The Electronic Catalog:
The Achilles Heel of Corporate Purchasing Systems

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Developing a purchasing system isn't terribly difficult. Implementing one - and actually getting its promised benefits - is.

Writing the code for a purchasing system isn't a monumental effort. Nor is designing the data structure that supports it. In fact, we believe systems designers and developers can attest to the fact that setting the boundaries (i.e., the scope) of an intended purchasing system is the hardest part of the development task. Should the system provide workflow management for requisition approval? How should delayed approvals be escalated? Should the system handle invoices? Receiving? Two- and three-way matching? How much personnel information does the system need to hold (almost certainly duplicating data stored in the customer's HR system)? How much asset information does it need (almost certainly duplicating data stored in the customer's accounting system)? All non-trivial issues, certainly, but once the decisions have been made – after due consideration of their impacts on the functionality and marketability of the system – coding and testing are pretty straightforward.

For their customers, implementing a purchasing system is a completely different can of worms, even if the customer's policies and processes support the use of the system and its telecom and IT environment are adequate for the task. Without question, the single most difficult challenge in implementing and operating a corporate purchasing system is the nagging issue of what the electronic catalog will contain and how best to populate it.

Thetis, mother of the Greek hero Achilles, bestowed near-total invulnerability on her infant son by dipping him into the river Styx, neglecting only the heel by which she held him; an otherwise flawless purchasing system implementation can fail utterly if the electronic catalog doesn't contain the products and services a company's employees require to accomplish their own job responsibilities.

Nothing is Easy

One of the many aspects of the catalog problem, and the first we'll explore, is that suppliers are frequently forced to create not one, but many catalogs - potentially one for each of their customers. Each new customer provides yet another opportunity to sell a subset of the supplier's goods to that customer - with prices, discounts, terms and conditions that will almost certainly be different from any other customer's. There just isn't a standard approach for a supplier to provide and maintain one catalog that would be acceptable to all its customers, if for no other reason that its products may be sold at different prices to its various customers.

The supplier's only real alternative to creating multiple catalogs is to provide their products through a "portal", a service that connects a smallish network of customers to a relatively smallish network of suppliers. Introducing this middle layer into the

mix has predictable consequences: the customer pays more, the supplier earns less and the customer may not get just the selection of products it might prefer.

The customer has a problem similar to the supplier's; it must deal with each supplier on a one-by-one basis, extracting that part of the supplier's catalog that may apply to the customer's business. Each of the customers in Figure 1 may have a separate and unique catalog-building project going on with each of its suppliers. The effort is unproductive, time-consuming and costly, remaining stubbornly resistant to economies of scale and repeatable processes. Even after acquiring the data in some consistent structure, the customer then has to stitch this crazy-quilt of catalog bits into one that its employees find usable, non-redundant and complete.
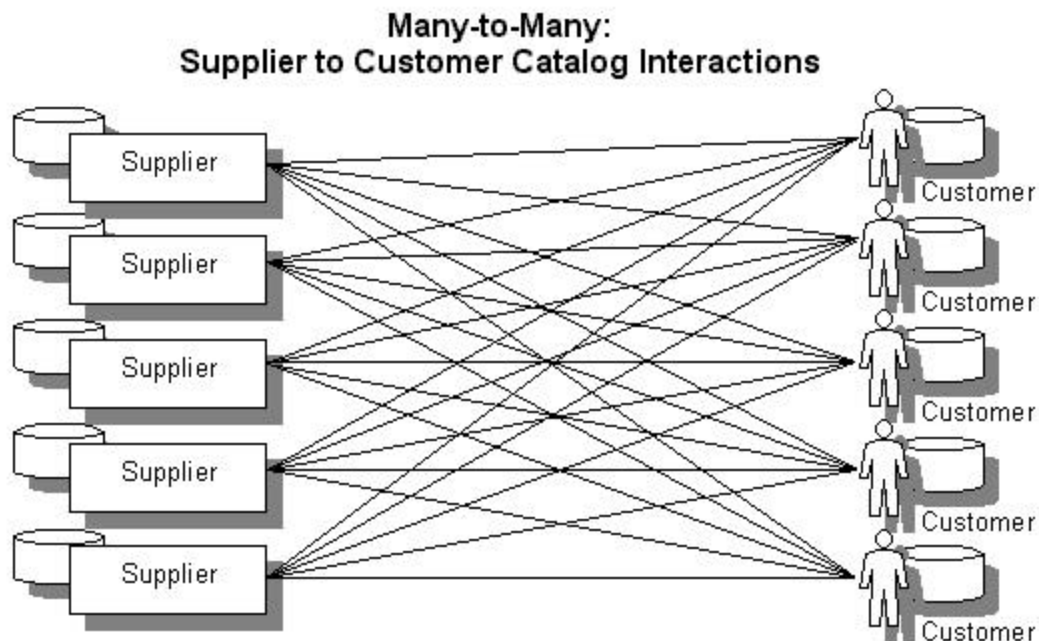

