Argus Center for Information Architecture

# INFORMATION ARCHITECTURE
# OF THE SHOPPING CART

## BEST PRACTICES FOR THE
## INFORMATION ARCHITECTURES
## OF E-COMMERCE ORDERING SYSTEMS

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# Contents

# I NTRODUCTION

Information architecture is the art and science of structuring and organizing information environments to help people achieve their goals. The information architecture of web sites depends upon clear organization, labeling, navigation, and searching systems.
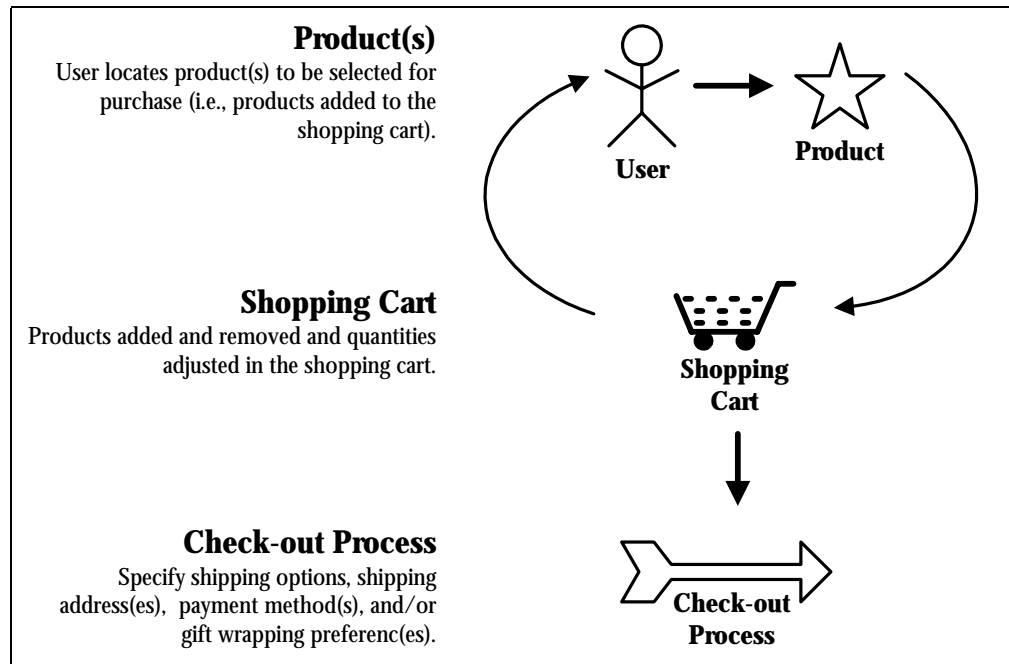
Information architects are often focused on connecting users with the content they need. However, the principles of information architecture can also be applied towards enabling users to perform tasks.

This white paper explores the principles of design for process-oriented information architectures by illustrating the best practices in the design of e-commerce ordering systems commonly referred to as "shopping carts."

The metaphor of the shopping cart and checkout process is employed by many e-commerce sites. Users first go to a web site and look for the products and services they need. They then click on or "tag" items of interest for later purchase. This process of collecting items is often referred to as "adding" items for purchase to a "shopping cart."

The metaphor of the shopping cart helps users understand the actions available to them: adding additional items to their purchase, deleting items they have selected, or adjusting the quantity of each item to purchase.

Similar metaphors include the shopping bag (http://drugstore.com/) and a wheelbarrow (http://garden.com/). These are all creative ways of giving users a mental model for shopping on-line. When the users finish shopping, they then proceed to the "checkout process" to provide their address and payment information. This may include specifying a shipping preference, shipping address, the method for payment, and any gift-wrapping preferences.

**Product(s)**
User locates product(s) to be selected for purchase (i.e., products added to the shopping cart).

**Shopping Cart**
Products added and removed and quantities adjusted in the shopping cart.

**Check-out Process**
Specify shipping options, shipping address(es),  payment method(s), and/or gift wrapping preferenc(es).

