

**Application for
The Northwest Academic Computing Consortium
Joanne R. Hugj Excellence Award**

Paperless Procurement

Pacific Northwest National Laboratory
IT Services Division

Abstract:

The Department of Energy's (DOE) Pacific Northwest National Laboratory (PNNL) has implemented a fully paperless process for the procurement of high volume, low dollar items such as office, laboratory and industrial supplies, as well as computer hardware and software. The Business-to-Business (B2B) procurement system reduces administrative costs and procurement cycle-time, provides leveraged buying power for greater discounts, and enforces institutional procurement policy. It was built on the PeopleSoft eProcurement module (which is part of Oracle's [PeopleSoft Enterprise Supplier Relationship Management](#) (SRM) family of applications) and is the electronic exchange of data with suppliers in ordering, receiving, invoicing, and payment. PNNL is the first PeopleSoft customer to go paperless: "from Requisition to Payment."

Description of the Practice:

PNNL acquires more than \$250 million in goods and services each year. Approximately 80% of the procurement actions are for purchases under \$2,500, although these transactions account for less than 20% of the total dollars spent.

Traditional procurement processes are overly burdensome to these low value, low risk transactions. In 1994, PNNL estimated the administrative cost of traditional purchase-order procurement processes at \$229 per order. This meant that the administrative cost of 80% of PNNL's procurement actions was 10% at the low end. Furthermore, the cycle-time for purchase-order procurements was averaging 17 days from request to receipt.

In 1995, PNNL implemented a Purchase Card-based (P-Card) low-dollar procurement system, supported by a semi-automated cost reconciliation tool, to improve the efficiency of low-value procurement transactions. The P-Card process and PCardPro information system was very successful and is still in use today.

PNNL implemented a fully paperless, Business-to-Business (B2B) procurement process to decrease procurement administrative costs even further, gain greater volume discounts, increase standardization of certain products (e.g., office computers), and further reduce risk of fraud or purchase of certain classes of goods (e.g., laboratory chemicals) outside of other control processes. This new process, introduced in 2004, is used for acquisition of low-cost, low risk items such as office and laboratory supplies, and computer hardware and software, and provides a secure, electronic exchange of information and data between two businesses. The process begins with the selection of products from a vendor-maintained – but PNNL-controlled – catalog; moves to the creation of an electronic requisition with necessary management approvals; then to the dispatching of an electronic purchase order; and ends with electronic invoicing and payment (see Figure).

PNNL uses PeopleSoft modules to manage the procure-to-pay process. PNNL is the first PeopleSoft customer to implement a fully paperless procurement process.

