

interaction path analysis

building blocks for a rational design process

anil bawa cavia
last.fm osmotics series
01/08/08

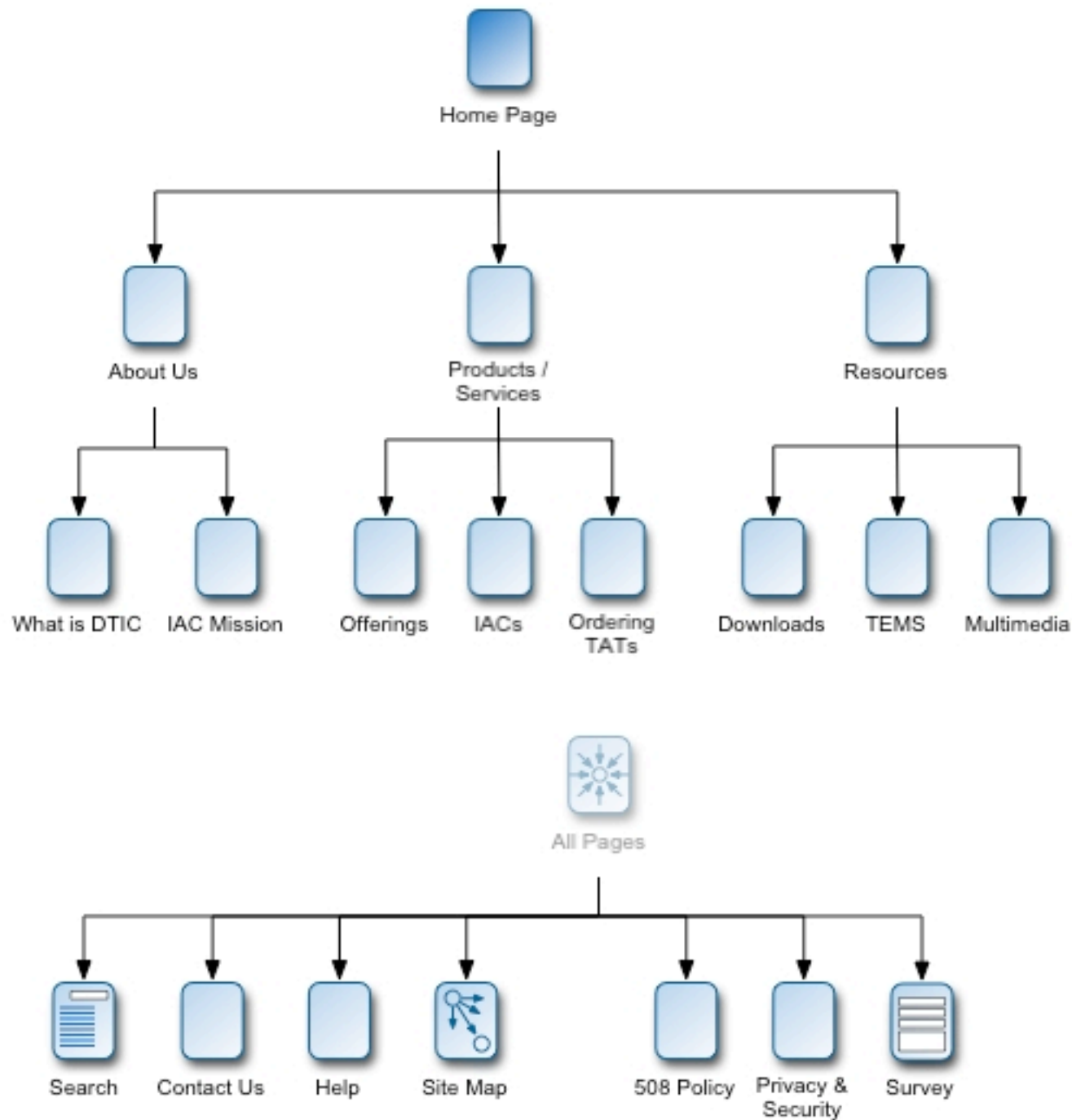
Interaction path analysis is one of a series of components we're trying to bring together in order to encourage a culture of 'rational' design around our web product. What do I mean by that? Of course design is never truly rational; because it's not science, it has subjective components. But we're bringing lots of data to the table so we can have informed debates about our product. Interaction path analysis is just a way of examining what a user's interaction flow through our site looks like. This data allows us to hypothesize about user behaviour and then test those claims using the behavioural data we capture on our site.

on faulty models

All design involves modelling. The design of web products is haunted by some ingrained ways of thinking about web sites or applications. I'm going to take a step back and discuss these briefly so you understand some of the cultural problems we're fighting against in our modelling approach.

architectural models

Architectural models for web sites often mix the underlying information architecture of a web site with the actual presentation of the web interface.