**The E-Commerce Shopping Cart**

In our research, we analyzed the shopping cart and checkout processes of four top performing e-commerce sites:
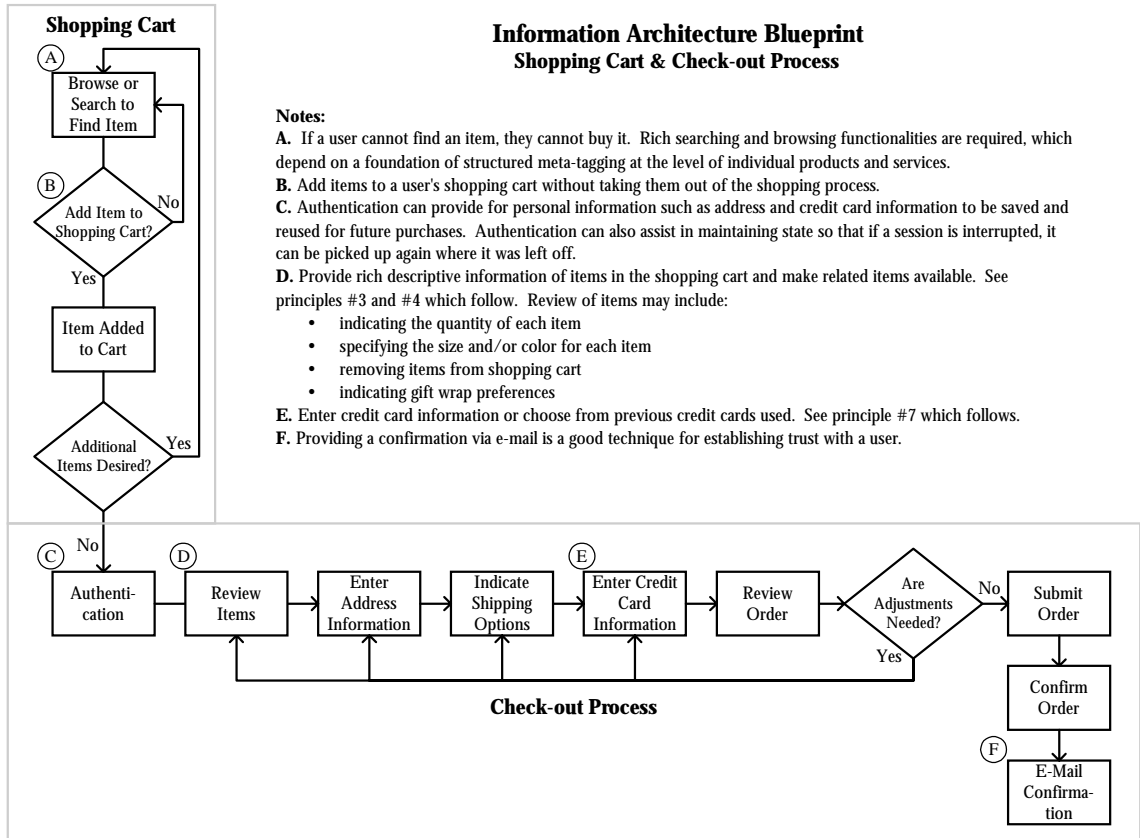
- Amazon.com
- CDNOW.com
- eToys.com
- LandsEnd.com.

These four sites provided excellent examples of how a planned information architecture provides a foundation for rich functionality.  Based on this research, we developed eight principles for designing the information architecture of the shopping cart and checkout process:

1. Make the shopping cart easy to find.
2. Provide clear ordering options.
3. Provide for rich functionality of the shopping cart.
4. Make related items available from the shopping cart.
5. Provide for items in shopping cart to be saved for future purchase.
6. Give advanced notice of what the checkout process involves.
7. Keep order forms simple.
8. Ensure secure transactions.

An information architecture blueprint for a simple shopping cart and check-out process follows.

# Figure 1: Information Architecture Blueprint of the Shopping Cart & Check-out Process

**Shopping Cart**

(A)

Browse or Search to Find Item

(B)

Add Item to Shopping Cart?  — No

Yes

Item Added to Cart

Additional Items Desired? — Yes

No

## Information Architecture Blueprint
### Shopping Cart & Check-out Process

**Notes:**

**A.** If a user cannot find an item, they cannot buy it. Rich searching and browsing functionalities are required, which depend on a foundation of structured meta-tagging at the level of individual products and services.

**B.** Add items to a user's shopping cart without taking them out of the shopping process.

**C.** Authentication can provide for personal information such as address and credit card information to be saved and reused for future purchases. Authentication can also assist in maintaining state so that if a session is interrupted, it can be picked up again where it was left off.

