

User research for information architecture projects

Donna Maurer

Maadmob Interaction Design

<http://maadmob.com.au/>

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User research provides a vital input to information architecture projects. It helps us to understand what information people need, why they need it, how they may use it and how they think about it. Although there are many different user research techniques, some are particularly good for information architecture projects.

The challenge for user research is not in collecting information from people, but in applying it to an information architecture project. It is easy to collect a large amount of detailed data and then be unsure what to do with it.

The focus of this article is on applying user research to an information architecture project. But before you use it, you have to analyse it, and before you analyse it, collect it. After describing various user research techniques, this article describes four different methods to analyse research data and then discusses ways to use research in an information architecture project.

What is an information architecture project?

For the purposes of this article, an information architecture project is one where:

- The system being designed (or redesigned) is content-rich. It may have a lot of content, or the content may be complex.
- The main tasks are discovering, understanding and using information to achieve a goal
- The design effort largely involves identifying the best structure, sensible content groupings, and relationships between content chunks and navigation

Information architecture projects therefore include complex information systems such as websites, intranets, help, knowledge bases and other content-heavy systems.

Throughout this article, I refer to the outcomes from IA projects as a 'site', but not all IA projects result in a traditional website or intranet site. They may result in an educational product, help documentation, set of training material, document management approach, enterprise taxonomy or similar system.

The importance of user research

Good user research is a critical component for many types of design projects. For an information architecture project, user research is useful for learning about the following aspects of people's needs:

- Identify popular and useful content
- Learn what people will do with your information
- See when and where people will be using the information
- Learn about people's conceptual models of the information and groupings they perceive
- Gather lists of terms people use to describe content and concepts

The research collected provides input to many aspects of an IA project, such as selecting content and functionality; designing structure, groupings & navigation; and creating clear labels.

User research techniques

A number of user research techniques are useful for information architecture projects. All methods have advantages, limitations and biases – below I describe some techniques briefly and outline their strengths and weaknesses.

It is important to use more than one user research method within a project. This allows you to collect a wide range of data and reduce bias from any particular method. It also allows you to more easily identify key issues, as they will be consistently identified by each method.

For a detailed description of how to conduct each method I recommend *Observing the user experience - A practitioner's guide to user research*¹.

Talking to people - interviews & observations

Interviews are one-on-one discussions with people, usually conducted in their normal environment. They may involve a period of observation – watching people going about their normal tasks.

Interviews are excellent for gathering rich, targeted information about the issues affecting your project, including the context in which people work, their tasks, their skills and their information needs. Interviews can be very flexible, letting you explore issues and tangents as they are discussed. They are best conducted in people's normal locations so you can combine the discussion with examples. Asking people to show you what they are describing helps you to gain a deep understanding of their needs.

The main disadvantage of interviews and observations is that they can be time-consuming, both to organise and to run.

At a distance - Surveys

A survey is a set of questions people are asked to complete. They can be quantitative (with closed questions that can then be statistically analysed), qualitative (with open text-based questions) or a combination of both. They can be used to collect information about how people use a site, what they may need in the future and many other issues of interest.

Surveys are good for gathering a large number of responses with little effort. They can also be used for comparisons by asking the same questions before and after the project.

The data collected can lack richness, even if you ask for open-ended text responses. Surveys allow no opportunity to probe more deeply about a particularly interesting comment, or to ask the respondent to show you an example. You can learn what is of interest or problematic, but often cannot understand why it occurs.

Using existing data - site statistics, search terms and more

¹ Kuniavsky, M. (2003). *Observing the User Experience: A Practitioner's Guide to User Research*, Morgan Kaufmann.

You can learn a lot about people without talking to them. A wealth of information is often collected as a by-product of existing interaction.

Website statistics provide data about content people are already using, the areas of the site that are most popular and content that is not used. Search terms (from an internal search facility and external search sites) can provide an insight into key information needs and how people describe their needs. Customer emails, letters, forums, call centre logs and help-desk queries can also provide useful information.

These sources can provide a large amount of information at no cost and offer a place to start exploring before other commencing other research methods.

They can, however, contain bias. Customer emails, call centre logs and help-desk queries often over-represent new or inexperienced people. Website logs only show what happened, not why it happened. For example, I once worked on a website where the logs showed one page that was unusually popular. In usability testing we found the reason for its popularity – it was an index page with a set of ambiguous links. People would look at it, select a link, realise the resulting page didn't help, go back, select another link and so on (the website statistics tracked every hit to the index page). It was popular precisely because it was not usable. This was a valuable reminder to not take the website statistics at face value.

Card sorting

Card sorting² is a more targeted user research technique. It is used specifically for learning about the way people perceive groupings in content. In a card sort, content or topics are written on index cards. People are then asked to group the cards in ways that make sense to them given the particular context. At the end of the activity, they write a short description of the groups they have created.