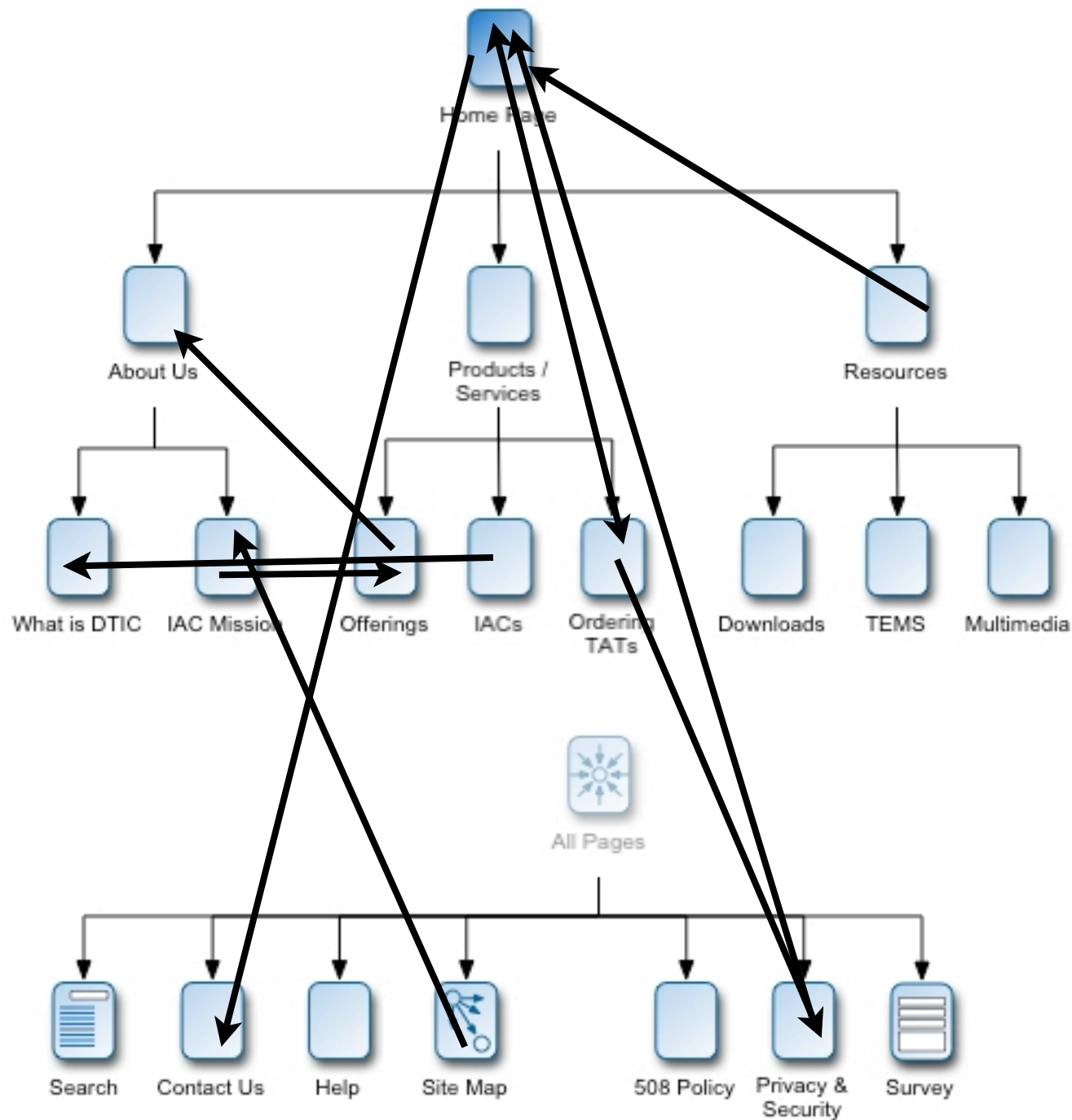
Here's a site map. Every site map for every website in the world looks like this. It's a hierarchy of pages. Great. This might match your information architecture but it's not that useful from an interface design perspective. An example of a clear hierarchy in our information architecture is Artist > Album > Track. Artists 'own' albums which contain tracks.

behavioural models

So that's an ingrained architectural model used to construct web sites. Page hierarchies. There's also ingrained behavioural models that inform how we think users interact with websites.



Here's the dominant behavioural modelling paradigm for web products in the last 15 years or so. Users will just 'surf' your site! This is faulty because casual browsing stopped happening in any meaningful scale online about a decade ago. These faulty models have been around since the web started but are still embedded in product design in a way we need to acknowledge and root out. e.g. everyone knows that 'search is king' nowadays but bizarrely teams often still design their sites as if users are just going to 'browse around'.



This is how users might navigate your website. What do they think about your page hierarchy model? They don't care. They will use your website in a way that disregards many of your architectural models. They will choose the shortest route to do what they need to do. Understanding what they need or want to do and optimizing for that is therefore crucial.

