Embedding User Understanding in the Corporate Culture: UX Research and Accessibility at Yahoo

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Abstract

This case study shows how a UX Research organization created a company-wide user first culture, aligned the strategy of multiple products to align with real user needs, and improved product usability in a global company with over 1 billion monthly web and mobile app users. We will describe the team, its organization and role, and specific ways research is conducted to positively impact product development. As the organization and function of research teams in industry has been largely opaque to the broader CHI community, we hope that this case study will provide deep insight and foster a larger conversation about the role of UX Research at scale and the best ways to organize and deliver that research for maximum effect.

Author Keywords

UX Research; Industry; Organizational Culture.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; K.4.3 Organizational Impacts

Introduction

The UX Research and Accessibility team at Yahoo is now a group of 21 researchers and accessibility specialists focused on advancing a user first mentality

at all levels in the company. A little more than one year ago, the centralized UXRA team was created by combining several existing teams within Yahoo. Researchers from existing design research, mobile UX research, ads and data research, accessibility, and Labs groups were brought together to form this new central organization with the charter of driving user understanding throughout the development process.

In such as large company, we faced many challenges in creating this new culture. Yahoo has dozens of product teams, that each operate differently. Some are very small and function more like scrappy startups, while others have decades of history and large, hierarchical organizations and processes. Various teams had particular histories of working with a variety of disparate organizations that conducted user research in the past, while some had never engaged with more formal user research activities. In parallel, we received top-down support from our CEO for creating a culture of putting users first across the company.

The current team has been reorganized to support Yahoo verticals, and researchers are embedded in the teams that they support. In this case study, we will discuss key changes that were made to the team's focus and mission and how we are currently impacting a wide variety of products as well as driving an overall user first mentality throughout the entire company.

As the role of UX research in companies becomes more defined, and the idea of user research being a core part of product development practice enters into broader thinking, we believe that our learnings and current process can provide key insights to other companies who are working to define the role of a UX research team in their organization.

Timely, believable, actionable and surprising framework

The first and most effective change we made was to articulate "what good research looks like" which properly set expectations and focused the team on key aspects of great research. Research should be timely, believable, actionable and surprising:

Timely: We highly value operating at our product development team's speed and schedule above all else because if our research results do not arrive in a timely manner, they will not be useful to the team or impact the product. This framework required us to work faster–instead of weeks and months to complete a study, many of our studies now take only a week end-to-end. Timeliness is everything. Timely doesn't always have to mean fast, but it does require a keen understanding of the time constraints that product teams are facing–and respecting them. Timeliness is everything.

Believable: We value quality of work, and our findings should be believable. Upholding a scientific standard is about solid empirical evidence, including replicability. Knowing when to surface just the right insights and when to keep quiet is also important. We force ourselves to think very hard about the best method to obtain "believable" evidence about every particular issue. We use a wide diversity of methods (e.g. diary studies, field studies, usability studies, MTurk, etc.) and frequently use them in combination to triangulate results. We think hard about how to structure our questions and observations to get the

best insights we can out of each study and focus on the needs of the team and specific research questions that will advance their product planning and development. We follow a simple, common sense standard of believability. Did the team observing your study or reading your reports believe your findings? Were they convinced that real users will indeed experience the product in much the same way as in your study?

Actionable: We want our findings to be actionable, rather than simply interesting. There are many interesting aspects of user behaviors we can report on, but our job is to translate these interesting observations into actionable insights and recommendations.

Surprising: Finally, in our studies we want to surprise our product development teams with novel observations that they weren't able to get from other sources. When teams learn information that they were not expecting, they see the value in user research, as well as can make some of the most impactful changes to their products that did not seem obvious before participating in research activities.

