User Experience at Google – Focus on the user and all else will follow

Irene Au
Google, Inc.
Mountain View, CA 94043 USA
ireneau@google.com

Antonella Pavese
Google, Inc.
New York, NY 10011 USA
antonellap@google.com

Richard Boardman
Google, Inc.
Mountain View, CA 94043 USA
rickb@google.com

Jens Riegelsberger
Google UK
London, SW1W 9TQ
jensr@google.com

Robin Jeffries
Google, Inc.
Mountain View, CA 94043 USA
jeffries@google.com

Kerry Rodden
Google, Inc.
Mountain View, CA 94043 USA
krodden@google.com

Patrick Larvie
Google, Inc.
Mountain View, CA 94043 USA
patrickl@google.com

Molly Stevens
Google, Inc.
New York, NY 10011 USA
mollystevens@google.com

Abstract

This paper presents an overview of the User Experience (UX) team at Google. We focus on four aspects of working within Google's product development organization: (1) a bottom-up 'ideas' culture, (2) a data-driven engineering approach, (3) a fast, highly iterative web development cycle, and (4) a global product perspective of designing for multiple countries. Each aspect leads to challenges and opportunities for the UX team. We discuss these, and outline some of the methodological approaches we employ to deal with them, along with some examples of our work.

Keywords

Google, organizational overview, user experience, design, research

ACM Classification Keywords

H5.2. User interfaces

Introduction

The first statement of Google's Corporate Philosophy is "Follow the user and all else will follow" [3]. This means that the importance of user experience (UX) is encoded into the culture. However, as in any other organization, the Google UX team encounters challenges and opportunities resulting from how this is interpreted. In

this paper we discuss the work of the Google UX team, focusing on four aspects of our culture: (1) a bottom-up 'ideas' culture, (2) a data-driven engineering approach, (3) fast and iterative web-development product cycles, and (4) a global product perspective of designing for multiple countries. Firstly we briefly introduce our team structure and locations.

At Google the UX team is part of the global engineering organization. The team is structured to align with our core product areas - *Search* (including Mobile, Maps, and desktop tools), *Commerce* (advertising products), and *Applications* (our communication and collaboration products such as Gmail and Calendar). The team includes people with skills in interaction design, visual design, user research, web development, technical writing, participant recruiting and audio-visual infrastructure.

The team is situated across multiple locations around the world, including the UK, Switzerland, China, Australia, India, and Korea, as well as California, New York, Washington, Colorado, and Illinois in the USA (see Figure 1).

How we work #1: Bottom-up Culture

Google is built around an 'ideas' culture based on the goal of continuous innovation. There is a belief that great ideas can come from anyone, and that this is the place to help them grow. An example of this is '20% time' [4,5] All engineers are encouraged to spend 20% of their time working on something they have a passion for that may or may not be related to their primary work. Google News, Google Trends and Google Finance are examples of products that were originally created in 20% time.

Figure 1: Google UX Team locations.

Because of this, Google can be likened to an ideas factory with hundreds of active projects being continuously created and worked on. This leads to several challenges for the UX team:

1. Challenge 1: How can the UX team scale to meet the demand for involvement across so many projects? Many of these projects make significant UI progress as a 1-2 person project, despite their recognition that they need UX help; other projects will never see the light of day. How can UX offer support without becoming a bottleneck?

2. Challenge 2: Does anyone need this wonderful technology? In many cases, 20% projects emerge from a technically feasible or fascinating idea, rather than a specific user need. How can UX help steer project focus to an overlooked user need?

Some of the techniques, which the UX team employs to meet these challenges, are outlined below.

Entering the corporate DNA
While the UX team would prefer to fully engage with teams and do so on the projects that are most important, we recognize that the best way to scale

effectively is to educate and train engineering and PM about user experience. To enrich the fruits of the bottom-up culture, UX aims to get user empathy, and design principles into every Google engineer's head. We want engineers to draw from the lives of our users when they are making decisions.

A company cannot fully realize a vision of focusing on the user without having relentless user focus as part of the DNA. To that end we are running several programs to build human-centeredness into the company's culture, for example the 'Life of a User' training program and 'Field Fridays':

- All new Google employees (also known as 'Nooglers') complete *'Life of a User'* training from the UX team, which complements their technical training. This covers user-centered design principles and useful research methods, as well as introducing the UX team and available resources such as styleguides.