“Users are highly goal-driven on the Web.”

Jakob Nielsen

Whilst you can still encourage casual browsing on your site (it's good to strike a balance and allow for discovery), the evidence all points towards a higher degree of goal-driven usage as the years pass and people use the web more often and for longer periods. This quote is from Nielsen's "Top Ten Mistakes in Web Design" article. The original version was written in 1996, but some of the insights have still not been absorbed by the whole web community.

information architecture is not a behavioural model

It's tempting to build a neat artist > album > track hierarchy right into your interface as the dominant navigational element, but people often disregard information architecture when navigating a site. We're trying to get away from baking all our information architecture right into our actual interface design, so that the navigation reflects real interaction flows.

[Upload music and videos](#)

Ria_Bacon

Overview

Charts

Journal

Groups

Friends

Neighbours

Events

Tags

Recently Listened Tracks [\(edit/see more\)](#)

Bending Corners – Alice in Wonderland	just listened
Bending Corners – Alice in Wonderland	49 minutes ago
Bending Corners – Alice in Wonderland	1h and 32m ago
Bending Corners – Alice in Wonderland	2h and 19m ago
Bending Corners – Alice in Wonderland	3h and 6m ago
Bending Corners – Alice in Wonderland	3h and 52m ago
Bending Corners – Alice in Wonderland	4h and 39m ago
Bending Corners – Alice in Wonderland	5h and 25m ago
Bending Corners – Alice in Wonderland	6h and 11m ago
Bending Corners – Alice in Wonderland	6h and 58m ago

[Feeds](#) | [Embed/add this](#)

Here's an old last.fm page. See how the information architecture is exposed via tabs. There are 3 levels exposed here (Users > Individual user > Subtabs). Whilst I can tell that users can have friends and neighbours and events, the interface doesn't tell me what I can actually **do** with all that data. I have to just browse to those subtabs and find out ("Just surf our site!"). The design of this page does not seem to be sensitive enough to my actual **use cases** when I arrive at or pass through this page as part of a browsing session. We have been working on that.



Fáilte joanofarctan!

Now you know how to greet people in Irish!

- You have [5 new messages](#).
- [Find your friends](#)


Flickr News

31 Jul 08 - **Mark your calendars!** Celebrate another 24 hours of Flickr on Friday, August 8, 2008. [Find out more...](#)



» [Flickr Blog](#) Great content & latest news, daily!

Do more with your photos!

 Posters! Books! DVDs!

Now there's even [more you can do](#) with your photostream:

- [Capital One](#) Personalize your credit card **NEW**
- [HP](#) Prints, Photocubes, Posters and Books
- [MOO](#) Tiny, wonderful photo calling cards
- [QOOP](#) Calendars, Posters & Books
- [Blurb](#) Bookstore quality books, by you
- [ImageKind](#) Frame your Flickr photos

» [Upload Photos or Video](#) (Or, look at our uploading [tools...](#))

» [Your Photostream](#) ([Recent activity](#) / [Comments you've made](#))



» [From your Contacts](#)



From [Moblog Roel](#)



From [dodeckahedron](#)



From [gold leaves](#)



From [ampster](#)

