Designing with Users in Internet Time

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You have three weeks to design an e-commerce application. Or three months to launch a "next generation" web site for a top videogame publisher, with a new identity system, an architecture that integrate dozens of new acquisitions, and immersive lowband interactions. How can you design with users when facing intense time constraints that necessitate simultaneous discovery user research and business strategy? Or simultaneous usage scenario development with the creation of interaction maps for a new digital service?

Two case studies demonstrate creative solutions to designing with users on fast-paced projects with large multi-disciplinary teams unfamiliar with human computer interaction techniques. Involving information architects, brand strategists, graphic designers, web developers and content strategists ensured that multi-disciplinary concerns contributed to prototype creation, test plans, ethnographic data collection, research analysis, and, most importantly, rapid implementation of findings. With the whole team immersed in all stages of user research activities, we were able to eliminate the need for formal research reporting, and at the same time enable user research findings to contribute site design, visual identity, technology decisions, brand and business strategy.

CASE STUDY 1: PAPER PROTOTYPING AN E-COMMERCE APPLICATION

Many e-commerce site developers are skeptical about involving users and working with paper prototypes. How can we incorporate customer research activities within tight time frames? Can paper prototypes create convincing interactions for customers to evaluate and improve? From a usability perspective, can a team simultaneously conduct discovery research to uncover usage scenarios while also developing the interactions and page level details?

These questions were faced at the outset of a 3 week project to develop the interaction for a new web shopping application for a specialty coffee retailer. Quickly assembled, hand-drawn prototypes created with six peoples' unique handwriting raise even more skepticism about inconsistency, realism and user confusion. However, not attempting participatory design risked the real possibility of creating an application that met business and brand objectives, yet failed to provide a compelling customer benefit and intuitive navigation.

Our multi-disciplinary team included a usability designer, information architect, project manager, content strategists, and two graphic designers. The prototypes allowed us to gain early and iterative user input into the application concept,

interaction flows, page level details, nomenclature and instructional copy. With no time for upfront research prior to design, our prototype became the vehicle for simultaneously conducting discovery research and developing the application's interaction flow.

Paper prototypes provided multiple benefits: for us, ease of quickly modifying the application; and for our users, a tangible yet unfinished interaction that was engaging and open to their alteration.

CREATING THE PROTOTYPE

The project team had no prior experience with paper prototypes, except for the usability designer. Two brief papers provided context about paper prototypes' benefits and practical advice on how to build them [7,10]. The team first considered the client's business needs and a tentative task set. The team then sketched on a whiteboard an interaction flow and identified two preliminary drill downs [8]. Prototype materials included craft paper, colored pens, Post-It notes, scissors, glue, and correction tape for data fields. The team used a copier to replicate common content elements on multiple pages. Despite differences in handwriting styles, the prototype used a common visual language remained consistent throughout; for example, all buttons were drawn as boxes and all clickable links were represented as underlined text.

SIMULTANEOUS RESEARCH ACTIVITIES

An ideal research schedule includes separate and discrete discovery and interaction research phases. It is valuable to have a clear understanding of your customers, their behaviors and tasks before creating page-to-page interactions and seeking user-generated improvements. Time constraints did not allow for this, so the project team relied on prior ethnographic research and character profiles [1, 4]. By using low fidelity, easily modifiable prototypes, the team knew that we would quickly learn if our application overlooked key user needs and that we could rapidly incorporate research findings into our evolving application [3, 9].

Discovery activities	**Interaction activities**
Character profiles	Interaction flows
Usage scenarios	Page level details
Tasks and features	Instructional copy and nomenclature

ITERATIVE TEST SESSIONS

We conducted twelve test sessions where target customers first described their offline coffee purchase patterns, their general online shopping experiences, and

their awareness of services comparable to our shopping application. Despite the fact that none were aware of this new type of shopping, users were able to grasp the application concept, navigate through purchase and edit paths, and offer suggestions for making the site easy to use and convenient. The user experience researcher led the users through open-ended questions and the prototype, with team members alternating between playing the computer by "serving" the pages to the participants and watching a video feed in an observation room. After interacting with the prototype, test participants offered insights into usage scenarios relevant for them.