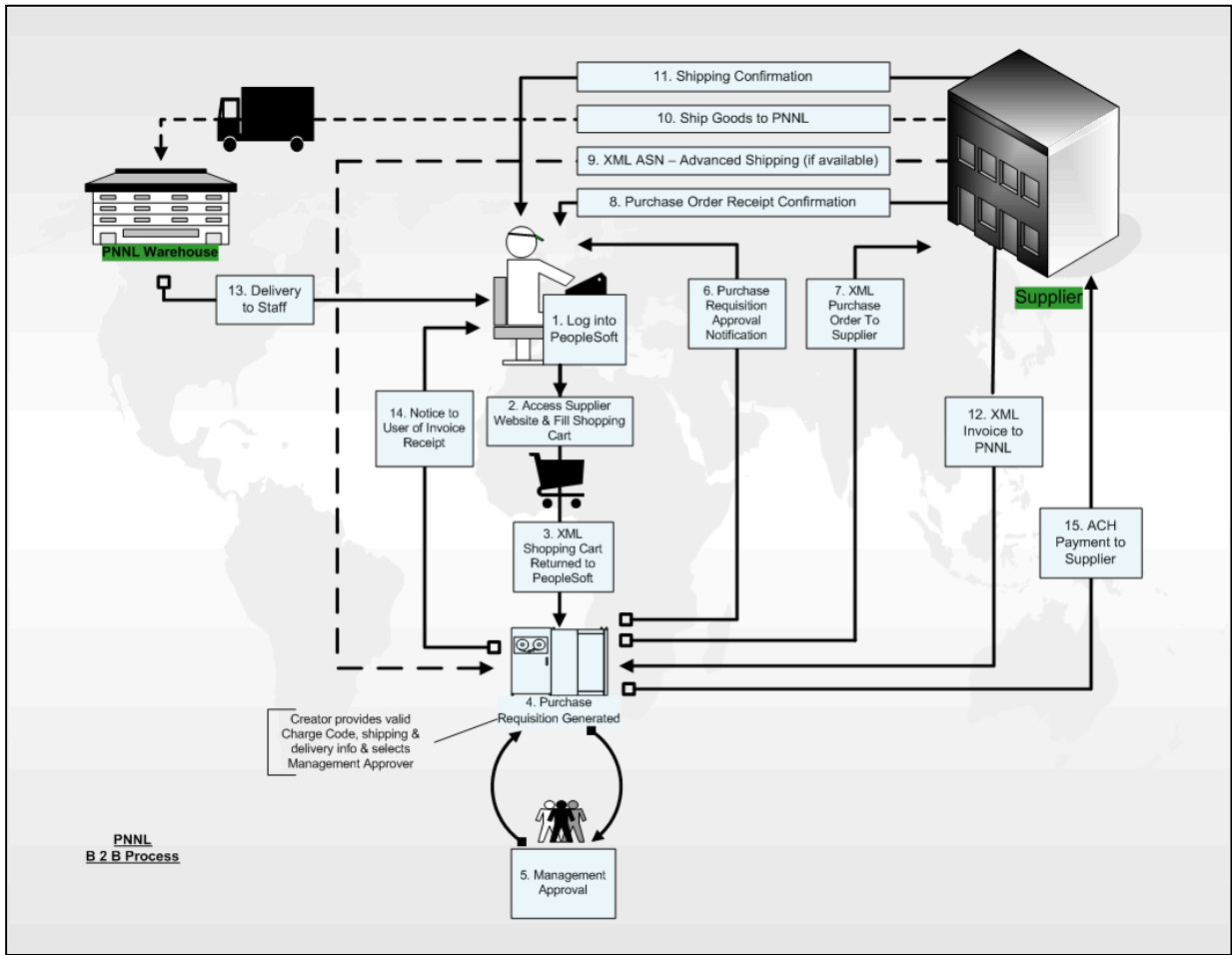


Figure . PNNL Business-to-Business Paperless Procurement Process

Responses to Evaluation Criteria:

Innovation

PNNL's B2B procurement process features the following innovations: Using Ariba's Commercial Extensible Markup Language (cXML) to automate the process, leveraging existing PeopleSoft technology, customizing delivered functionality, and developing standards to determine a supplier's B2B readiness.

PNNL leveraged PeopleSoft's Direct Connect functionality to implement "punchouts" (connections) directly to supplier web catalogs using cXML. PeopleSoft also provided a means to automatically generate Purchase Orders, and then dispatch them directly to the supplier via cXML.

PNNL also took advantage of PeopleSoft's Integration Broker technology to automatically load cXML invoice files sent by the supplier. Vouchers are built from the cXML invoices, which then generate an Automatic Clearinghouse (ACH) payment to the supplier.

The Integration Broker technology is also used to process cXML Advanced Shipping Notices (ASN) sent by suppliers at the time of invoicing. The ASN contains information PNNL uses in order to track property

based on DOE guidelines; once the ASN files are processed, the information is electronically transferred into PNNL's electronic property tracking system.

As a PeopleSoft customer, PNNL is able to customize the delivered functionality to meet PNNL standards. For example, the cXML Purchase Order contains custom extrinsic tags that the supplier places in an email sent to the order creator. Also, PeopleSoft provided various Automated Clearing House (ACH) payment formats, but not the format required by PNNL. In order to resolve this, PNNL purchased a third-party tool to generate the payment in the required format.

In addition to customizing the technology, PNNL generated a standard set of questions used to determine a supplier's technological readiness. The Direct Connect Questionnaire contains questions such as:

- "Does SUPPLIER currently host punchouts utilizing cXML?"
- "Will SUPPLIER use digital certificates?"
- "Does SUPPLIER presently allow duplicate Purchase Order Numbers to pass through their cXML interface and enter their order management system?"
- "How often does SUPPLIER update their catalogs and prices?"
- "How will SUPPLIER ensure package labeling accuracy by Third Parties?"

Based on a supplier's responses to the Direct Connect Questionnaire, PNNL develops timelines for establishing the supplier in PNNL's B2B system.

In addition, PNNL works with the suppliers to establish online "browse catalogs" that can be used by any staff member at PNNL, even if they are not trained in the B2B purchasing process. Browse catalogs are a mirror of the PNNL B2B purchasing catalog—without the ordering capability. Staff can, however, look for items available on B2B, and then send a list of those item numbers to their B2B-trained order creator.