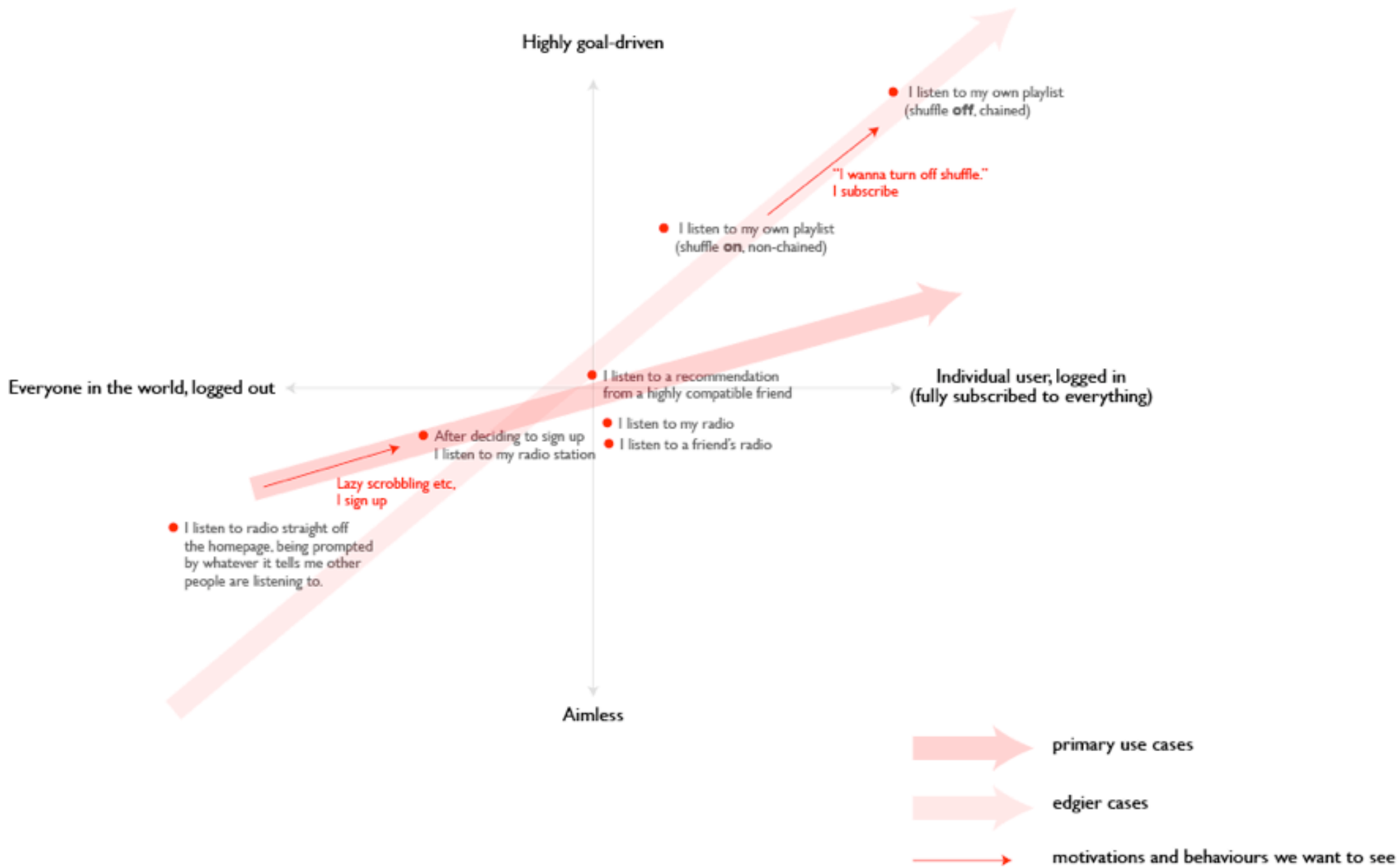
» [Everyone's Uploads](#) ([Show latest here](#))

» [Your Groups](#) ([See what's new](#))

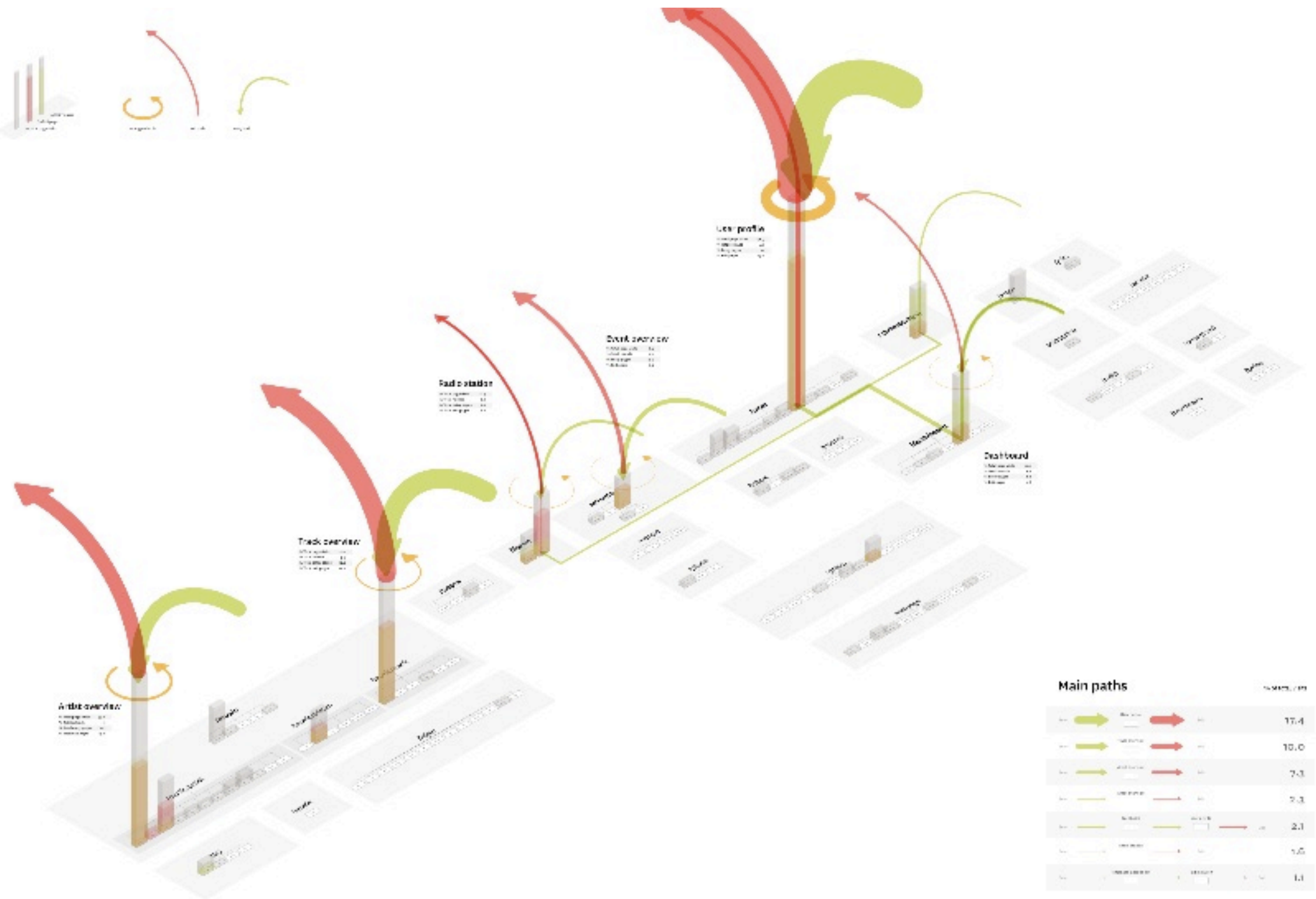
The flickr homepage has been around for years but it's just as impressive now as it was then in terms of being sensitive to what people are trying to accomplish (their **goals**) when they visit the page. Note there isn't a great deal of exposed information architecture here, and lots of verbs (common **use cases**).