Figure 1

There isn't even a standard language for describing a supplier's items, although Ariba's Catalog Information Format (CIF) and various versions of XML are being pushed for wider acceptance. As with many technological innovations before (e.g., Beta vs. VHS videotape formats, CDMA vs. GSM cellular technologies), varying approaches may compete for a long time or a clear winner may emerge in the next few years. In the meantime, business continues to struggle with a mixed bag of proprietary and custom-crafted solutions that impede more effective use of corporate purchasing systems.

Whose Responsibility is it?

Even if there were an industry-standard approach for populating catalogs - and a language to use for the catalog - the problem of actually entering the information remains. After all, wouldn't you want your employees to find just the right widget in your online catalog that they are convinced is crucial to their achieving their quarterly results? Thereby taking advantage of your Procurement organization's excellent work negotiating the contract? Then the product data has to be physically entered into your online catalog. The issue is, who puts it there and how is that done? Consider the following common situation:

- One of your Contract Managers executes a contract with a supplier
- The contract covers only selected items the supplier could provide
- The contract specifies prices and discounts for those items that your company wants to buy

Here's the problem. Your Contract Manager is the most knowledgeable person in your company regarding what items the contract covers. But … you don't pay Contract Managers to do clerical, or data entry, work. You measure and reward them for negotiating substantial monetary savings based on the contracts they negotiate. Frequently, as a consequence, a local administrative person or someone from a central administrative staff enters the catalog updates for them. However, even if the actual data entry is done by another person or through a data transfer from a supplier, *someone knowledgeable about the contract has to ensure the catalog reflects what the contract called for.* Whether the Contract Manager enters the items into your catalog directly, provides notes to someone else or authorizes upload of a spreadsheet or data file, he or she is a critical link in the supply chain. Your organizational processes must address specifically how it will be done and your Contract Managers have to understand the role they *must* play.

Let's now move to the next problem. *How* you enter items into the catalog depends on *how many* items there are to enter.

A Fistful of Products

Let's assume for the moment that your company has just executed a contract to buy a short list of products - at discounted prices - from a supplier. Let's further assume that you want your employees to be able to buy these products using your internal purchasing system. The challenge facing you and your supplier is to properly populate your electronic catalog with those products *and* the pricing that is unique to your company. Obviously, you need to generate Purchase Orders for the items covered under the contract at the prices the supplier has agreed to. As long as the list is reasonably short (in human, ergonomic terms), the list of contracted items can simply be keyed into the online catalog directly. Keying inaccuracy issues can be managed and the total cost of the labor is relatively low so it probably wouldn't be

worth designing a system-based data entry process for the task. Whoever actually does the data entry, the simplest way is just to use the data-entry utility function that (hopefully) comes with your online catalog. This approach is simple but highly labor intensive, relative to the number of items involved.