Benefits

Use of B2B at PNNL has resulted in both cost and time savings for staff, while increasing the Lab's compliance with DOE purchasing guidelines. Specific benefits include:

Time Savings

- Cycle-time reduced by 67%, from 3 days to 1 day
- At least 5 minutes per transaction for staff members (no P-Card reconciliation required)
- At least 5 minutes per transaction for PNNL Warehouse staff members (suppliers keep package detail and supply it to PNNL when necessary)
- Reduced time spent determining sales tax to be paid since sales tax is applied based on shipping location (suppliers have tax certificates for tax-exempt states)

Purchasing Controls

B2B provides PNNL staff the assurance that purchases are secure and meet institutional and DOE purchasing guidelines.

- Users must be authorized to order via B2B
 - Authorization is only issued after the user attends training
 - Access can be revoked based on order history and management discretion
 - Access can be limited to individual suppliers versus allowing users blanket access to all B2B suppliers
- 100% of orders automatically routed for pre-approval

- Additional approvals automatically inserted into the approval workflow based on items being purchased (e.g., “non-standard” computer hardware items, laboratory supplies requiring Subject Matter Expert approval)
- System matching of purchase order and invoice (can’t pay for what wasn’t ordered)
- PNNL-based contract terms and conditions versus supplier terms and conditions
- PNNL-based catalog control
 - Catalogs limited to PNNL-approved items
 - Items deemed “prohibited” blocked from purchase
 - Items selected for catalogs meet Environmentally Preferred Purchasing guidelines

Cost Savings

- Shipping and handling not applied to B2B orders
- Products cost an average of 2% less than if ordered via P-Card
- Higher supplier rebates

Other benefits

- Majority of B2B suppliers are small or disadvantaged businesses (meets DOE requirements)
- Suppliers save on processing costs (no credit card transaction fees)
- Enhanced reporting abilities help enforce purchasing controls
- Reduced user training because PeopleSoft is used for other business applications at PNNL
- Increased user acceptance since users are familiar with the technology
- Browse catalogs allow staff to get exact item numbers to be ordered and reduce order errors

Since implementation of the B2B program, we have received positive feedback from numerous users. The below responses are from a customer satisfaction survey administered last year.

“I have to tell you - this B2B is awesome!!! I have been getting some strange orders from staff as they work on their projects, and rather than immediately going to the websites they give me in their request, I have been forwarding them on to our appropriate B2B vendor contacts. The latest one is a KUDOS for managed software (SHI). They were able to pull in a special request for an OSX Server that listed at \$999 - our B2B price dropped down to \$825. ... So THANKS for a system that is really working.”

“It is wonderful! I love the ease of not having to input everything into the p-card system. The response time is quick. I don’t have to wonder whether or not I should have gotten pre-approval, since I’m already getting approval. Best of all – no reconciling! I think it is great. There is a great assortment of vendors also.”

“B2B is great! The amount of time I save is amazing and I’m impressed at the cost savings when I compare catalog prices with those I receive when I order B2B.”

Replicability

Since PNNL uses PeopleSoft for its procurement process, the B2B Program is highly replicable. Any PeopleSoft customer with PeopleTools 8.45 or higher, can take advantage of the Integration Broker and Direct Connect functionalities. Other DOE National Laboratories that own PeopleSoft have already contacted PNNL for assistance in the technical setup of their own “B2B” purchasing processes.

The use of Ariba's cXML standards makes the technical aspect of punchouts, dispatches, invoicing, and ASNs easily leveraged by other organizations. PNNL has also shared the "Direct Connect Questionnaire" with organizations interested in establishing standard setup processes.

In addition, PNNL's B2B business model is structured so that organizations can still establish a B2B purchasing process, regardless of technology used. Lawrence Livermore National Laboratory, Lawrence Berkeley National Laboratory, and Brookhaven National Laboratory are examples of DOE facilities whose B2B programs are based on the PNNL program. Battelle, which operates PNNL for DOE, also is working on a B2B process based on the PNNL structure.

Costs

The costs of developing the B2B program were kept low by: customizing existing technological architecture rather than creating a purchasing system from scratch; using existing information technology staff familiar with working within the architecture used for the B2B program; and using a small team consisting of four full-time staff members to manage the program. This has resulted in a consistent annual cost savings over previous purchasing programs used at PNNL.