One important but frequently overlooked aspect of our work is our interactions and engagement with teams. Many research teams have the focus on "understanding the user". While we are very mindful of the importance of this goal, we believe that an effective research team needs to accomplish more. In addition to understanding the user, we need to understand the teams we work with and the product. We invest time and effort into understanding team dynamics and product vision articulated by teams. We believe that we can only be effective when we can bridge the gap between teams, product visions, and user understanding. Our goal becomes not to simply understand the user, but understand how product vision should be altered to accommodate the user, and how we can best work with teams to drive the product vision forward with user in mind. One of the hard-learned lessons in this is that time spent understanding the team and the product is just as valuable as time spent understanding the user, and one needs to spend time doing both to be successful.

Grow User-Centered Focus by increasing Contact with Users

We established and supported a corporate goal for all employees throughout the company to participate in a user-understanding activity at least once each quarter. Through this goal, we provided frequent opportunities for employees to interact with users, capture useful feedback and improve our products in order to establish the high value of user research and create a stronger user-centered focus throughout our company. Success was measured by employee participation and product impact (feature, performance, and reliability improvements). While we didn't reach our ultimate stretch goal of 100% participation, we were happy with the success we achieved in such a short time, having over 5,000 employees participate in user research activities.

In order to increase participation in user research activities, we created several strands of activities. First, we strongly encouraged all product team members: designers, product managers, engineers, or marketing staff to attend all of our in-lab user activities. All Yahoos were welcome and encouraged to drop into any research study. In order
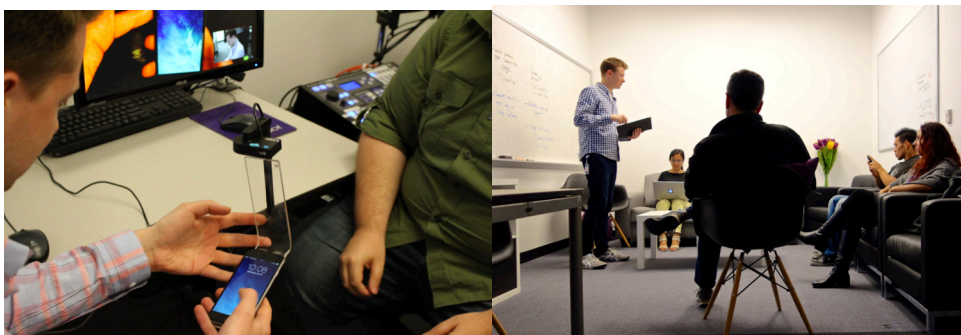
Figure 1: Our updated labs. (left) Using a phone on a camera sled for an in-lab usability test. Both the image of the phone screen and a view of the participant are live streamed to team members and archived for later viewing. (right) A team debriefs with the researcher after the session and whiteboards any suggested changes in direction or design.

Figure 2: Activities outside the lab. (left) Teaching a session at our new employee orientation. (right) A User Night pairing nearly 100 external users with members of our Search team.

to support this goal we renovated our user study labs to create inviting, comfortable and large observation rooms where teams can watch the studies live, take notes on whiteboards, and make plans for addressing user feedback. After each session, researchers and product teams who are observing the study, debriefed together immediately, to focus on the key themes identified and create actionable follow-up (submitting

design changes, noting points to address at strategy meetings, filing bugs, etc.).

In addition, we audio and video record all of our in-lab sessions, livestream them throughout the company, and archive all sessions for later viewing. This enables any Yahoo to participate from anywhere in the world and interact during the study to ask questions or communicate back to the research team. The research calendar is also available electronically to all Yahoos, and all study reports include a link the session videos. Often, highlight videos are created of key moments in interviews and user interactions so the teams can quickly focus on the incidents that are most critical to understand and address. All study reports also include a link so anyone in the company can follow up and view the complete sessions should they want to investigate the study further.

We also created a routine schedule of "User Nights" where up to 100 external users are paired individually with members of a particular product team [6]. Team members are briefed in advance and provided a script and coaching to run their own study with their participant. For up to an hour, they have conversations about the use of their product and observe real-world use on the participants' own devices (phones and/or laptops). After the event, team members share key findings in large group settings, and findings from these sessions are aggregated and fed back to the team. This process enables rapid, larger-scale feedback than is possible obtain in a single-day, 5-user, traditional usability study. These events create unique empathy among product team members for real users, their issues as well as joys, in using the product that they spend each day building.