For A Few Products More

Let's now assume you negotiate a contract for several hundred products. At this quantity, the most likely source of the catalog information is the supplier, extracting the product information from their existing overall catalog in electronic form. Your Contract Manager, however is the "trusted" source for some of the important data, including discounts, negotiated prices, tiered pricing quantities, etc. In most cases, this data transport exercise is best done with a spreadsheet. Everyone understands them, nearly everyone has the requisite desktop software, and it's highly likely your online electronic catalog can import the data from the file with relatively little manipulation. Your IT support may need to be involved to properly format the file and import the data. For all concerned, this should be a manageable and not unduly taxing process. The downside of this approach? It's not too bad if done with a small number of suppliers, but it sure doesn't scale up well. The more each Contract Manager has, the more of their time will be whittled away making sure each data transfer is accomplished and verified as accurate. Further, verification of the accuracy of a spreadsheet full of item entries is likely to be a challenge for your Contract Managers.

The Good, The Bad, and the Many

If your contract is with a supplier who offers thousands - or tens of thousands - of products, effective population of your catalog can be a true nightmare. Suppliers (and distributors) of office products, chemicals, telecommunications equipment and more have thousands of products available, but if you only want to make some *identifiable* subset of those products available to your employees for internal use, you have a significant filtering problem to solve.

Almost certainly, you will need to use a file provided by the supplier as a baseline. The concept of extracting data of your choosing from their file may be straightforward, but the devil is in the details: how do you properly populate your catalog in as efficient (i.e., automated) a manner as possible? *The key is the original set of requirements for the contract.* How was the original set of products you want to buy identified? Was it by type of product: staplers, but not televisions? Was it even more specific: one-hole punches but not three-hole punches? Or did it employ a standard classification methodology, like the UNSPSC[1]? If the Contract Manager, on

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[1] United Nations Standard Product and Services Code. In this case the contract might have included language similar to the following: " Products covered under this contract include Coaxial Cable products properly classified under UNSPSC category 26121606." Those few words of specificity will make your task of selecting products from

the other hand, has simply specified "cable products" as the scope of the contract, the extraction process could be an exhausting and error-prone task for eyeballs. Although the supplier may offer thousands of products, if the desired set of products is small enough, you may find yourself reverting to the techniques in the preceding sections by keying it in manually or by using a spreadsheet.

Commercially Provided Catalogs

But what if you don't want to create your own catalog at all? Then you have several choices. One option is to "buy" a catalog, a particularly attractive way to go if your business depends on a few narrowly focused categories of raw materials. Chemicals, pharmaceuticals, furniture and more have been collected into catalogs that you can subscribe to and import into your online catalog. The benefit? You don't have to do all the work to contact the suppliers, work through incompatible data formats, download data, populate the catalog and then establish an update/maintenance program. The downside? You may have established corporate standards for the items and only want to make a small subset of the products available to your employees. Or, you may have already negotiated a contract with one or more of the suppliers represented in the catalog and the pre-established catalog doesn't reflect your contracted prices. A one-size-fits-all catalog just may not meet your needs. Everything is a compromise…
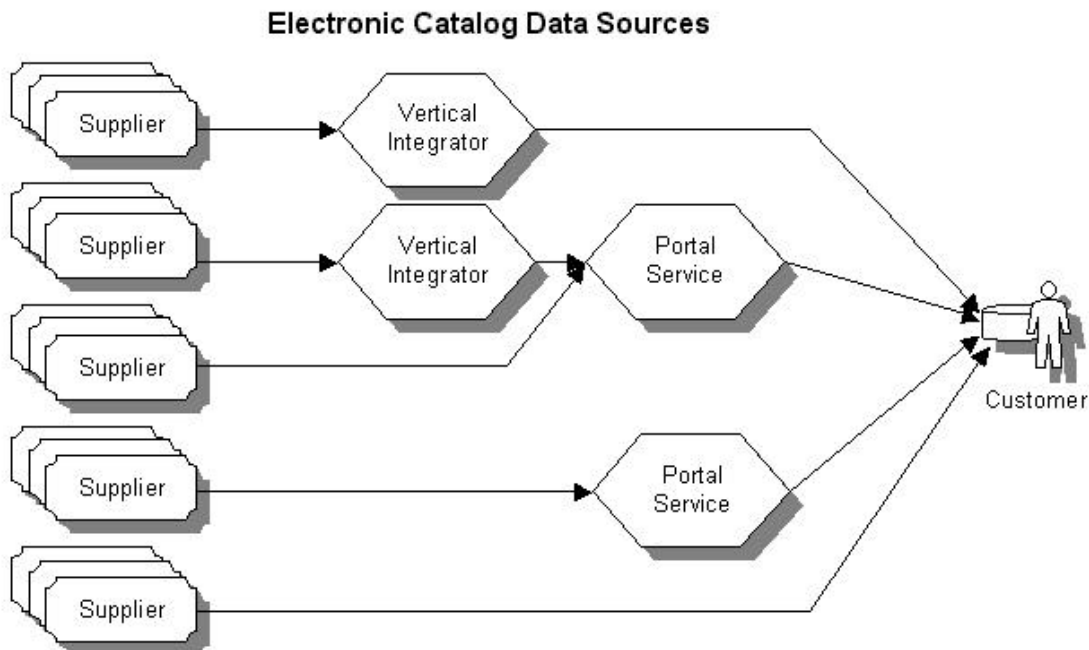