Links:

Because the B2B process is housed within a PNNL internal application, we must provide screen shots of the process, rather than actual links.

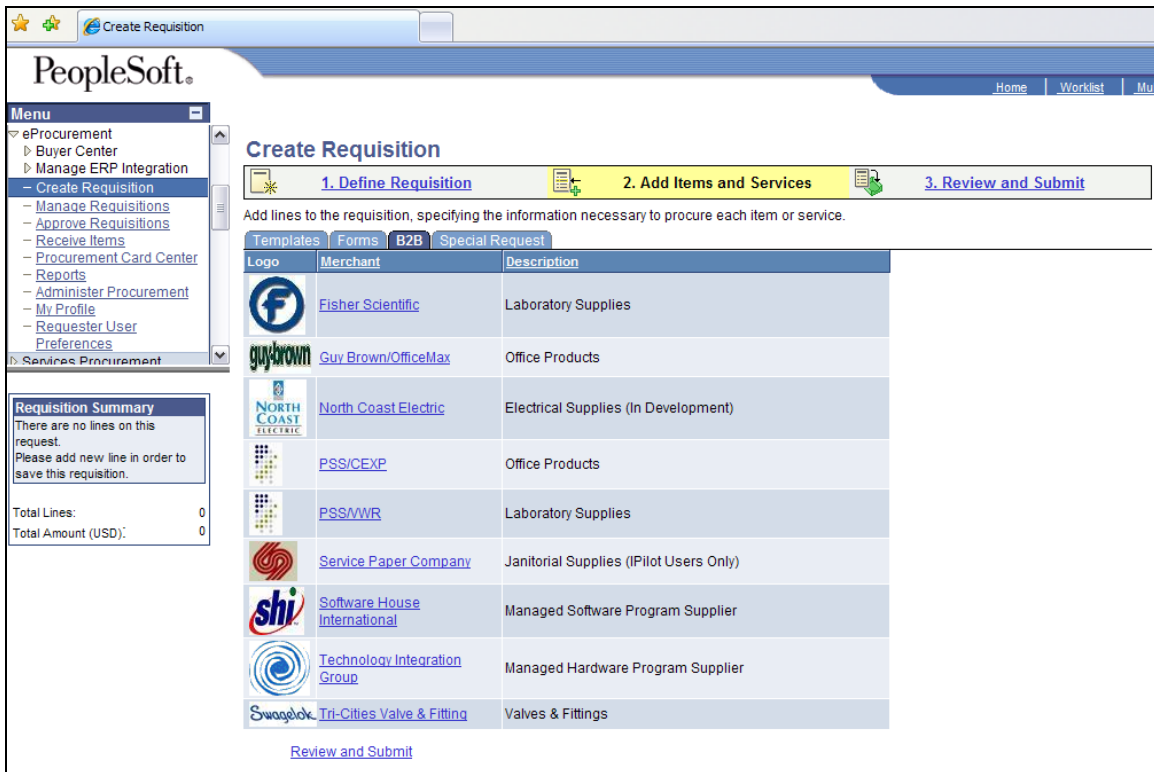


Figure . Procurement begins by creating an electronic requisition by selecting products from a number of available catalogs.