We also organized company-wide brown bags to promote user research, encourage curiosity, and present interesting and unexpected findings. We host sessions on a variety of products or topics each month. Typically UX Researchers present alongside members of their product teams, or supporting Science team from Yahoo Labs (our formal academic research group). These sessions provide an opportunity to present interesting findings and new methods being used by the User Research team and how products have implemented the insights gained from the research.

To address wider company-wide culture issues, we started a few broader initiatives to reach out to the company and raise awareness of our team and how it can help products throughout the company. We participate in presenting at new-employee orientations for all technical hires each month, discussing the types of research we conduct and examples of the impact that we have made. Regular company wide presentations of product insights, intranet articles, posters, and yearly paper submissions to an internal company-wide tech conference help the UXRA team promote user understanding throughout all aspects of the corporate culture.

Through the diligent application of each of these activities, the User Research and Accessibility team has inculcated a "user first" culture throughout Yahoo. A growing percentage of Yahoo employees have participated each quarter in this User First Goal - and most recently over 50% of global organization participated in the most recent quarter. In addition, the number of requests for research has dramatically increased, and we find our team involved in a larger

variety of studies, from early generative research to drive product strategy through to usability and field studies as products mature.

Shape Product Strategy Through Generative Research

In recent quarters, new products and product features have become crucial to the company's success. Several large new bets were made in mobile, video, and social applications. We strongly believe in involving user insights from the moment a new product is conceived. We have promoted the value of starting user research early, before product concepts have solidified or key use-cases have been established. Early involvement has enabled us to include data from users as a guiding principle for use case and feature selection and steer the overall product experience to support real user needs as observed through a variety of studies.

Specifically, in the past quarter, we directed product teams to explore use-cases in an adjacent under-explored market area as a key differentiator that satisfies an unmet need that we observed during dozens of previous studies. We were also able to redirect product teams away from exploring domains that our research indicated were not major pain points for users and thus unlikely to yield large growth.

Frequently, we work closely with product managers to define a series of rapid exploratory studies to explore the domain that they are addressing. Often, these studies require a wide variety of methods, from online surveys, in-lab or in-home interviews, contextual inquiry, field visits, observation, or mid-scale data collection. Our goal is to learn as much as possible

about the target domain and provide feedback to teams quickly, often weekly or even more frequently.

Our product teams use agile development practices which mean they typically work on a weekly (sprint) cadence. We design our generative research to fit this cadence and have found that mid-scale studies [1], with 100-200 participants, executed on crowdsourcing platforms often fit this need for rapid execution. We have had great success exploring domains such as mobile web use, SMS use, link sharing in messaging, calendar use, email search behaviors, and others in helping to understand current user needs and areas where products can innovate. Often, these online studies explore a variety of quantitative log data collected directly from a participant's device in addition to qualitative data captured through open-ended feedback questions in a one-week sprint.

We have also designed a number of rapid in-home studies to quickly identify users' needs in areas as diverse as photo sharing, video live-streaming, or teen communication. These often include rapid methods such as Contextual Inquiry [2], or installing loggers on participants' devices for a set amount of time to understand web or mobile device use in real-world settings over a period of time.

For all of these studies, our goal has been to design, execute, and evaluate within the one-week product sprint, to answer questions that arise in strategy discussions the very next week so that decisions can be made as to product direction in the next weekly meeting. When using data loggers, we often seek to capture historical data where available to reduce bias through being a part of a research study and to increase our speed of execution. All studies are approved by our research management and legal where required.

Improving Products Through Iterative Evaluative Research

In addition to the generative research to help plan product strategy, we involve our team with evaluative research from the earliest stages. In most cases, this is a continuous process to involve evaluative research directly after (or concurrent to) more generative work. We work with designers to test early paper sketches in our user study lab to see how users reacted to overall product concepts as well as to solve major usability issues while design concepts were still fluid.