- In addition, the UX team runs a *'Field Fridays'* program at various locations whereby any Googler can attend field studies to connect them with the everyday problems and "delighters" of our users. These studies may be focused on a particular project or on gathering more long-term data to guide product teams. Our aim is to ensure that there is always at least one non-UX observer in every study.

Scaling to support hundreds of projects
At some stage in most projects involving UI, some hands-on UX involvement is required. This is provided in a scalable fashion via *'Office hours'* sessions for each

of our product areas. Here, UX designers and researchers are on hand at a regular time each week to provide consultancy for anyone who wants it. This means that new 20% projects without any official UX commitment can still get assistance. In addition, internal UX standards, style guides and pattern libraries allow teams to leverage previous design work.

Rather than running distinct usability tests or walkthroughs for all new features, the team tries to bundle up testing into *regular testing programs* for any single product area, e.g. Search or Commerce. As well as streamlining the recruitment process, spare 5-10 minute "piggyback" slots can be made available for smaller projects that might not otherwise have a chance to get early user feedback.

Helping Focus Projects on User Needs
Sadly it is impossible to conduct early research for every emergent project idea. A key aim for user research is thus to focus on broad strategic work that can be used by a lot of project sub teams, including those that are just coming into existence.

The UX team also maintains a *User research knowledge base*. Here our aim is to ensure salient information is easily accessible by engineers and other team members. Where possible general themes are presented for a product or product area (e.g. "The Top 10 things you need to know about GMail users"). This means that some grounding research is available to engineers working in any area.

How we work #2: Data-driven approach

Google is a very data-driven organization. Everything from server performance to hiring success is tracked

rigorously, via metrics and dashboards. Having the key statistics at hand is central to the executive decision-making process.

The majority of Google's products are web-based, making web analytics a very important user research method for our team. We have specialists who work solely on analyzing aggregated usage data from a UX perspective, helping to get a better understanding of how our products are actually being used, and what is working or not working for our users. We track conventional metrics such as page views, and also more user-centric ones. For example, a key indicator of the success of a product is its growth in terms of the number of users who are active, but there are many possible ways to define "active". A typical definition is that the user visited the product's web site at some point during a fixed time window, such as the last 7 days. When studying Blogger [2], however, we observed that individual bloggers have very different patterns of posting (e.g. several times per day, versus once per month or less), and proposed that it would be more appropriate to use a variable-length time window, based on what is typical for each blogger.

For many of its products, Google will test UI variations on the site by exposing them to a randomly selected set of users in a live experiment - a technique also known as "A/B testing". For each variation, key metrics are tracked, enabling us to see which variation performs best. The results are often surprising and may run counter to the predictions of even the most experienced UX practitioners. We can gather lots of data in a short period of time - but it is often necessary to let experiments run for a while, to get both the initial effect and the settled effect.

Of course, web analytics can show us what is happening, but not why. We always supplement quantitative analysis with qualitative study of the contextual factors that drive user behavior (e.g. via field research, diary studies, face-to-face interviews). It can be particularly valuable to combine the two types of methods in a single study, recruiting a set of participants to use a specially instrumented version of a product in a field study. This allows us to gather detailed and highly accurate data on product usage over time, while being able to interpret it with contextual information gathered from e.g. diaries or user interviews. An example of such an approach, applied to Google Maps for Mobile, is reported in [6].

How we work #3: Rapid web development cycles

Desktop software was traditionally updated on an approximately annual basis. With the advent of the web, updating web-based products is much easier, allowing companies such as Google to roll out new products and features much more rapidly.

In order to support tight turn-around, UX practices a number of agile techniques such as guerilla usability testing (e.g. limited numbers of users hijacked from the Google cafeteria at short notice), prototyping on the fly, and online experimentation.

One agile usability technique also employed at Google is enabling a live instant messaging dialogue between observers and moderator during lab-based testing [1]. This enables redesign even within the scope of a single study session, and allows extensive product iteration over the course of even a short user study.