The project team revised the prototype daily and between almost all the test sessions. Revisions ranged from changing nomenclature to reworking entire pages. Iterative testing took on a two phased approach. During the first phase, major kinks were resolved with the handcrafted paper prototype. For example, users convinced the team of the value of full product descriptions and educational content. Users alerted us to their need for seeing instructional content pertaining to shipment arrival date surfaced at a higher level in the interaction flow. Mid-way through the ten days of iterative testing, we transferred our hand-drawn prototype to more formal interaction pages in Adobe Illustrator, which would be used at the end of the development period for client approval and rapid progression to a visually designed "look and feel."

CONCLUSIONS

Rapidly creating an e-commerce application succeeded due to paper prototyping and multi-disciplinary team collaboration. Ideal research practices yielded to constraints and flexibility, including conducting discovery and interaction research simultaneously. Guided by skillful moderation, research participants not only tolerated but embraced low fidelity prototypes. Users demonstrated greater attention to hand-written script, including their own, than digital copy. They also displayed greater eagerness to offer improvements than is often the case with testers of more polished HTML, on-screen prototypes. We hope this paper encourages other e-commerce teams to consider incorporating multi-disciplinary, human-computer interaction activities as part of interaction design.

CASE STUDY 2: THE GAME'S NOT OVER

Is "user testing" merely a reliable and timely means to prevent design disaster, as Edward Tufte argues in his national one day seminars? Is our role to reduce the interface to the lowest common denominator? How do we stop saying "no" to web site developers and start to contribute with creativity and solutions?

Human computer interaction experts working on the web have ambitious aims: using customer insight to solve complex business and brand problems by creating innovative user experiences. Customer-centered web designers accomplish this by employing a range of user-centered activities across the product development life cycle, and by involving multi-disciplinary teams as participants rather than consumers of user experience research [1].

This case study examines how collaborative interaction ethnography and iterative user research yielded rapid insight into a client's customers and supported the creative resolution of business, brand, creative and technology challenges [5,11].

THE CHALLENGE

A major video game publisher came to us to launch a new internet platform for what remains a largely console-based industry. Faced with fresh competition from new players, including Shockrave and Yahoo Games, the Publisher asked us to replace their existing sites with one that would establish them as the online entertainment destination. The Publisher had grown through acquisition, and its existing sites were largely "brochure-ware" full of lengthy marketing copy and

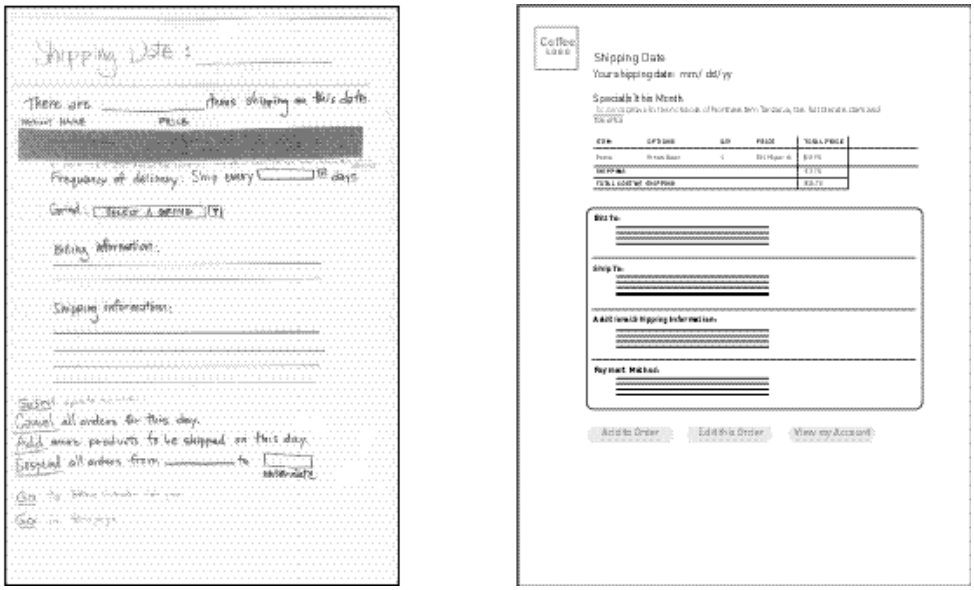

Fig 1: Hand drawn and Illustrator prototype screens.

poorly integrated sub-branded sites. Our job was to invent and express a new digital business strategy by building a platform with a consistent brand experience and personalization, e-commerce and community features.