Figure 2

your supplier's product list much, much simpler. It should **not** be too much to ask the supplier to ensure the products are each properly UNSPSC classified in the file provided to you.

As Figure 2 shows, you may end up with catalogs (or, more properly, catalog entries) from a variety of sources, depending on your needs and the economics of maintaining the item information in your catalog. You may use a vertical catalog of office supplies, use a portal for your travel and lodging suppliers and enter your operational products in your catalog yourself based on your contracts. In our experience, the cost of creating and maintaining some of these catalogs, usually containing hundreds of thousands of items, is overwhelming for most businesses. The choice is usually to accept a commercial catalog – with pre-negotiated pricing - as it exists for some broad categories of items (with more entries than your business really needs) and look for focused contracting savings elsewhere.

The Portals

You may find that either you need large catalogs from multiple sources or no catalog exists for your industry - or both. Early in the history of true business-to-business electronic commerce, eCommerce vendors recognized that the lack of an online catalog was a limiting factor for their sales and turned to the concept of the portal to address the problem. Companies like Oracle and Ariba set up services that signed up suppliers, imported their catalog information and made the data available, under agreement, to their customers. Not incidentally, the portal service itself provides a revenue stream with pricing by subscription or by individual purchase transaction.

Fixed Prices, Discount Levels and Discount Percentages

Assuming you are able to create your online catalog and implement purchasing software to use it, connecting the catalog to the terms and conditions of your contracts may still be a challenge. Contract Managers are ingenious; we've managed them in the past and the things they can wrangle out of a supplier are astounding. But … being able to take advantage of those contract terms is itself trickier than you'd think. Depending on how you obtain your catalog content, you may or may not be able to integrate your pricing into your purchasing process. If your catalog provider has negotiated with the suppliers independently, then the prices your employees see may be the catalog provider's and not yours. Further, some sophisticated pricing negotiations provide for discounts if a certain number of items are purchased in one transaction. In other cases, the supplier will discount the price as your company reaches a certain aggregated purchase volume. In still other cases, additional products and services become available at reduced cost (or free) if those volume levels are reached. There's no short cut to this: work with your suppliers, catalog providers and especially your Contract Managers to ensure that what you contract for can be taken care of automatically by the purchasing software. The end user cannot be expected to know that the price he or she sees doesn't reflect a 15% discount or that if the purchase amount is an even dozen the cost is further reduced. Your Contract Managers need to know what the system can do and what the catalog

provider can do. There is little point in negotiating tough terms and conditions in your contracts that your purchasing system can't support.

Our Prediction: The Many-To-Many End State

We believe the issue of catalog population will continue to be crucial to successful implementation of eCommerce projects. We've been following the problems with electronic catalogs for years and have reached our own conclusions about how the processes will evolve for catalog creation and maintenance. Let's start with a few assumptions we believe to be true:

- Customers need to buy from multiple suppliers and suppliers need to sell to multiple customers

- Each customer's contracts will drive (some or all of) the content of their online purchasing catalog. *If* the company doesn't outsource *all* of its contracting, then it can't completely disassociate itself from building catalogs. Its catalog has to reflect whatever the contracts specify in terms of products, services, prices, terms and conditions or the contracting effort is pointless.