interaction paths & use cases

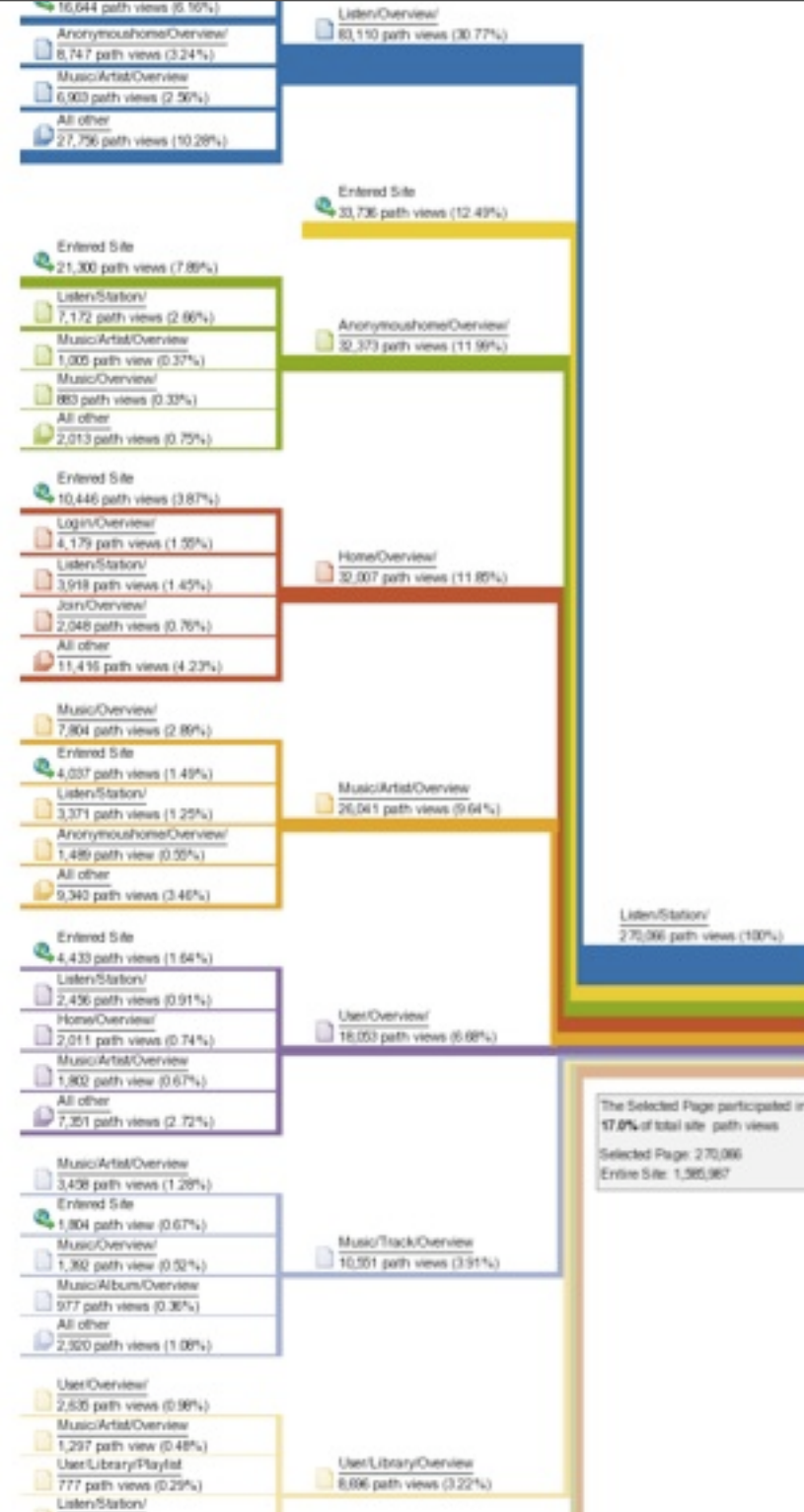
A use case is just a simple modelling tool we use in software to break down all the different types of tasks people are trying to accomplish when using your website. Interaction path analysis and use cases go hand in hand because the analysis allows you to test hypotheses about use cases which you can then use to design or improve features. Often the way you designed a feature to be used is not the way it's used in the wild. Reconciling your use case models with the actual interaction flows is important.