Card sorting helps you to learn about people's conceptual models for a set of information, what groupings people perceive in content and how a set of information could be organised. It is particularly useful in information architecture projects as it focuses on content groupings and labelling. It is also a very inexpensive method.

Card sorting has limitations and should be used together with other techniques. For example, it does not provide any information about what information people need and how they are likely to use it. It does, however, provide ideas and insights for grouping and labelling.

Recording user research

Make sure you record your research data in detail – it is hard to analyse data based on memory or scratchy notes.

For face-to-face techniques record sessions with an audio or video recorder. Later, create a lightly edited transcript of the session (one with the 'umms', 'ers' and personal comments removed). It is important to capture the interviewees' words verbatim – don't change the language into your own or attempt to interpret what people have said, as these are particularly useful for information architecture projects.

² Maurer, Donna (2007). Card sorting. Rosenfeld Media.

For other techniques, capture the data as close to its raw form as possible. For example, collect individual survey responses (not aggregated statistics), detailed search terms (not just the top 20) and full email messages (not just subject lines).

Analysing user research

It is easy to end up with an overwhelming amount of detailed data that is very daunting to analyse. Make sure you leave sufficient time for analysis – your research effort will be wasted if you do not properly consider what you have collected.

If you watch crime shows, you've probably seen one where the investigator writes notes on the whiteboard, stands and stares at it until the pieces fall into place (often while talking aloud). When analysing user research, we need to do the same (though not as dramatically). We, like the hotshot investigator, want to identify patterns, determine the most important issues and keep track of insights and ideas.

Just as you should use more than one method for user research, you should use more than one method for analysis. They each offer a different way of learning about what you have.

Analysis has a risk you should be aware of – it is easy to see patterns that don't exist and miss patterns that are important. When you think you understand the key ideas, check the data to make sure your ideas are supported.

It is best to involve as many of the project team as possible in the analysis step so everyone can gain a deep understanding of the users. This is especially important if the person designing the information architecture and page layouts was not involved in the user research – being involved in analysis is much better than reading a report prepared by someone else.

Exploring the data

One of the easiest initial analysis methods is to explore the data. This lets you get a feel for the type of information you have and the very high-level patterns.

I use spreadsheets extensively to do this. They can hold a large amount of information from many sources and are easy to use. It is invaluable to have all the data in one place where you can sort it, manipulate it and look at it in different ways.

Here's how I use a spreadsheet to explore the data:

- In the first column, record the source of data
- In the fourth column, list all the user research data – for example, survey comments, interview quotes and search terms all go in the same column.
- In the second and third columns, code the data with simple tags (keywords). Tag each line with whatever comes to mind - don't worry about creating a complete or consistent set of tags, you can go back later and revise them.

An example is shown below with content from some research conducted for the Information Architecture Summit³ (please note this example was generated for this article, and just shows enough to give you the idea).

| A | B | C | D | E | |
|----|-------------------|----------------|----------------------|---|------------------|
| 1 | Source | Tag | Tag | Comment | Search frequency |
| 2 | Interview1 | schedule | | I looked at the conference schedule a little bit | |
| 3 | Interview1 | reporting back | | I asked my team to find out sessions they want me to attend | |
| 4 | Interview1 | social | | done a lot of unrelated to the conference background prep | |
| 5 | Interview1 | touristing | food | researching restaurants | |
| 6 | Interview1 | money | | I called my bank and let them know I'm travelling | |
| 7 | Interview1 | schedule | printed | I downloaded the program and I probably will take it with me on the plane | |
| 8 | Interview1 | sessions | | will probably look at the conference schedule and do a rough plan | |
| 9 | Interview1 | workshops | description | Looked descriptions for the workshop I also used my personal understanding of people to choose a workshop | |
| 10 | Interview1 | workshops | presenter | I also got a username sorted out for the blog. I'll use that a | |
| 11 | Interview1 | blogging | | Haven't looked at the schedule yet | |
| 12 | Interview2 | schedule | | I think I will decide in the morning | |
| 13 | Interview2 | sessions | decide close to time | to see the slides of the presentation, it helped me a lot | |
| 14 | Interview2 | sessions | slides help | My company booked the plane for me | |
| 15 | Interview2 | flights | company booked | And I booked a hotel – not the conference hotel | |
| 16 | Interview2 | accommodation | | I'm planning on staying two more days in city after the conference is finished | |
| 17 | Interview2 | touristing | | so it is great that the IA Summit is in city It is a great opportunity for me to go to the conference and see the city. | |
| 18 | Interview2 | touristing | city important | I just read the description and the titles of each workshop | |
| 19 | Interview2 | workshops | description | program | 26 |
| 20 | Internal search | schedule | | costs | 21 |
| 21 | Internal search | costs | | timetable | 15 |
| 22 | Internal search | schedule | | hotel | 14 |
| 23 | Internal search | accommodation | | technorati | 12 |
| 24 | Internal search | blogging | | The plenary speeches were very good ways to start and end the conference | |
| 25 | Evaluation survey | structure | plenaries | The how to sessions were the most interesting | |
| 26 | Evaluation survey | sessions | how to | I am an experienced ia so the 'future' / 'vision' sessions were interesting. | |
| 27 | Evaluation survey | sessions | visionary | | |

