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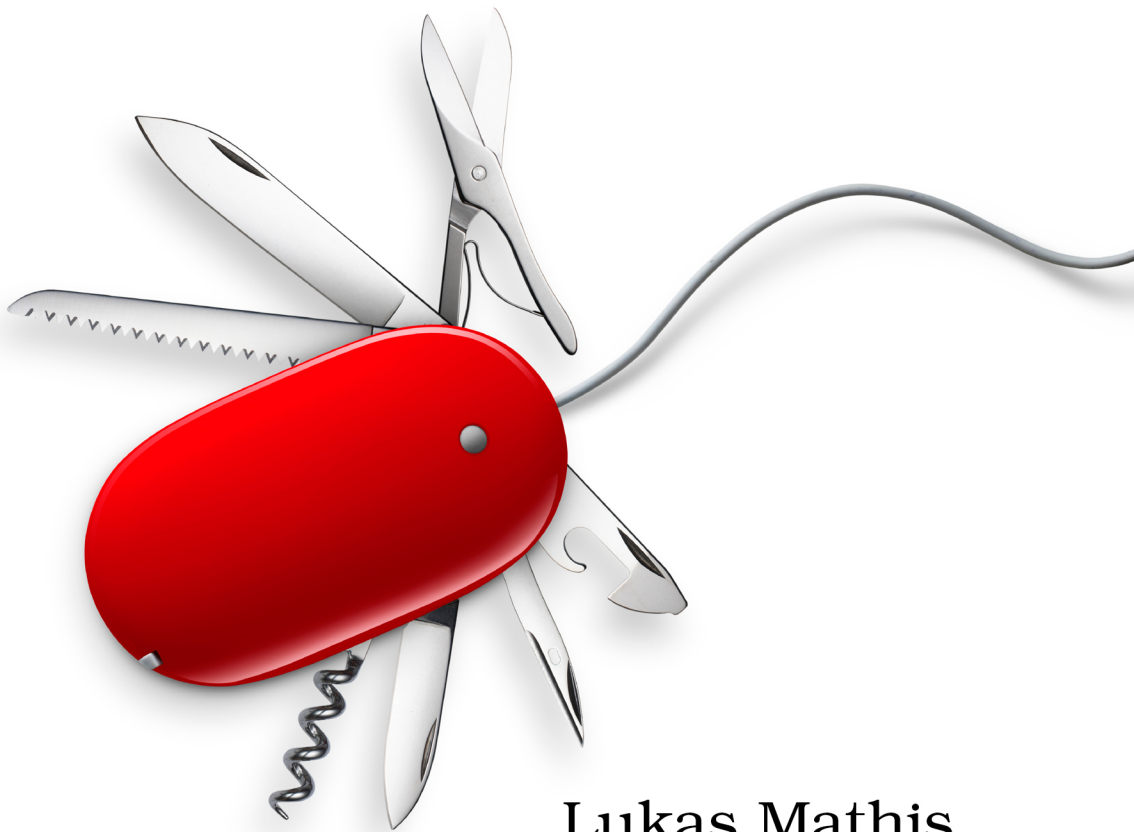
Dallas, Texas • Raleigh, North Carolina

The  
Pragmatic  
Programmers

Second  
Edition

# Designed for Use

*Create Usable Interfaces  
for Applications and the Web*



Lukas Mathis

# Designed for Use, Second Edition

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The Pragmatic Bookshelf

Dallas, Texas • Raleigh, North Carolina



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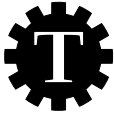
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*For Regula and Werner*



# Card Sorting



## What's the Technique?

Card sorting allows us to gather data on where people think the individual parts of our product should be shown or what parts belong together.

Consider doing card sorts if your product is complex enough that you have to “sort things.” For example, if you’re designing a site and have to decide how to organize the individual pages, or you’re working on an application that offers lots of different features that have to be organized in a way that makes sense to your users, this chapter is for you.

## Why Is This a Good Idea?

Our view of our product is very different from that of our users. For example, if we’re creating a website for a company, we have a pretty good idea of the company’s internal organization, which may influence how we think the website should be organized. The people visiting the website, on the other hand, probably don’t know how the company is organized. This difference in knowledge may mean that something that makes perfect sense to us is incomprehensible to our users.

Card sorting helps us find out how people really see things.

## Are There Any Prerequisites?

No.

## Designing Hierarchies

In the previous chapter, we saw that products are often organized using hierarchies. Here's another example.

