Modeling Organization – Methods for Increasing a Systems Findability

By: Todd R. Warfel

Introduction

We've all probably heard the term "information architecture" thrown around a time or two. I would even be inclined to say that if you're reading this, you could point out something that qualifies as information architecture. But how well could you define the art and science of information architecture to a family member, friend, or colleague? Hopefully, after reading this, you'll not only have a better understanding of what information architecture is, but why it's important, and how you can create intuitive models based on good information architecture.

The goal of good information architecture is to increase findability. Findability is a system's ability to enable a user to find what they need. The best way to increase findability is through the system's target mental model – the model of the product we want users to have.

Target mental models should be based on a combination of users' current mental models, vocabulary, and a set of assumptions. Differences between the users mental model and the target mental model can be addressed through the interface and accompanying documentation.

Two Schools of Thought

Information architecture – what exactly is it? How much of it is science and how much is art? How does one go about creating information architecture?

When it comes to information architecture, there are two schools of thought – the top down approach and the bottom up approach. Both approaches can be valuable; however, we prefer the bottom up approach for several reasons.

While the top down approach is effective for small, brochure-ware sites, it is limiting in its flexibility for future expansion. It does not take the approach of looking at what content currently exists, but rather focuses on creating buckets and trying to fill them with something. Additionally, the top down approach tends to force users into a mental model that the designers, developers, or other stakeholders have, which may not be the same as the users'. The top down approach is kind of like trying to find a problem for a solution, rather than trying to find a solution to a problem.

The bottom up approach, on the other hand, is effective for sites and applications of any size. It focuses on creating an intuitive structure based on existing content, or features, better allows for planning in wildcards, and is more flexible in its approach for future expansion. In the bottom up approach, you look at the existing content, or feature list, as well as the desired content, or feature list, and create buckets based on their relationship to each other. The bottom up approach is based on the users' mental model. This allows for a more accurate target mental model.

The Science

One of the most effective methods I've come across for documenting the user's mental model is something called a card sort. A card sort is a very simple process that delivers very reliable results. There are two typical ways to perform a card sort – high-fidelity and low-fidelity. While both methods are valuable, we're going to concentrate on the low-fidelity method.

High-fidelity

The high-fidelity approach to a card sort uses a program like IBM's EZSort. Users are asked to move items from a list on the left to a grouping on the right. Then a statistical analysis program is used to compare individual users groupings. Finally, a report is generated indicating which groupings have the highest probability across the sampling.

> The EZSort tool helps interface designers organize information for Web sites based on users' expectations gathered from card sorting exercises. It includes two packages: Usort and EZCalc. Usort provides a simple user interface for the card sort study participants to group cards by direct manipulation within a Graphical User Interface. EZCalc analyzes the card sort data gathered from Usort using cluster analysis statistical tool and generates tree diagrams that present clearly the page groupings, suggested by the data. The output diagrams from EZCalc feature directly adjustable criteria bars and dynamic feedback on the resulting groupings.

Pros:

- Generates statistical probabilities of relationships between the card sorting results.
- It's free.
- Reliable results.

Cons:

- Requires a computer.
- Only runs on Windows.
- Only allows for one user at a time to do card sorting exercise.

Low-fidelity

The low-fidelity approach to a card sort can be done with pencil and paper. Unlike the high-fidelity approach, the low-fidelity approach does not rely on a computer, and therefore, can be done just about anywhere. In the past, we've performed card sorts with index cards, post-it notes, and even on the backs of business cards. The low-fidelity approach is our preferred method.

In the low-fidelity approach, a group of users is typically provided a set of index cards that contain the system's content, or features. Optionally, the group may be given a list of content, or features, and a set of blank cards and asked to write each item on a single card. This second option is more time consuming, but has the advantage of planting the seed of the content, or feature in the users' memory. We've found that they tend to remember content/features better and actively look for particular items while sorting.

Once the cards are shuffled, the participants are asked to sort the items into like groups. Once they are satisfied with the grouping, they should give it a name that makes sense to them. When the group is done, the person administering the card sort records the groupings for future analysis.

We tend to run three to five groups of three participants for card sorting exercises. Each card sort takes approximately 20-30 minutes.

Once we have our results, we put the groupings into Excel and compare the findings. We've run this method hundreds of times and consistently find that between the groups 75-80% of the sorting is identical. Of the remaining 20-25%, roughly 90% shows an overlap between more than one of the groups. That leaves only 5-10% for guesswork, or intuition.

Pros:

- No computer required.
- Can be done in just about any setting.
- Low cost.
- Reliable results.
- Can be done with more than one participant at a time. Having multiple participants allows for a consensus on groupings.
- It's fun – users tend to enjoy moving the cards around and interacting with each other.

Cons:

- Requires more work to analyze the data.
- Marginally more time consuming.

How does one perform the method?
What type of equipment/software is typically used?
What context does one perform the tasks (lab, on site)?
When is it used in the design process?
What are the pros/cons of using this method?
What are other methods?
How might this model complement, or interact with other models?

Keywords: information architecture, sitemap, organization, findability, usability, interaction design.

- Mental models are typically defined as a mental representation of something. Unfortunately, this is a rather loose definition.
- Mental models typically include what a person thinks is true, not necessarily what is true.
- Mental models are similar in structure to the thing or concept they represent.
- Mental models allow a person to predict the results of his/her actions.
- Mental models are simpler than the thing or concept they represent. They include only enough information to allow accurate predictions.
- We need to know the different parts of the mental model in order to construct, or document them correctly.
- Once the mental model is documented, we can construct a target mental model – the model of the product we want the users to have.
- Differences between the users mental model and the target mental model can be addressed through the interface and accompanying documentation.
- The overall goal – to help people find stuff.

Resources

McDaniel, S. What's Your Idea of a Mental Model?
http://www.boxesandarrows.com/archives/whats_your_idea_of_a_mental_model.php
Morville, P. The Age of Findability.
http://www.boxesandarrows.com/archives/the_age_of_findability.php
IBM EZSort http://www-3.ibm.com/ibm/easy/eou_ext.nsf/Publish/1876
User Engineering Activities http://www-3.ibm.com/ibm/easy/eou_ext.nsf/Publish/2743
Warfel, T. "The Dive Process" 2003. http://messagefirst.com/resources/dive.php