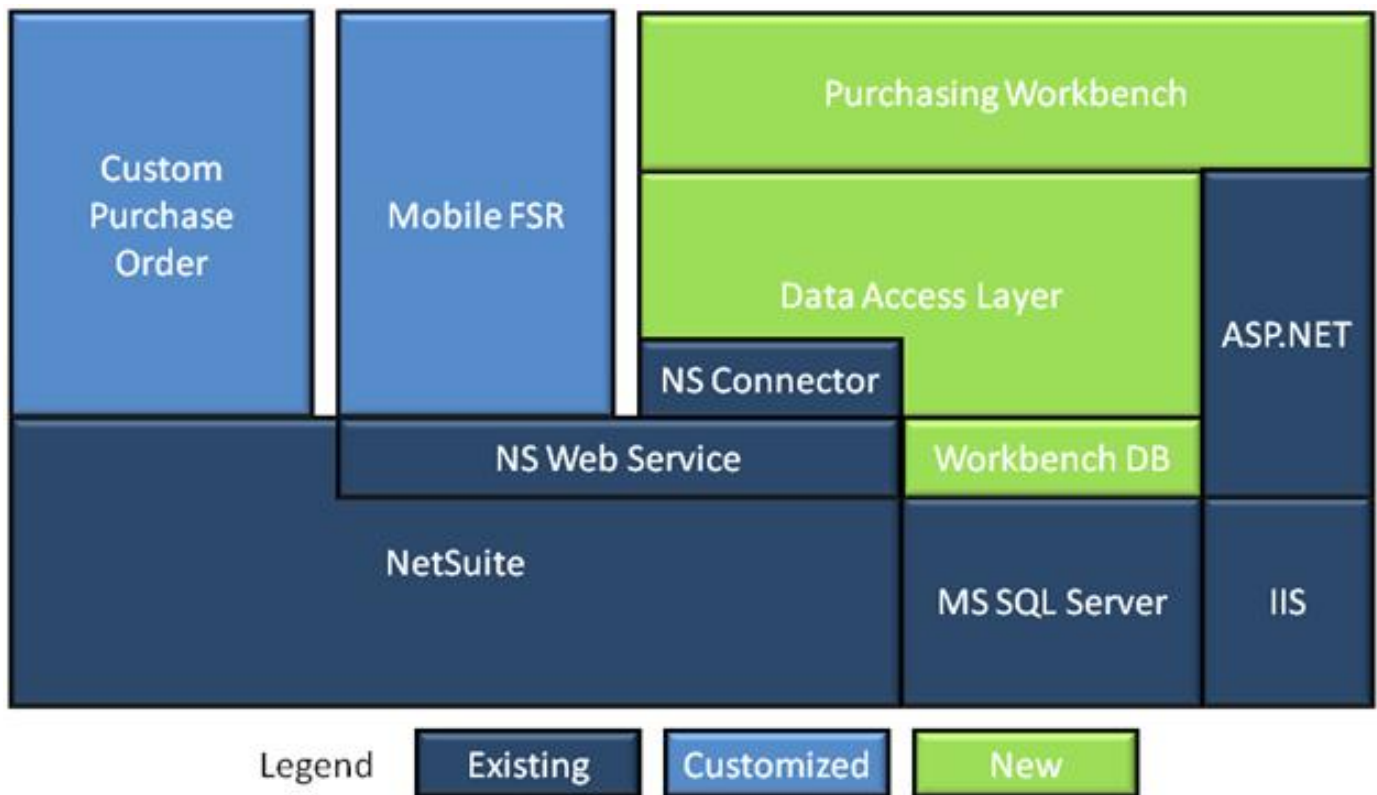
**Technical Solution**

Explore Consulting developed the solution using a variety of tools and techniques including:

- Customizations to the purchase order functionality in NetSuite
- Custom web-based Purchasing Workbench application built using Microsoft ASP.NET and SQL Server

- [NS Connector](#) to integrate the purchasing workbench with NetSuite
- [Explore Mobile FSR](#) to enable supervisors to review and approve purchase requests from their mobile devices

The dependencies between these components are presented in Figure 5, below. Blocks higher on the stack depend on one or more blocks below them.



**Figure 5: Technology Dependency Stack**

**Custom Purchase Request Form**

As discussed previously, the purchase request functionality built in NetSuite was not enough to meet ITS’ requirements. A custom purchase order form was created in NetSuite with many of the standard fields removed. The result is a minimalist form that requires an employee to specify the type of order and the items desired.

Behind the scenes multiple NetSuite scripts run to populate various fields on the underlying request, including setting the buyer for the entire order to the Requisition Department and locking the field down so the employee cannot circumvent the normal purchasing process. Another script is invoked when the request is saved, and it invokes a custom web service that selects the best vendor and price for each item on the request. Both scripts are written in JavaScript using NetSuite’s SuiteScript platform.