Open any website, and it's likely to be arranged in a hierarchy. Let's say your laptop's internal camera doesn't work anymore, and you need help. You open the manufacturer's website in your browser. Where do you go to find help? If your computer is from a big electronics manufacturer, you probably start by clicking "Computers" and then "Notebooks." Here you'll see a list of laptop lines from your manufacturer. Clicking the proper line of notebooks should take you to a list of laptop models, and you should be able to find yours in that list. On the page for the specific model, you'll probably look for "Support." Ideally, this will show a support page for your model, with a number of potential laptop issues. With some luck, you'll find your problem (and a solution to it) in that list.

Here's the path you took through the site's hierarchy:

Computers → Notebooks → Notebook Line → Notebook Model → Notebook Model Support → Answer to a specific question

But that's not the only way you could have arrived there. You could also have gone straight to the Support section of the website. The question is, if you are designing this website, how do you know what paths your users might want to take? And how do you know where people expect to find the individual pages of your site?

## Card Sorting

A common way of finding answers to these questions is to use card sorting—a great way to determine where people expect to find things. Card sorting is really easy. In her book *Card Sorting: Designing Usable Categories* [Spe09], Donna Spencer explains that "at its core, card sorting is a pretty simple technique—write things on index cards and ask people to sort the cards into groups." Of course, there are nuances, so let's look at some of the details of how to do this.

## Preparing for a Card Sort

Take a bunch of index cards and put the things you need to sort on them. For example, if you're structuring a website, you represent the individual pages or areas of your website as the individual cards to sort. If you're



structuring an application, you use the names of features, properties, menu items, commands, windows, tasks, goals, or visible elements as your cards.

It sometimes makes sense to pick things that are roughly on the same level in your product: don't mix terms that are high up in the hierarchy with terms that are far down in the hierarchy. Instead, do multiple card sorts to get information on different levels of the hierarchy.

It's best to use terms that are obvious and easily understandable. If you absolutely can't avoid using jargon, explain the meaning before the card sort, and allow participants to substitute their own terms.

Make sure the words you pick for your card sort can't be grouped on the basis of superficial similarities, such as how the words look or sound. The risk of picking words that look or sound similar is that people may group them based on that similarity, rather than on their meaning.<sup>1</sup>

You should end up with anywhere from twenty to eighty cards. If you have fewer than twenty, then you're probably not thinking hard enough. If you have more than eighty, then you might overwhelm your participants.

Also prepare some empty cards.

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1. Jakob Nielsen talks about this problem and offers solutions for it at <http://www.useit.com/alertbox/word-matching.html>.





Since people might write on cards during a card sort, or otherwise alter them, and since you'll want to do more than just one card sort, making multiple card sets by hand is often too time-consuming. Instead, it's easier to print cards out and cut them up.

To keep track of the cards during a card sort, and to refer to individual cards during the results evaluation, it helps to number them. I've created a simple online tool that helps you create printable numbered cards at <http://card-sort.ignorethecode.net>.

## Participants

You can do each card sort with one person at a time or with several people at once. Both have advantages. Having more than one user in one session can be harder to schedule, and one person typically dominates the process anyway. On the other hand, having multiple participants may create conversations that offer valuable insights into how people think about these things.

If you go with multiple participants, be careful not to overdo it. More than three or four people typically won't be able to participate in a card sort at the same time.

How many card sorts should you do in total? Jakob Nielsen recommends fifteen card sorts with one user each.<sup>2</sup> Since card sorts are simple, doing many of them is easily possible. Different people may expect things to be in different places; the more card sorts you do, the clearer the picture becomes.

2. Read his essay at <http://www.useit.com/alertbox/20040719.html>.

## Running a Card Sort

After you've welcomed the participant or participants, explain what they are about to do. This introduction should go something like this:

Hi, my name is Lukas Mathis. I'm currently working on the design for a new Twitter application. Twitter is a social networking tool, similar to Facebook.

Right now, I'm working on the basic organization of the app—you know, where to put which feature, stuff like that. The exercise we're about to do will help me understand where people expect to find things in our application.

In a minute, I'm going to give you a bunch of index cards that have words written on them. These words are things that exist in our application, like features or objects. What I want you to do is to group these index cards into little piles. Each pile should contain things that, to your mind, belong together. Let me explain this a little bit more clearly. We're not looking for superficial similarity, like grouping words that sound similar or start with the same letter. Instead, imagine that you are using this application. Which things would you expect or want to see on the same screen, for example? If there's a list of items on a screen, which items would you expect to see next to each other in the list?