Here's a 2D representation made by our lead interface designer Matt Brown of some common use cases. On the horizontal axis we have 'anon' to 'power user' and on the vertical axis of 'highly goal-driven' to 'aimless'. We have been thinking in terms of use cases whilst designing features for a while now.

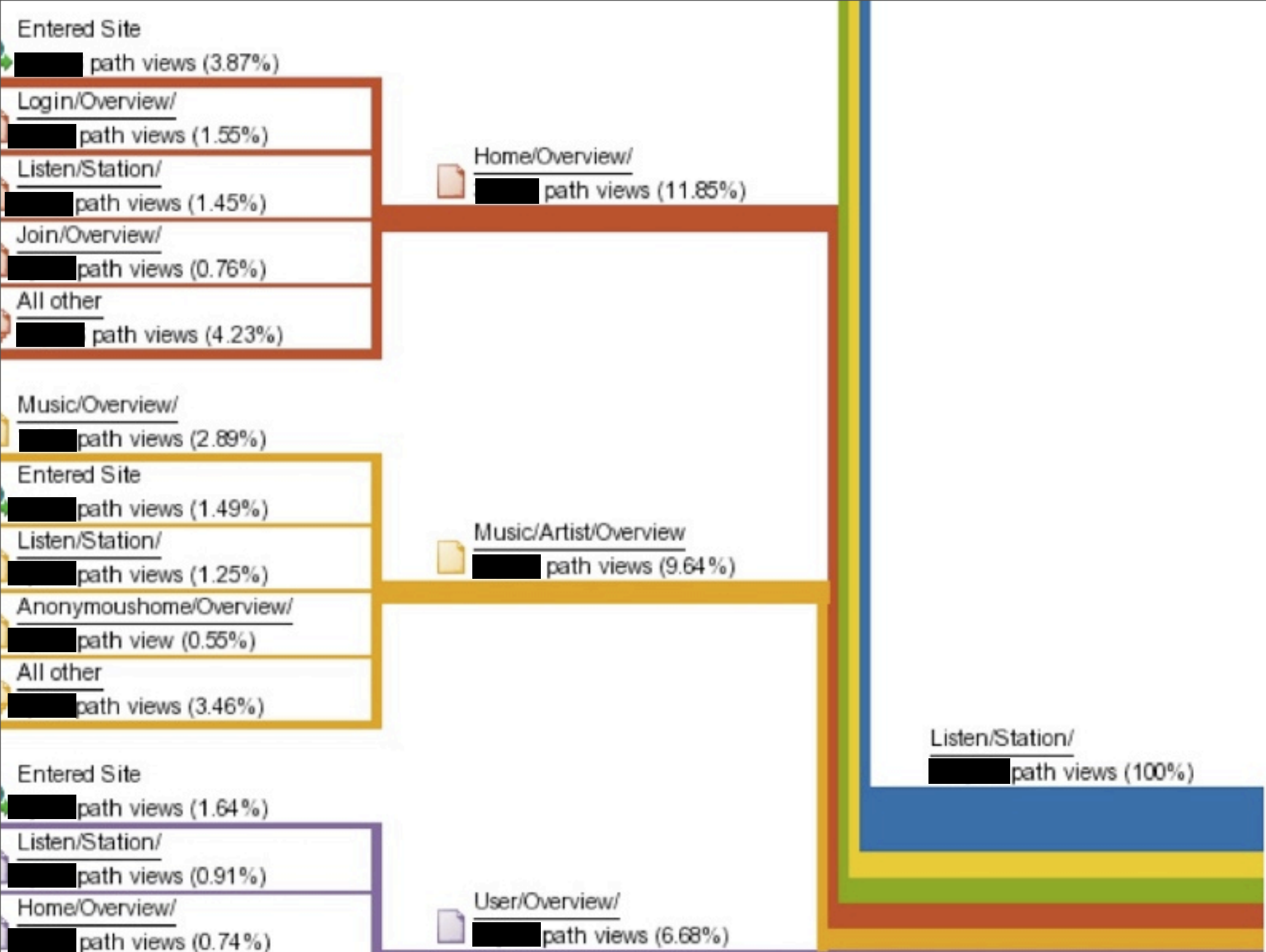


And here is an isometric visualization (by Matt Brown) of some of the path analysis data from the live site. This is real data we capture from the site. You can see information on page reloads (the orange 'refresh' rings), bounces (1 page sessions) are the big arrows bouncing off the top of the blocks. Each block is a different page. You can also see common paths joining different blocks. On the 'floor' of the isometric landscape you can see the old school hierarchical page model - the way we've grouped pages on the site by overviews and subtabs. In many cases it's incidental to how users are navigating our site. This diagram contains lots of information you can't see at this resolution, but it shows how we're thinking on different terms to the old architectural models.

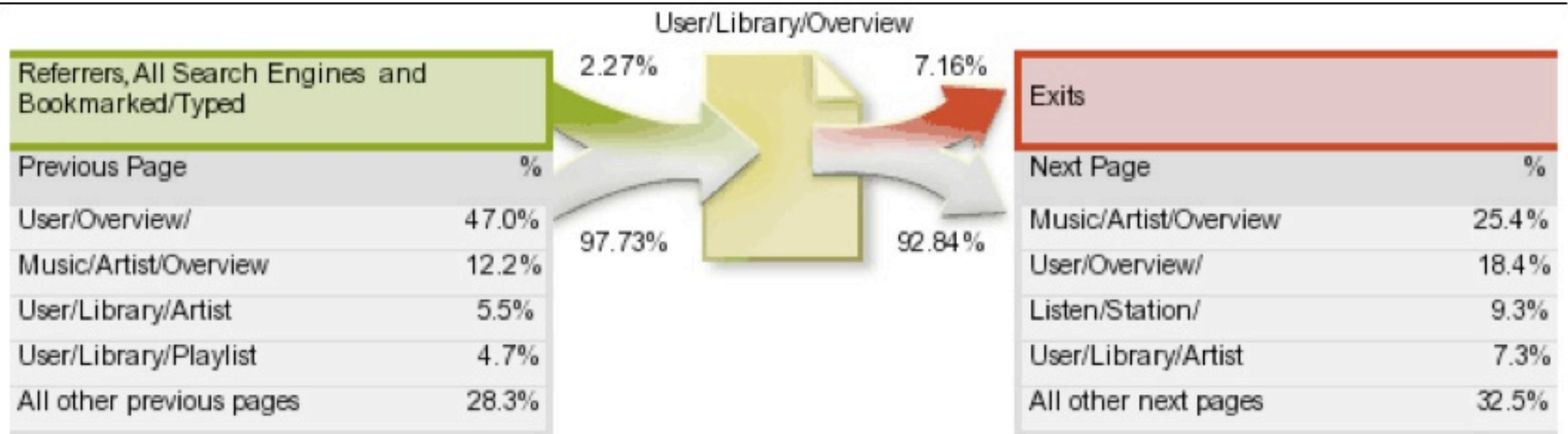


The Selected Page participated in 17.0% of total site path views
 Selected Page: 270,066
 Entire Site: 1,585,967

Here's a 'previous page' report for our listen pages on the website. You can see the tree-like structure depicts the top X referers by page type to our listen pages and takes two steps back in the browsing session, with the listen page being the 'destination' in this report. So we can start to see interaction patterns in this data. We get all our data from omniture, which we've set up to record visits to all these page types (like 'artist overview').