After checking you have used your tags fairly consistently it is time to explore the data. Sort it by tags so similar ideas are grouped together. Look for basic patterns and interesting issues. You will be able to identify key information needs, issues that were mentioned most frequently, how people described similar needs (they may have done so in similar or quite different ways) and whether there was consistency between sources.

This technique is good to use first to see what data you have and identify the initial patterns. You will discover interesting things that were not apparent when the data was in its original format.

Term analysis

Term analysis is a technique more often used in information architecture projects than other types of projects. It is a good technique to gain an understanding of how people describe concepts.

Choose a concept you know people are interested in and use your research notes to see how they describe it. Look for:

- Words used to describe the concept
- Synonyms (words with the same meaning)
- Antonyms (words with the opposite meaning)
- Related concepts
- Broader and narrower terms

³ An annual conference devoted to information architecture. See <http://www.iasummit.org/>

- Concepts frequently mentioned together.

You can use the outcomes from this simple analysis as a way to understand how people describe their information needs. It is also very useful as a source of terms for navigation labels and to improve search.

Affinity diagramming

Affinity diagramming is an activity good for identifying key issues from research data. It is conducted in a small team so provides a great opportunity to discuss the research findings.

To prepare for an affinity diagramming session, each person in the team goes through the research data (the transcripts, spreadsheets etc), identifies issues they find interesting and writes them on sticky notes. What is an interesting issue? It may be something you didn't think of before or something confirmed by the research. It may be a particularly insightful quote from a participant or something you heard over and over again. It will include many simple things that made you stop and think 'oh, that's interesting'.

When the team has a pile of sticky notes start to discuss the issues. As you discuss, start to group the notes by similarity (or affinity) on a big wall or table. Shuffle notes around, move notes between groups and make new groups, discussing all the time. As you progress, talk about questions like the following:

- What is important about this group of notes?
- Why does this happen?
- What is this group of notes about – what is the underlying idea?

The actual sticky notes and resulting groupings are not important (so don't feel you need to keep them). The main value of this technique is the team discussion about the issues.

The trickiest part of affinity diagramming is determining the initial set of issues to include in the activity. Some things may only become interesting when there are many of them. After an initial discussion, check the user research to see if you missed anything the first time around.

Dimensional analysis

Dimensional analysis⁴ is a very useful but little-known technique. As with other techniques, it allows you to identify key issues. In contrast to the others, it allows you to focus on different aspects (or dimensions) of the data, analysing each individually. This provides a deeper analysis than the other methods.

Like the initial tagging step described above, the dimensions emerge from the data. For an information architecture project, you might identify dimensions such as:

- Frequency of use
- Familiarity with the domain
- Method of finding information

⁴ Kools, S., McCarthy, M., Durham, R., and Robrecht, L. (1996). Dimensional Analysis: Broadening the Conception of Grounded Theory. Qualitative Health Research, 6(3).

- Type of information task⁵
- Number of terms entered in search
- Amount of content needed to meet an information need
- Overall experience with the site
- Basic demographics such as age & education level

When you have a set of initial dimensions to examine, examine the user research by focusing on one dimension at a time. For example, if you identify a range of familiarity with the domain, see if there are differences. Do people unfamiliar with the domain use different terms to describe concepts or content? Do they need different types of content? What do very frequent users need (are they returning frequently to keep up to date) compared to medium frequency (who may return for the same content over and over) and infrequent (who may visit to get a fast answer)? Think about how people's needs and experiences differ.

When you have examined all you can for one dimension, start over with another one. The discussion about people's experiences and needs for each dimension may also suggest new dimensions to examine.

Documenting user research outcomes

You will know when you have done enough analysis – you will start to feel that you are not learning anything new. At this point, it is important to write up your findings. Here are just some of the benefits.

- Documenting research findings helps you to think about what you learned. The act of writing makes you think through it in a logical way and ensure the data supports your conclusion.
- It makes the user research more accessible and more likely to be used.
- After creating a design, you can refer people to findings in the research and support your design decisions.
- It shows why you have spent so much time and effort conducting research.

For a thorough examination and practical advice about communicating the results of your research, I recommend *Communicating Design: Developing web site documentation for design and planning*⁶.