**D.** Provide rich descriptive information of items in the shopping cart and make related items available. See principles #3 and #4 which follow. Review of items may include:
- indicating the quantity of each item
- specifying the size and/or color for each item
- removing items from shopping cart
- indicating gift wrap preferences

**E.** Enter credit card information or choose from previous credit cards used. See principle #7 which follows.

**F.** Providing a confirmation via e-mail is a good technique for establishing trust with a user.

(C) Authenti-cation → (D) Review Items → Enter Address Information → Indicate Shipping Options → (E) Enter Credit Card Information → Review Order → Are Adjustments Needed? — No → Submit Order

Yes

**Check-out Process**

Confirm Order

(F) E-Mail Confirma-tion

# 1. SHOPPING CART: MAKE IT EASY TO FIND

Since the primary goal of an e-commerce site is to connect users and products, it is fundamentally important for users to be able to begin the ordering process once they have located the items they want.  There should also be multiple entry points into the shopping cart from the site so users can see what is in their cart and add additional items.  For each item within an e-commerce shopping cart, users should be able to see at a glance:

- A description of the item
- The option to remove or add item
- The option to add item to a wish list or shopping list for future purchase
- The item's current availability

For example, tell the user what colors and sizes are available.  Let users know if items are available in stock, or if they are not in stock, let users know when they will be available.  As part of the information architecture for the site, attributes about item availability can be collected along with the item descriptions and can be displayed to the user for each item before they even get to the shopping cart.

**Figure 2:  Initiating the Ordering Process (Amazon.com)**

# 2. SHOPPING CART: PROVIDE CLEAR ORDERING OPTIONS

If you choose to provide more than one ordering option for your users, the distinction between the options should be clear.  After a recent purchase at Amazon.com, a confirmation screen came up announcing that "1-click ordering" and "gift-click" had been turned on for me.  They provided a link to a lengthy explanation regarding these features, but many users will not take the time to read the explanation.  Although these new ordering options can help users process their orders quickly, a user may become confused or slowed down when they are presented with four different purchasing options for every item.   Amazon.com does a good job of labeling the various options, but to limit possible user confusion, they should consider simplifying the choice to the options or features that are used the most.

**Figure 3:  Multiple Ordering Options (Amazon.com)**

# 3. Shopping Cart:
## Provide Rich Functionality

There are a number of different capabilities of the shopping cart that are useful to provide.  These include options to add items, remove items and to find out more information.  A user should also be able to add items without leaving the shopping process, or to easily return to shopping in the site after adding an item to her shopping cart.  Navigation options for returning to shopping might be through the use of the global navigation bar, by using their browser's back button, and/or by clicking on a link to return to shopping.  The shopping cart should include the option to easily modify the quantity desired of each item and to remove items from the shopping cart.  Descriptive information should identify each item in the shopping cart and there should be a link from each item back to the detailed description for that item.

**Figure 4:  Functionality of the Shopping Cart (etoys.com)**

# 4. SHOPPING CART:
# MAKE RELATED ITEMS AVAILABLE

There are several methods that e-commerce sites can use to provide their users with suggestions for related items. First, an e-commerce site can gather information about their users' past purchases to identify purchasing trends. These trends can then be leveraged to suggest related items. For example, Amazon.com uses this type of information to provide a list of other titles that were purchased by users who had purchased the current title shown. This information can also be used in the shopping cart to show users other items similar to those they have already added to their cart or from past purchases.

Items can also be associated with related items. For example, if a user adds a portable CD player to their shopping cart, related items such as batteries, headphones, and a carrying case are displayed as associated accessories to the user. Related items can also be linked together using a thesaurus behind the scenes. A thesaurus maps similar descriptive terms into one acceptable term per concept to help users find all relevant items. Different users define the same concept using different terms, as do the indexers or people creating the content. For example a portable CD player might be described as a compact disk player, portable compact disk player, or mini disk player. A thesaurus links all of these descriptive terms together so that a user can look for any of the terms and find all of the relevant items.

There are privacy concerns that surround some of these applications, but if used appropriately, this type of information can help the user find additional products they may be interested in and can help the e-commerce site to increase its sales.

# 5. SHOPPING CART:
## SAVE ITEMS FOR FUTURE PURCHASE

Only one of the four sites I compared provided the option to save the items in a shopping cart for a future date, although this is a particularly useful feature when shopping on the Web.

For example, I buy several books every month or so from Amazon.com. As I hear about books that sound interesting throughout the month, I can add them to my shopping cart. When I have a few books in my cart and am ready to splurge, I can go through the checkout process to purchase the items I want. Amazon.com lets users specify items in their shopping cart that they would like to save for up to 90 days. Amazon.com also temporarily saves items in a user's shopping cart when they leave the site. This is particularly helpful for shoppers who are comparison shopping on the Web and abandon their shopping cart to look at the features and costs of comparable items at another site.