THE ESSENCE OF GAMING

In order to create an engaging site that would succeed within business, technology and customer constraints, our project team realized that we would first need to understand the essence of gaming. The twelve person team, including graphic designers, information architects, creative lead, site developers, content and brand strategists, visited small groups of gamers in their rec rooms, bedrooms and living rooms to understand passionate play. Our overriding questions were: What is it about gaming that frequently produces uninterrupted hours of human-electronic toy interaction that eclipses regular habits of eating and sleeping? How can we express that immersive, console-and-television experience online?

RAPID RESEARCH

Within a ten day period at the start of the project, we met thirty-two mostly teen and mostly male gamers. Observing and interviewing them in small groups allowed us to understand the social aspects of game play, and provided us rapid insight into youth and young adults lacking the verbal skills many of us take for granted. During concept and design, we conducted weekly iterative research and testing in our office lab. Among our qualitative findings were console gamers' frustrations with PCs [6], an overwhelming preference for visual designs that include Cameron Diaz, spelling difficulties that impede web browsing, and online interests centering on adult entertainment. Based on their game play and internet usage, we observed that gamers expected responsive interactions: they wanted their clicks to produce instantaneous sounds and movements on-screen. Server delays and downloads ran a high risk of alienating our customers, whose impatience is more extreme than most web users.

Fast responses and addictive play would be difficult to achieve within the technology constraints of slow telephone modems and our 28k baseline. We could not simply re-create the video rich console games on today's internet. Finding a solution required satisfying user requirements and redefining the Publisher's internet strategy.

NON-STANDARD GROUPINGS

The project team's iterative user experience research generated key creative solutions to business, brand and technology challenges. Because the Publisher was known for only a fraction of its popular titles, we rejected standard game genres [similar to video stores' categories of action, drama, comedy, new releases] and instead invented new categories that spoke to the emotions of gaming and enabled visually rich and original designs. As even the most ardent advocate of web usability notes, there are occasions where non-standard treatment is warranted [2].

Non-standard groupings shifted the focus from the games to the gamers. Our extensible architecture also provided brand benefit by introducing customers to new titles beyond single genres such as sports, action, flight, first person shooter, and racing. We allowed our research participants to define game associations not captured in traditional genres and then surfaced in the information architecture games that spoke to similar gaming emotions. For example, sports and action games are often separated. We learned, however, that someone who enjoys hockey games is likely to also enjoy deer hunting.

Standard Genres	**New Clusters**
Action	Adrenaline
Racing	Fuel
Subject matter	Emotional states
Focus on games	Focus on gamers

IMMERSIVE NARROW BAND INTERACTIONS

In a physical environment, content can generally be organized along a single typology; for example a video store can organize titles by movie stars or by standard genre. In digital platforms, there can be multiple ways of organizing and navigating content. Our challenge was designing satisfying interactions that would propel gamers across our site.

The information architect on the team discovered, buried in the existing site, a simple, branded interaction that could be personalized, printed and pasted on kids' walls or emailed to friends. We surfaced this interaction in testing, and were amazed by the overwhelming response. The development costs for these simple toys were a minuscule fraction of creating full online games, and they could be enjoyed on slow speed internet connections with no downloads. Our site architecture enabled these narrow band personalized interactions to serve as an additional method of navigating the site.

CONCLUSIONS

Collaborative user-informed site development generated a digital expression of the playfulness and addiction of offline gaming within technology, business and brand constraints. Iterative research throughout the project life cycle enabled design solutions that satisfied customers and redefined the Publisher's internet strategy.

Conducting ethnographic research at the project's beginning ensured that gamers remained at the center of design. Gamers' physical environments, social networks, and largely non-web entertainment informed how our site should look, sound and behave. As we developed concepts and designs, iterative testing, with the same gamers we had met in their homes, spurred our creativity and informed our design.

Involving the whole web design team in iterative customer research and testing serves multiple purposes. Collaborative team research ensures that a wide range of design questions can be surfaced swiftly with target users. Given the compressed time frames of all e-commerce site development, multi-disciplinary research design, first hand observation and on the fly analysis make it possible to get close to customers and rapidly apply research insights.

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