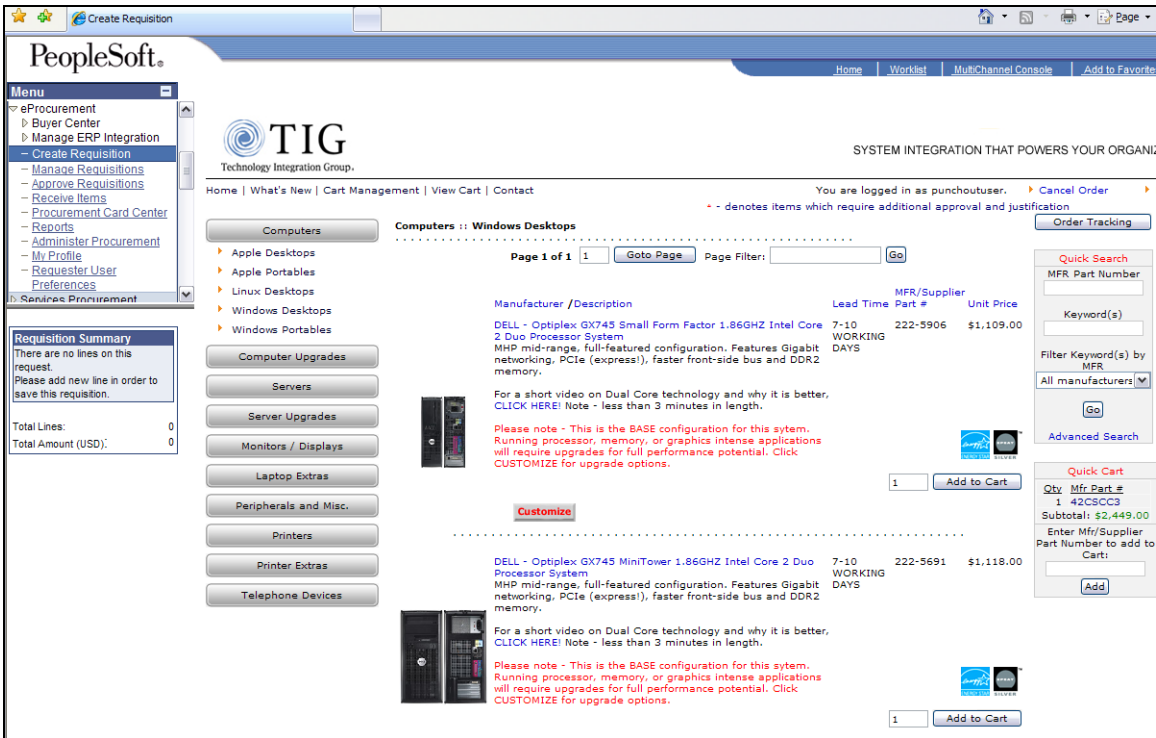


Figure . B2B users “punch out” directly to the vendor’s web site, which contains the PNNL-controlled catalog.

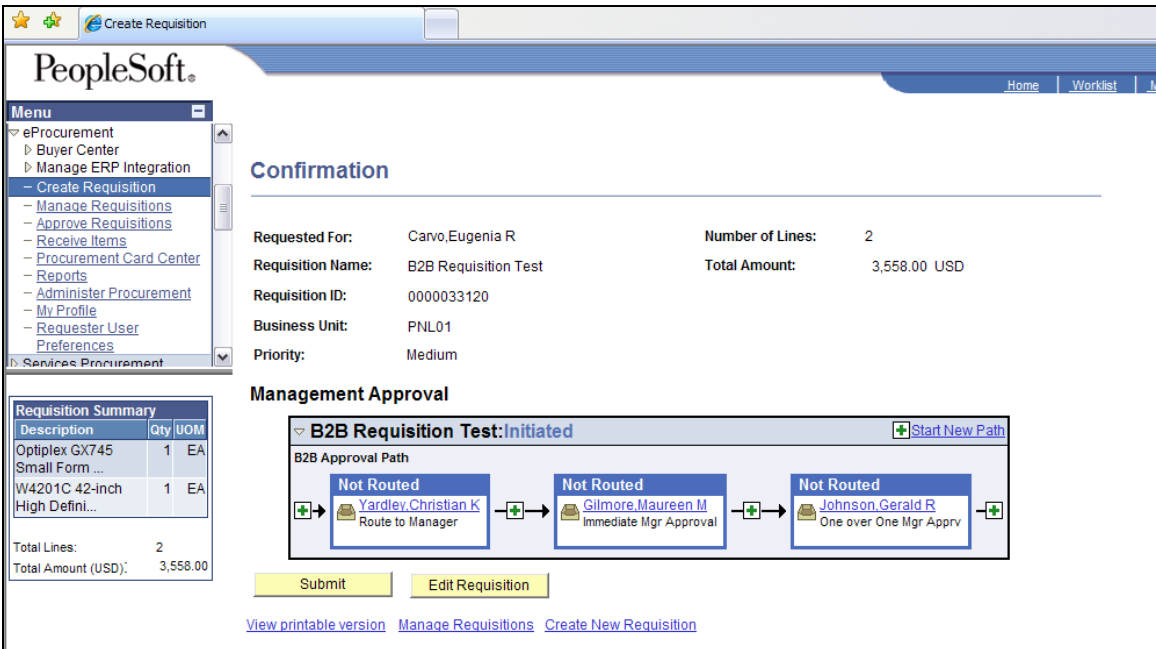


Figure . Purchases are automatically routed through appropriate approvals, depending on the type and value of products being acquired.

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