- The supplier has the most to gain from maintaining a current list (catalog) of its products and services, with descriptions of each. Those descriptions typically contain useful information including replacements or substitutions and any additional items the supplier recommends be ordered with the original item. Further, the supplier is best able to ensure the accuracy of the item information. If the catalog doesn't effectively describe a supplier's offerings, buyers won't know what they're buying and ultimately won't buy from the supplier.

- Each supplier would benefit most from having to provide only one catalog for all its customers. The assumption here is that each additional catalog created for a customer makes the overall process more costly.

Given this list of assumptions, we believe that the entire "system" of multiple customers buying from multiple suppliers using one-off catalogs can only collapse of its collective (and unproductive) weight. As Figure 1 shows, the number of interactions involved in sharing customized catalogs creates cost with every additional supplier/customer relationship.

We believe the situation will eventually devolve into a stable state in which each supplier creates only one catalog for all of its customers, with the information for each catalog entry identified by a commonly available item identifier. We're further convinced that identifier is the U.P.C. (Universal Product Code) as shown in Figure 3. Since we believe each customer must maintain crucial portions of its *own* catalog to reflect its contracts, we believe that the customer will create a list of products and services it wants its employees to be able to buy to sustain the business. And we

believe that the customer catalog will link to the supplier catalog - using the U.P.C. - for information about the item.

As we've discussed, customer catalog must contain information derived from the contract: item identification, contracted price and terms. The customer catalog only needs one further piece: a link to the supplier's web site using the U.P.C. as the common "key" for communication. When an employee needs the item description, clicking on the link would retrieve it over the Internet, bringing the description and image of the object into the purchasing application.

The U.P.C. – A Standard Item Identifier

Figure 3

As this approach gains momentum, we foresee a few other improvements, guidelines (and eventually standards) evolving. We think the item description will need to be free of advertising for the supplier's other products and services. The idea of this approach is to maximize productivity and one aspect of that is to keep the amount of unrelated "shopping" by employees to a minimum.

Like everything else in the real world, catalog creation won't be simple any time soon. We don't believe the methodology we described would ever be universal, replacing all other approaches. Vertical catalogs will still be needed and portal services will still be used. After all, someone, somewhere is still making buggy whips. But, we believe that the concept of enlightened self-interest will drive the majority of market interactions to the model we propose. Each business partner will provide that part of the puzzle that it is best positioned to provide and that it can provide at the lowest overall cost. The customer has to know what it wants to buy, and thus is already positioned to create a list, or catalog, for its own use. The supplier is best able to document the specifications of its own products and services. All that is needed to link the two pieces together is an identifier that every customer can use with every supplier (or distributor) - the U.P.C.

Why It Matters

In our experience, companies implementing purchasing systems have to make tough decisions about how to proceed with the implementation. First and foremost, they must be concerned with the impact on their own employees (their "customers" for the project.) When can they be trained? Do we convert one organization or territory at a time? But, the more difficult question is hard on its heels: Which commodities to make available for purchase first? Why does this even arise as something to be dealt with in the implementation? It matters because of the issues associated with getting those commodity items into the purchasing system's catalog.

Purchasing System users will use the system for buying goods and services if it helps them do their job. If it gets in the way of that single objective, the project is in serious jeopardy.

Companies have found that the cost of the eCommerce software can be relatively minor when compared to the cost of populating and maintaining the catalog. You need to weigh what items you want to buy and how you will get the information into the catalog before undertaking a major eCommerce project. Getting the right data into the catalog and maintaining it will make or break your project - and possibly your project's budget.

When system users can't find a needed item in a catalog, when they find errors in the pricing or when the purchasing process takes longer than they feel it should, they will find subtle – and not so subtle – ways to rebel against the system. If the user can justify, to some degree, choosing their own supplier or making a phone call to place an order, the return on the purchasing system begins that long slide downhill into oblivion.