Using the results of analysis in the project

The most important part of any information architecture project is not collecting data or analysing it, but actually using it when designing. It is important to note that the design process is a creative one, where you synthesize ideas from a number of sources to create a design. User research, therefore, is not the only input to a design. You also need a good understanding of business requirements and a thorough understanding of the content.

⁵ Maurer, Donna (2006). Four Modes of Seeking Information and How to Design for Them. Boxes and Arrows. Retrieved 8 June 2006 from

http://www.boxesandarrows.com/view/four_modes_of_seeking_information_and_how_to_design_for_them

⁶ Brown, Dan M. (2006). *Communicating Design: Developing web site documentation for design and planning*. New Riders.

In an information architecture project, user research informs many decisions as outlined in the following sections.

Content & functions

User research identifies content needs. You will clearly see the most popular content that should be retained, gaps and content difficult to find. This understanding will help with key design decisions:

- Some content may be so popular that you include direct links to it from the home page and make finding information easier for a large proportion of visitors
- You may find content with no identified need that needs further analysis to determine why and whether it should be retained.
- People may be looking for content that does not belong to your site. You may decide to write a short page that guides them to the correct site.

User research also identifies many straightforward functionality needs. For example:

- If people are deciding which product to buy, include a product comparison tool.
- If people say that they regularly print pages, make sure you include an easy method for printing.
- If your content is academic papers and people need to reference them, provide a function to copy the reference into major bibliography tools.
- If they say they come to the site to keep up to date with the latest issues, provide ways to make this easier – allow them to subscribe to an email alert service or provide an RSS feed.
- If many people access the site from somewhere other than a computer, ensure the site is designed and optimised for mobile devices.

Identifying structure

The site's structure is the way it is put together and how elements relate to one another⁷. Many sites use a basic hierarchical structure, but some use a database, faceted classification⁸ or organic structure. User research can help you determine the most appropriate structure for the site. For example:

- If you learn that people only want to see a small amount of information on a particular topic, you may structure the site as a simple hierarchy with discrete sub-sites.
- If people want to approach the data in a small number of different ways (such as finding publications by date, author or topic), the site will need to allow this, using a database with these elements as metadata. If the content could be approached in many ways, a faceted approach may be best.
- If keeping up to date is important, you may create automatically-generated lists of recently updated content and news.

⁷ Garrett, Jesse James (2002). *The Elements of User Experience: User-Centered Design for the Web*. New Riders.

⁸ IA Wiki. Faceted Browse. Retrieved 8 June 2006 from <http://iawiki.net/FacetedBrowsing>

- If it is clear people know they want some information but more is available, you may link key content areas together so they can see a fuller range of information.

Groupings

A key aspect of an information architecture project is creating groups of individual content elements (and creating groups of groups). Many user research activities contribute to the development of the best groupings:

- Card sorting is used to directly explore groupings in content, based on the way people think. This is a particularly good way to learn different ways of grouping information in a way that will suit the audience.
- In face-to-face techniques, people do not usually talk about individual content elements, but talk about broad topics or concepts they are interested in. The best will be mentioned consistently and people will use similar words to describe them. They may form natural groups of content for the site.
- Term analysis will identify many groups, concepts or topics people are interested in.

Labelling

User research is invaluable when determining the labels for groups of content, individual pages and more. Labelling ideas can be derived from all user research techniques:

- Term analysis provides an extensive list of words and variants.
- Transcripts from face-to-face techniques provide an invaluable set of information about how people describe things and the words they use
- Search terms provide a concrete listing of the way people describe their needs. They also provide synonyms and variants in spelling that can be used to improve search results.
- Card sorting usually involves a step to describe the resulting groups, providing a great set of labels for groups.

When choosing labels, look for consistently used terms. These will be words a large proportion of your audience and will understand and using them will help them discover content they need.

Navigation

As described above, user research provides significant input into content grouping and labelling, which make up the primary navigation for a site (such as the global navigation bar or local navigation for groups). Many sites will have alternate navigation methods (such as A-Z indexes and related links) and user research will help to identify what is needed. For example:

- If people frequently need a small set of known content items, an A-Z listing, using terms learned from the research, can be a good way to get them to information they need.
- If people often don't know where to start, or may approach the information in more than one way, 'related links' can help them to get where they need.
- If people think content will be on one site, but is on another, include links to related sites.

Conclusion

User research can help in information architecture projects in many ways. We can learn about content people use and need, how they think about groups of content, how they describe concepts and what functionality they need from a site.

But these findings take some effort to learn. User research data is relatively easy to collect, from interviews, surveys and existing data. The data gathered must be carefully analysed in order to identify the key issues, using a range of exploratory and rigorous analysis techniques.