A related feature is what sites are calling wish lists, gift registries, or shopping lists. This type of feature can also let a user gather items together for a purchase at a future date, or create a list to share as gift ideas with friends and family. Links should be provided to and from the wish list and shopping cart so that users have the flexibility to purchase the items they find at the time they choose.

**Figure 5: Moving an Item from a Shopping Cart to a Wish List (CDNOW.com)**

# 6. CHECKOUT:
# PROVIDE ADVANCE NOTICE

It is important to let users know in advance what they can expect in the checkout process. Many users never complete the checkout process after they have added items to their shopping cart. According to Forrester Research, 66% of all shopping carts are abandoned before a sale is completed. For example, one user may add items to a shopping cart and find out later that the shipping cost is more than she wanted to pay and decide not to purchase the items. Another user may have a question about an item he is considering purchasing.

Related to this, it is helpful to provide the user with clues as to where they are in the ordering process. For example, steps can be numbered and labeled with a descriptive title. Amazon.com provides a graphic at the top of each checkout page that indicates where the user is in the process and what steps have been completed and those that remain.

**Figure 6: Graphical view of Ordering Process (Amazon.com)**



In addition to keeping users informed about where they are in the ordering process, provide them up-front with the information they need to make their decision to complete the purchase. For example, let users know what the shipping costs are as one of the first steps in the checkout process. Users may not want to enter their credit card number until they know exactly how much the total is that they will be billed. If there are multiple shipping options presented, provide the cost of each option. For example, specify "overnight delivery - $2.95 additional."

# 7. CHECKOUT:
# KEEP ORDER FORMS SIMPLE

According to Einstein, "everything should be made as simple as possible, but no simpler." This is a good principle to apply to order forms. Order forms should be as simple as possible to help users complete them quickly and without confusion, but should have the necessary functionality to meet a user's needs. For example, a billing address can automatically be filled in with the shipping address if the option to change it is also provided. If a user agrees to store their address, it can be reused from a previous purchase, with the options to enter a different address or enter multiple addresses.

In particular, avoid requiring the user to type the same information twice. For example, the Lands' End site asks users for their e-mail address as part of a user's address and contact information, and then asks for it again if the user would like to get an e-mail notification regarding the shipment of their order.

**Figure 7:  Requesting Redundant Information (LandsEnd.com)**



If completing a subset of the fields is required, these fields should be clearly indicated. For example, required fields can be flagged by a symbol or color, or optional and required fields can be grouped separately on the page. If there is information that a user does not want to provide (e.g., home phone number), they may be more likely to fill out the form if they know that they can leave that field blank. A preferred recommendation is to simply eliminate all of the fields that are not needed to complete the transaction or for other business

purposes, which will save the user time and make the forms easier to complete. Finally, the order process should give the user the opportunity to confirm that all of the information is correct before submitting their order.

The information architecture of the shopping cart and checkout process should also keep in mind an international audience. If your web site ships to addresses outside of the United States, provide forms that provide for the variety of international addresses. For example, a pull-down menu of states is not applicable for most users outside of the United States, but a field for State/Province/Region that users can type their information into will be applicable for a wider audience. If your web site does not ship to locations outside of the United States, but you have a mirror site that does, provide links to that site. If the items in a user's shopping cart are available from the mirror site, let the user transfer the items in their shopping cart to a shopping cart at the mirror site, and/or help them choose from comparable products.

Part of the checkout process should give the user the option to indicate special handling of gift items. This could mean sending certain items to different addresses, gift wrapping of selected items in a gift wrap of their choice, and/or writing a gift message to include with the packing slip. If a user is purchasing gifts for multiple people as well as items for themselves, they should have the option to select different types of gift wrap for each item, as well as designate multiple shipping addresses.

**Figure 8:  Gift giving Options (eToys.com)**

# 8. CHECKOUT:
# ENSURE SECURE TRANSACTIONS

Key factors for addressing a user's concerns about security are to have an established brand, to provide secure web servers and processes, and to provide a satisfaction warranty. All four of the sites I evaluated were up front in providing information about the security and safety of purchases through their web site. For example, just below Amazon.com's button to add an item to shopping cart, there is bold text that indicates: "Shopping with us is 100% safe. Guaranteed." This text links to Amazon's guarantee and FAQ about safety.

Trust is also reinforced as a user goes through the checkout process. For example, if users are given the option to call with their credit card number or to mail a personal check, they have an alternative to what can be a daunting experience of entering a credit card number on the Web for the first time.

Providing order confirmations as part of the checkout process and through e-mail further establish a user's trust with your web site. An e-mail message at the time a user's order is shipped is also a great way to further establish a user's trust.