How we work #4: Global audience

The term 'Google' has found its way into everyday language in many parts of the world - this is testament to the reach of the products we help design as the Google UX team. Unlike in many other organizations, every product at Google is built from the outset with a view to being rolled out in dozens of countries and languages. This truly global perspective, combined with a wide product portfolio, has two consequences: (1) we face the same challenges of localization as other organizations, but on a much larger scale; (2) many of our core products (e.g. search, maps) are dependent on locally existing content and its structure as well as on locally variable needs, hence we face global UX scaling challenges that are more unique.

UI localization challenges
As the quality of local user interfaces has a tremendous effect on the usability of our products internationally the UX team works closely with localization (l10n) and internationalization engineering (i18n) teams. International user studies can help to highlight some of the problems for some products in some regions. However, the focus of our work is on more scalable efforts, such as fixing problems in shared UI libraries, and providing training and resources to in-country teams to conduct their own ongoing research.

Global UX challenges
While poor UI localization can be a formidable barrier to using a product, it's also the - relatively - easiest to fix. A far bigger challenge is the variation in user needs and expectations that stem from cultural, regulatory, and structural differences. One area, where such variations are evident is that of global payment systems, which impacts both our advertising products and Google Checkout. Differences in financial regulation impacts what information must be collected and how tax is calculated. In addition, typical payment systems differ by market. While credit cards may be ubiquitous in the US, German users may expect to pay via direct debit. However, there are even wider-reaching more subtle connotations: we found in Russia, that the very fact that a website registered with Google AdWords formed the basis of some form of user trust, as it allowed users to conclude that they were engaging with a 'real business'.

In addition to this general global diversity in user needs and use cases, Google Search (web, local, map, etc.) faces specific challenges that are related to the question of what content we offer, how we trigger it and how we rank it. As an example, if a Google Maps user types 'Manchester Airport' does she want Manchester UK, or Manchester US? Can we accurately predict her intent from the location, language, or interaction history? Or, while it may be evident to every German that 'HH' is short for 'Hamburg' when talking about cities (as car number plates are often used for locations), this search term may have a different meaning in another location or context.

To respond to these challenges we are growing the Google UX team globally, so that we have members with local expertise who live and work in all key markets. In addition we are working increasingly with local Googlers in the many sales and support offices, who volunteer some of their time to give feedback on early prototypes. In addition we conduct international user research projects in which local Googlers and members of the UX team go out into the field to learn about local needs and thus increase sensitivity and

awareness. Finally, with Google's increasingly globally distributed product development we are now also working on products that are first created in and for an 'international' market, and then 'localized' for the US.

Supporting Other Diverse Users
As well as international users, another example of diverse user needs is that of providing accessible UI for people with disabilities. [7] discusses some of the methodology adaptations made at Google to accommodate blind participants. These include (1) customizing test environments, (2) dealing with audio interference between screen reader output and the interview dialogue, and (3) educating observers inexperienced in accessibility technology.

Closing Discussion

In this paper we've outlined a few aspects of UX work within Google's engineering and product development culture. Many of these cultural aspects are common to other companies, but the combination of all 4 described in this paper - 20% projects, data-driven decisions, tight web development cycles, and global outlook - is unique to Google, and leads to a unique UX organization.

References
[1]   Boardman, R., No IM please, We're Testing, Richard Boardman, *Extended Abstracts of CHI'06*, ACM Press (2006).

[2]   Kramer, A., and Rodden, K., Applying a User-Centered Metric to Identify Active Blogs, *Extended Abstracts of CHI'07*, ACM Press (2007).

[3]   Google website, Company Information: Our Philosophy, http://www.google.com/corporate/tenthings.html

[4]   Google blog, Google's 20% time in action, http://googleblog.blogspot.com/2006/05/googles-20-percent-time-in-action.html, 2006.

[5]   New York Times website, The Google Way: Give engineers room, http://www.nytimes.com/2007/10/21/jobs/21pre.html, 21 October 2007.

[6]   Riegelsberger, J., and Nakhimovsky, Y, Seeing the bigger picture: A multi-method field trial of Google Maps for Mobile, *Extended Abstracts of CHI'08*, ACM Press (to appear).

[7]   Strain, P., Shaikh, A, Boardman, R., Thinking but not seeing: think-aloud for non-sighted users, *Extended Abstracts of CHI '07*, ACM Press (2007).