Historically, the team was involved with fewer studies that occurred later on in the development process. By starting with paper sketches or clickable mocks, we can identify issues long before code is written or features that have little utility are developed. We can still impact large changes to overall navigation and use cases by starting evaluative research early on in the cycle.

Once designs started to be refined, we set up a cadence of evaluative research in our lab, with products running studies every 1-2 weeks. Typically these sessions start with paper or clickable prototypes made in Pixate [4] or InVision [3] and explore user's understanding of the system as well as the key values of the product. We can also run eye-tracking studies as a part of our usability research. Each week, designs are updated based on feedback from the previous week's study and tested again. This highly iterative approach matches the product team cadence, provides timely feedback, keeps the product development moving

forward without delay and avoids design directions that can take the product off-course.

In addition to testing the design, we find that it is important to test a functional system in action. Where possible, we like to do this before the system is actually made, in order to ensure that it's solving the right problems and providing data that users actually want to see and interact with. In these cases, we run Wizard of Oz [5] studies with a designer or editor observing in a back room acting as the Wizard and composing results or pages on the fly for participants to see and interact with. This model provides valuable feedback long before a product is code-complete.

As the product becomes functional, we augment in-lab usability studies with a series of field studies to understand its use in the wild. Field studies frequently involve asking participants to use a system for two-weeks, call into weekly or twice-weekly voicemail diaries, and participate in a final interview at the end of the study. In these field studies, we instrument applications to collect usage data as well as use qualitative data from voicemails and interviews to understand use. Field studies also help us to understand how people engage with a system in their daily lives and work around the serious limitations of lab studies to understand real world behavior with a product concept.

Once a product is released, the UX Research team works closely with our Data Insights team to understand how the product is performing by monitoring daily usage rates, retention rates, and feature usage. These insights often spawn ideas for follow-up in-person studies to explore certain aspects

of the product that are showing issues that are hard to identify from purely quantitative log data. These studies can involve additional in-lab or in-the-wild studies to understand these aspects of user behavior in a more qualitative manner.

Adding Value by Embedding Researchers

Our ability to run impactful studies each week is strongly due to how our team is organized and physically located amongst product development teams. Individual researchers on our team each have one or more products for which they are directly responsible for conducting research. It is their responsibility to coordinate, direct, and provide all research for their product related to user interaction. This is in addition to exploration of instrumentation and quantitative data about use of deployed products, which is managed by other teams with whom we collaborate to triangulate findings.

Importantly, our researchers sit with their product teams, participate in product and feature planning meetings, and provide feedback to teams during daily / weekly scrum planning and product standups. Working in close proximity creates a strong trust relationship and "shorthand" communication that helps deliver relevant insights directly at the point where product decisions are being made. Researchers work closely with Product Managers and designers to understand the current thinking of the product, and together explore how research with people can help the team answer key questions or can uncover new strategic directions to explore.

As products are being designed, researchers work to create an evaluative strategy for the product, often

involving multiple rounds of in-lab and field studies exploring the use of the product as it increases in fidelity and nears launch. These studies range from Wizard of Oz, to paper prototypes, traditional in-lab usability, eye-tracking studies, in-home ethnographies, mid-scale data collection studies [1] or multi-week field studies of working systems.

Researchers are an active part of product development and continually suggest new directions or validate strategy with data from people. Product Managers and designers actively consider feedback from all research activities in planning feature roadmaps and design updates as a product is created. Through being embedded with teams, and a key voice in daily/weekly meetings, researchers are considered an important resource in planning new features, creating designs, or prioritizing bugs to fix.

Expanding the working definition of "Users"

Far too often, UX research ignores a significant population by not including people with cognitive, hearing, physical, visual, and speech disabilities in its research or definition of "user." Yet there are more than one billion people with disabilities in the world for whom equal access and inclusion is only possible through technology and, in particular, mainstream technology.