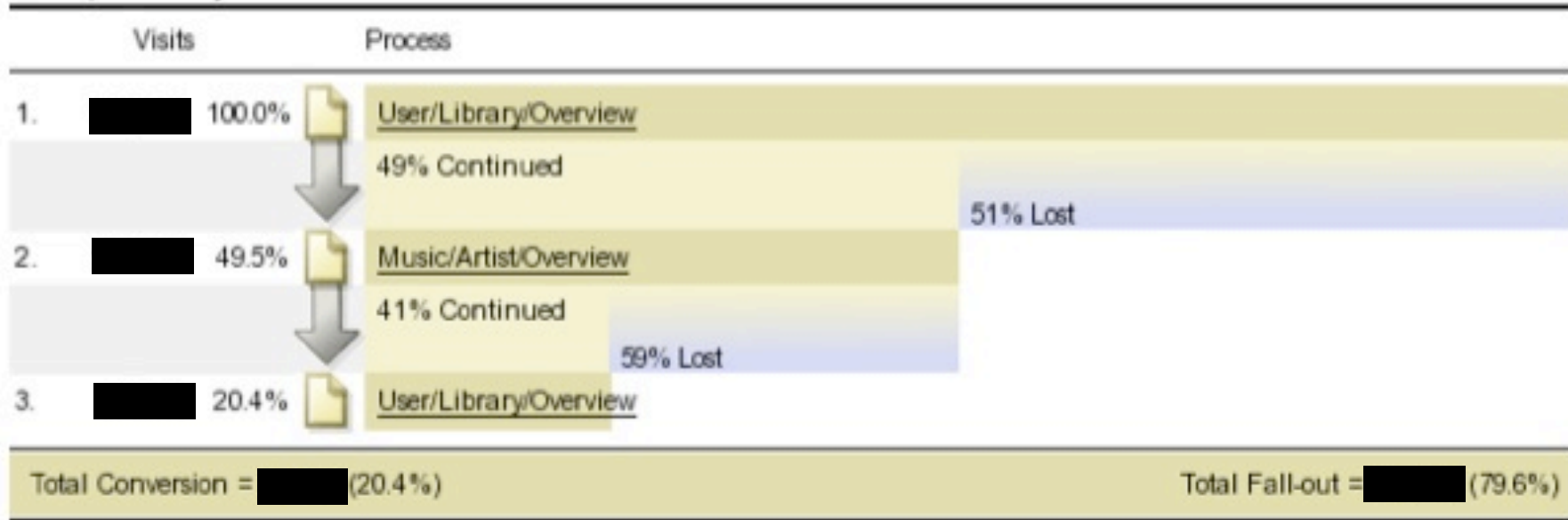
Here's a detail from that report so you can see the types of information available in it. We are able to understand which radio buttons and launchers on the site are working better than others by running reports like this.



14. Entered Site Music/Artist/Overview Music/Track/Overview Exited Site	0.8%
15. Entered Site Listen/Overview/ Exited Site	0.8%
16. Entered Site Webclient/Popup/ Exited Site	0.7%
17. Entered Site Music/Track/Overview Music/Artist/Userstore Music/Track/Overview Exited Site	0.6%

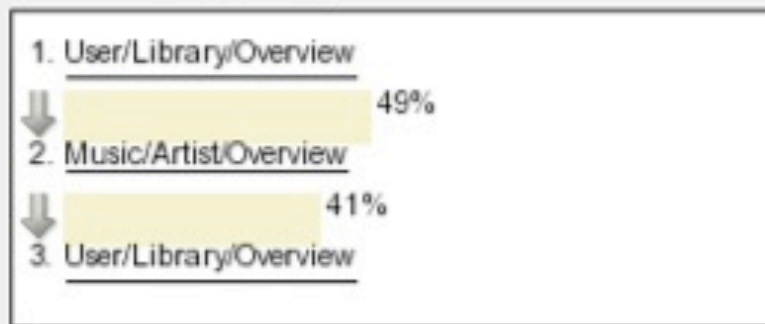
Here's previous and next pages for our new library feature's overview page (above) and some data showing common interaction flow patterns (below). Anyone on our web team can pull off these reports via a web interface when they're building features.

Checkpoint Analysis

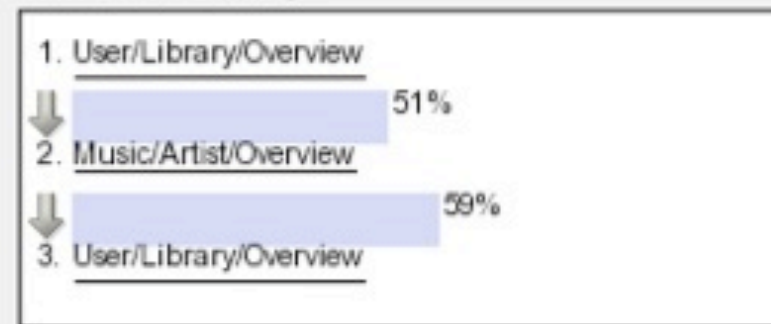


Conversion and Fall-out Summary

Conversion % Summary



Fall-out % Summary



We can also query the interaction patterns database. In this report I'm asking 'how many people visited their library, then clicked on a big artist image and then hit their back button to head back to the library'. I asked this question because there was a big discussion about whether the library interaction flow would make sense to users. Now we can tell what proportion of users are using it in ways we didn't design for.

stop designing pages!

This is one of our goals with all this work. Rather than asking someone to sit down and design the video playback page, we want someone to **design for a use case** like “I have this friend who’s in a band, and I want to find their video so I can share it, watch it and put it in my profile”. The latter might touch on video search on the site (is it any good?) or other means of finding artists and thus videos (your mate’s band might be in your charts or he may have recommended them to you in your inbox). So this way we **design for particular experiences** end-to-end. Different pages play different roles in different use cases.

building blocks for a rational design process

- Media consumption behaviours (streaming)
- Page metrics
- Success events (e.g. tagging)
- User testing/observation
- A/B testing tools
- Interaction path analysis

Interaction path analysis is just one component in a range of data tracking and analytics tools we're using to inform our web product. These allow us to speculate less about how our users interact with our site, and focus more on design solutions that reflect real interaction models.