### **Vendor Selection Web Service**

The vendor selection web service was written in ASP.NET and C#. At the heart of the service lie three algorithms: one to select the best address for a vendor, another to calculate the distance between two zip code centroids and another to compare the distances to all vendors. By calculating the distance between the ship-to location and each vendor, the closest vendor can be automatically selected and populated on each line of the purchase request.

The distance calculation is performed using the Haversine formula, which compares the distance between two coordinates, given their longitude and latitude. The longitude and latitude are obtained using zip code centroids. A centroid is the approximate geographical center of a bounded area identified by a zip code.

When this service is invoked, the service uses NS Connector to load the purchase request from NetSuite. Once the vendors have been selected, a buyer is assigned, the request is marked as closed and finally submitted back to NetSuite via NS Connector. The result is an order that will never be sent to a vendor that can be downloaded into the Purchasing Workbench.

### **Purchasing Workbench Web Application**

The Purchasing Workbench web application was developed using Microsoft ASP.NET, JavaScript and Asynchronous JavaScript and XML (AJAX). The database consists of several tables and stored procedures hosted in Microsoft SQL Server 2005. The workbench uses NS Connector to communicate with NetSuite.

To improve the user experience in the workbench, employee, item and vendor information is synchronized from NetSuite during a nightly process. This allows tasks such as item and vendor lookups to be performed much faster, since the database is on the same network as the web server, whereas NetSuite is hosted on another segment of the internet. Since the data is stored locally, latency is reduced significantly and the web page is much snappier. Furthermore, the application is less susceptible to network faults.

When a user logs into the Workbench, a NetSuite search for all approved purchase requests is sent to NetSuite. When the result set is returned, select header and line detail is combined into a purchase request line object, which is then persisted in the local SQL database. Once all purchase request lines are persisted, the requests lines are displayed in the Workbench. The buyer also has the ability to force a refresh of the data in the event that new requests are submitted or existing requests are changed in NetSuite. The fact that purchase request lines are stored locally makes it easy for them to be displayed in the workbench as individual requests as well as on a preview purchase order.

When the buyer clicks the “Create Purchase Order in NetSuite” button, a new purchase order is created and populated with the information from the purchase request lines. The purchase request lines are then removed from the database and the purchase order is created in NetSuite. Furthermore, the corresponding line item of each request is updated with a reference to the consolidated purchase order and an email is sent to the requester for each item. As a result, each requester knows when his or her parts were ordered. It is also possible for buyers to navigate between requests and orders since each maintains a reference to the other.

### **Explore Mobile Field Sales Rep (FSR)**

To make it easier for supervisors to view and approve requests submitted by their employees, ITS purchased a license for [Explore Mobile FSR](#) (Figure 6), which is a mobile solution provided developed and hosted by Explore Consulting.

[Explore Mobile FSR](#) allows supervisors to conveniently access NetSuite data from their mobile device. Using FSR, supervisors have quick access to requests that need approval. Furthermore, they can search other purchase orders based on their status such as “Pending Receipt” or “Closed”. They can approve urgent purchase requests while on-the-go. In addition, FSR gives them access to the ten most recent records as well as the ability to search and view customer and contact data.



**FIGURE 6: MOBILE FSR**

By customizing existing NetSuite functionality and developing new custom applications, Explore Consulting was able to meet the business objectives of ITS.

### **About Explore Consulting**

Based in Bellevue, Washington, Explore Consulting was founded in 2001 and is a professional services company dedicated to providing innovative and cost-effective solutions for their customers' database and IT systems needs. Having specialized in SaaS solutions for more than 8 years, Explore Consulting is the largest and most experienced NetSuite reseller and solution provider in the Northwestern United States. Not only is Explore a licensed reseller of the NetSuite product suite, but an experienced NetSuite implementation and integration partner. Whether you

are looking for assistance with your NetSuite purchase and implementation or needing to integrate your NetSuite account to any external data source with our industry-leading CloudConnect™ service, we are your one stop NetSuite service provider. Explore Consulting is well-known as a leader in NetSuite customization, integration and extensibility. While NetSuite can run most businesses using out-of-the-box functionality, we're experts on adapting the product to meet your specific business requirements. Explore Consulting was recently included on the Inc. 5000 list of fastest growing privately owned companies in the U.S. for the third year in a row as well as the Puget Sound Business Journal's 100 Fastest Growing Private Companies. Explore has also been a 5-time NetSuite Star Performer and is well recognized as a leader in integration and mobile solutions for NetSuite. For more information, visit [www.exploreconsulting.com](http://www.exploreconsulting.com).