One significant change was for the User Experience Research and Accessibility team to introduce the topic Accessibility into the onboarding of new technical employees. Time is dedicated to clearly communicate that Accessibility is expected in our thinking, product design and communication and introduce them to the

available accessibility tools, resources and processes in their new role.

We have established a routine of including people with disabilities into our user studies. These are often conducted by Accessibility Specialists (who have specific training with assistive technology to facilitate the study) but also include non-specialists and product teams as observers. The greatest successes have come when these observations and results have been aggregated with observations from other similar studies and presented to product teams as unified findings. This provides a more complete, full picture of how users are interacting with a product. We've often found product issues sooner and in more detail with disabled users than with traditional participants, as these users tend to be more sensitive to smaller details and changes in the design.

We chose to reflect the importance of Accessibility in our organizational structure. Traditionally Accessibility is part of an administrative organization within a company tasked with "compliance" but we've found it to be most effective to place in in our User Experience Research group which is closely aligned with product development. Our Accessibility Specialists and researchers have sharpened each other's skills. The Accessibility Specialists have become better researchers and improved their user study skills, while our researchers have broadened their sense of user perception and capability (physical, sensory, and cognitive).

We've changed how we consider and observe users with limitations (including age, health, injury, and environment—particularly for mobile users) and have

changed our process to include people with disabilities in our studies beyond the regulatory requirements and now strive include disabled users in our research as a matter of course. It has sharpened our skills and expanded our thinking about what users perceive, what we communicate through user interfaces (including the choice of colors, shapes, and layout), how user interfaces must be more dynamic to meet the varying needs of our users, and how users respond to this dynamic product design.

Some of the other benefits of our focus on Accessibility have been very practical changes to product design including high contrast and adjustable type sizes for easier discoverability and reading, simplified use of language for increased intelligibility, improved consistency in user interface layouts and iconography (including responsive design), and multimodal content delivery such as captions and descriptions which improve the user experience for all users and many of which are absolutely necessary for some users.

Discussion

Creating a "User First" culture and making User First a company-wide goal has changed Yahoo and has established a new awareness of the role and value of UX Research within the company. Product teams are now aware of the wide variety of services we can offer to uncover user needs, set product strategy, and better understand user interactions with our products at all levels of fidelity. This has brought about real change, resulted in many new requests for UX Research services and has elevated the role of the UX Research throughout the organization. But most importantly, it has shifted the mindset of our employees to focus more tightly on understanding, and responding to, our users.

This is in stark contrast to perceptions of UX Research before this transformation took place. Several years ago, UX Research functioned more like a traditional research lab, conducting research that was of interest to the research team and who then had to "sell" it to various product teams with whom they rarely interacted.

The changes to the research practice included centralizing the team, embedding researchers with product teams, learning people's real needs, and moving in step with product development teams. These changes have led to not only a large increase in the number of studies run, but the direct applicability of the findings, and specific changes to both strategic direction and design. By providing results weekly, and answering key open questions at the pace of product development, input from users is now core piece to the planning of product strategy and features.

We've also found that enlisting the UX Research team on day-one when a new product team is created or a new product conceptualized ensures that the needs of real, diverse people drive feature and strategy planning instead of only the personal perspectives of Silicon Valley product managers, designers, and engineers. This results in products that better reflect and meet the needs of a wide variety of people.

Important to the CHI community, the changes we have implemented have not impacted our academic endeavors. This year alone, the team had made eight submissions to the Papers and Notes category as well as another two submissions to the Case Studies venue. We find no contradiction in having tight integration with

product teams and exploring academically-interesting topics.

This case study highlights how we have created a user first mentality throughout a global corporation with over one billion monthly users, and organized a UX Research team that can meet the needs of rapid, highly scaled product teams while incorporating user observation and feedback into every step of product planning and development. We hope that by describing our response to these challenges, we can encourage an open conversation at CHI about best practices for user research in large corporations and what others are doing successfully to include users in the product planning and design process. As the UX field matures, this discussion is becoming increasingly important, and will greatly affect the future of product development often these process-level discussions are not occurring at venues such as CHI.

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