If there are cards you can't group anywhere or think don't belong in the application, feel free to put them in their own group. I have empty cards handy, and there's a marker on the table, so if the word on a card seems unclear to you, feel free to cross it out and replace it with a better word. You can also make copies of cards, if you feel that certain cards should be in more than one group.

Before we start this, let's go through all the cards.

Next, go through the cards with the people doing the card sort, and make sure they understand what each word means in the context of your product.

Now, ask the participants to sort these cards into categories that make sense to them, stacking cards they think belong together.



Invite them to think out loud and to ask questions. Start taking notes at this point. If participants come up with new words, you can either make additional cards as necessary or add the words to existing cards as relevant.

If the participants create many small groups of cards, encourage them to merge similar groups. If they come up with only a few large groups, encourage them to break them up.

Alternatively, depending on the situation, you can also do a “closed” card sort, where you define a number of groups beforehand and let participants sort the cards into the different groups.

It’s important to let people discard those cards that they feel don’t fit anywhere. These rejected cards may indicate product features or website areas that are not important enough to include or that are extraneous to the problems your users usually solve with your product.

Next, ask the participants to identify names for each stack of cards. Add a card with the name of the stack to the top of each stack (preferably in a different color).



If there are enough stacks, ask participants to arrange them so that those that belong together are located near each other. Depending on the people participating in your card sort and the words you’ve picked to put on the cards, you might even want to ask people to draw connecting lines between associated stacks. (If you intend to do that, do the card sort on a large sheet of paper.)

Finally, collect the data. A quick and easy way to do this is to take a picture of the whole arrangement and then secure the individual groups of cards with rubber bands.

## Running a Remote Card Sort

You don't necessarily have to invite people to a physical place to do card sorts. Card sorting can easily be done remotely. In fact, there are a number of good card-sorting websites like websort.net or OptimalSort<sup>3</sup> that are specifically designed for doing remote card sorts.

Remote card sorts give you more exact data, since you can do card sorts with a lot more people. However, you'll miss a lot of the qualitative information you get from doing card sorts in person. What words are people confused by? What synonyms do they use? What kinds of associations do they have to the words on the cards? Remote card sorts won't tell you these things.

Of course, nothing prevents you from doing both kinds of card sorts.

## Evaluating the Results

If you're working with predefined groups of cards (a closed card sort), evaluating the results is simple. Count how often each card got sorted into each group, and you'll get a pretty good idea of where most people would expect to find the thing that the card represents.

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7			
Card 1		4			3					
Card 2			2	6						
Card 3	7									
Card 4			5	1		1				
Card 5			5	4						
Card 6	1	4					3			

If you're working with user-defined groups of cards, on the other hand, start by defining the groups. Sometimes different people use different words to describe the same group. In those cases, it may make sense to combine these

3. At <http://www.optimalworkshop.com/optimalsort.htm>.

groups. Other times, different people come up with entirely different ways of sorting the cards, creating entirely different groups. If this happens, it may be an indicator that you need to provide different ways of accessing the same things. Once you've hashed out which groups to use, you again count how many times each card was sorted into each group.

Now you can develop a hierarchy based on the information you've collected and then use this hierarchy for your visual layout and for your information architecture. I would advise against formal, statistical evaluations of the data because you probably haven't collected enough information. Card sorting provides input for your design decisions, not proof that a specific solution is the "correct" one.

Use the information you've collected when working out things like the storyboard of your application, the hierarchy of your website's content, or the hierarchy of individual screens. What you gain from a card sort is insight into how people think about the things in your product, the criteria people use to put the concepts present in your product into different mental boxes, and people's mental model of how your product is supposed to work.

After you've decided on a hierarchy, it is generally a good idea to create a simple paper prototype and run a few short rounds of usability testing. (See [Chapter 14, \*Paper Prototype Testing\*, on page ?](#) for more information on how to do this.) This way, you know whether your interpretation of the results is correct.

## Takeaway Points

- Don't use internal structures as blueprints for hierarchies that users see in your product or website.
- Use card sorts to find out where people think individual things should go.

## Further Reading

There's really only one book you need to read to find out pretty much everything there is to know about card sorting: Donna Spencer's [Card Sorting: Designing Usable Categories \[Spe09\]](#).

Spencer also writes a great blog on this topic.<sup>4</sup>

To easily and quickly create cards for a card sort, you can use my card generator at <http://cardsort.ignorethecode.net>.

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4. At <http://rosenfeldmedia.com/books/card-sorting/>.