Another way to establish trust is to help users get answers to the questions they may encounter along the way. This can be accomplished by providing links to frequently asked questions, an e-mail address for questions, and a phone number to call a customer representative. For example, in addition to providing a phone number and e-mail address throughout their site, LandsEnd.com provides a new service called "Lands' End Live" where you can request that a sales associate contact you by phone or via online chat immediately.

**Figure 9: Lands' End Live from LandsEnd.com**
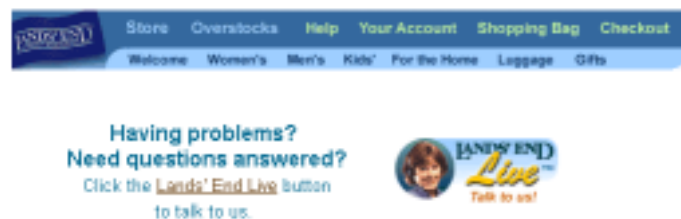
# FEATURE SUMMARY

The following table outlines some of the common features we observed in the process of our research.

**Figure 10: Feature Table**

| Amazon.com | CDNOW.com | EToys.com | LandsEnd.com |
|---|---|---|---|
| *1. Make the shopping cart easy to find.* | | | |
| Item descriptions | Item descriptions | Item descriptions | Item descriptions |
| "Add to Shopping Cart" buttons | "Add to Cart" links | "Add to Cart" button | "Select" button |
| "Add to my Wish List" buttons | "Save to Wish List" links | "Save to Wish List" link | "Shopping Basket" button (when selecting item's attributes) |
| Availability information | | Availability information | |
| *2. Provide clear ordering options.* | | | |
| Shopping cart, 1-Click, Wish List, and Gift Click | Cart and Wish List | Cart and Wish List | Shopping Basket |
| *3. Provide for rich functionality of the shopping cart.* | | | |
| Descriptive information | Descriptive information | Descriptive information | Descriptive information |
| Change quantity | Change quantity | Change quantity | Change quantity |
| Delete Item | Remove item | Remove item | Remove item |
| Save for later | Move to wish list | "Return to Shopping" button | "Keep shopping" button |
| | Inventory information | | |
| *4. Make related items available from the shopping cart.* | | | |
| "See more items like those in your cart" button | | | |
| *5. Provide for items in the shopping cart to be saved for future purchase.* | | | |
| Option to save items in shopping cart to buy later | Option to move items to Wish List | | |
| *6. Give advanced notice of what the checkout process involves.* | | | |
| Graphic at top of each checkout page that indicates where user is in the process | Indicates setting up an account takes 5 steps, which are clearly labeled | | Indicates that checking out includes two steps and what each involves |
| *7. Keep order forms simple.* | | | |
| Registration and passwords required for purchase | Account registration and password required for purchase | Account registration and password in order to access personal features (e.g., address books, birthday reminders). | Optional "Personal Shopping Account" |
| Shipping and credit card information | Shipping and credit card information retained for | Shipping and credit card information | If registered for "Personal Shopping |

| Amazon.com | CDNOW.com | EToys.com | LandsEnd.com |
|---|---|---|---|
| retained for returning customers | returning customers | retained for returning customers | Account," shipping and credit card information retained |
| *8. Ensure secure transactions.* | | | |
| Established brand | Established brand | Established brand | Established brand |
| Guarantee every transaction is 100% safe and indicate so with the "Add to Shopping Cart" button and at start of check-out process; links to more information. | SSL Encryption Technology | Guarantee every transaction is 100% safe and indicate so at the start of the check-out process; link to more information | On overview of security and privacy are explained at start of check-out process and links to more information provided throughout process |
| E-mail address and 1-800 phone number for help provided throughout process | Link to "Help Desk" from order summary/confirmation screen; help section on site | E-mail address and 1-800 phone number provided near end of check-out process; help section on site | "Lands' End Live" to interact on-line with customer representative; e-mail address, 1-800 phone number and fax number provided throughout process; help section on site |

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Before joining Argus, Sarah worked for the University of Michigan's Digital Library Program on the PEAK Project, focused on the investigation of new pricing and product plans for electronic journals and on an award-winning cataloging project of rare medical books for the University of Michigan Library.

Sarah received her B.A. in English from the University of Michigan and a Master's in Information and Library Studies from the University of Michigan's School of Information.

In private life, Sarah is an accomplished clarinetist with the Dexter Community Band and the Ann Arbor Concert Band.

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- Produce original articles, white papers, conferences, and seminars that draw from the experience and expertise of the Argus team.
- Conduct research, independently and through partnerships, focused on improving our collective understanding of information architecture.

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