Gusto

Uniting shoppers with stores according to motivations and style preferences

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http://gustoapp.herokuapp.com

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INTRODUCTION

T here is no question that e-commerce has dramatically altered the way consumers seek, buy and sell goods in networked society. Over the past two decades, numerous innovations and iterations have led us to our current state, one in which an Internet-connected consumer in the United States can buy virtually anything with the stroke of a key. These are unprecedented times, and they introduce great opportunity for gains in transactional efficiency and availability. As is so often the case, however, these Internet-driven gains come at a price. The more we buy and sell online, allowing search algorithms to drive our discovery, the less time and interest we have available for exploration of physical alternatives in the world around us.

Research and common sense suggest that online transactions lack certain affordances that are normally found in the real world. For example, it is difficult to know if a shirt will fit without trying it on. Just as it is hard to tell if a photo of a painting precisely represents the colors as they will look when the actual canvas is received. For reasons like these, consumers continue their patronage of retail shops and frequently seek out tangible goods at stores ranging from local merchants to big box warehouses. An interesting question, then, is where the line between digital convenience and physical affordance actually sits. What prompts a consumer to buy in the real world? When does e-commerce fail to fulfill a shopping need?

The Gusto team set out to pursue this line of inquiry, driven by the idea that exploration may lead to an opportunity to re-envision the e-commerce experience. Through a review of prior academic efforts combined with in-person user research, we began to unearth common themes driving different consumer behavior; namely, that online commerce is very good at isolating a product and very bad at encouraging free-form exploration.

Major retailers tend to use a similar format to sell their goods online: users can either search for specific goods or else work through a faceted classification system to find what they want. In both cases, the expected goal of the consumer is to find a targeted individual item and then buy it. Understandably, these sites emphasize speed of search and encourage consumers to reach a point of transaction as quickly as possible.

The problem is that not all consumers know exactly what they want nor do they always want to transact as efficiently as possible (Chocarro, 2013). There's a risk, for example, associated with the sight unseen purchase of big-ticket items like a couch or a television; these items require a large upfront investment and can be difficult to return if they don't meet expectations. What's more, consumers often enter the shopping experience in exploratory mode, with a hedonic motivation less focused on a specific product and fueled instead by a sense of adventure and accomplishment derived from successful discovery (Tauber, 1972; Arnold and Reynolds, 2003). While one can explore in some ways online, such activity is resisted at every turn by systems designed to segment customers and channel them towards purchases. Physical retail experiences are often very different, inviting consumers to browse, ask questions and take as long as they need to pick the items that suit them best.

It is also true, of course, that physical stores present their own challenges. Stores don't always have what a consumer is looking for and the cost of finding that out in terms of time and physical effort can be significant. It can be challenging to identify the specific store or set of stores that will most effectively accommodate a need, particularly if that search is happening online. Not all stores have online sites, making it sometimes difficult to get a feel for the style of the experience or the type of goods to expect. Review sites like Yelp often help provide some direction, but they have their own complications. For example, crowdsourced repositories are at the mercy of user bias and ratings can be misinterpreted. What is outrageous for one consumer may be perfect for another and thus asking both to rate on the same 5-star scale

presents challenges of consistency and expectations. Another side effect of crowdsourced store ratings is that shoppers might "default" to choosing businesses with popular support and high visibility, like retail chains, because they satisfy certain baseline needs, even if certain lower-profile alternatives might actually be more satisfying overall.

For the consumer that prefers variety and an in-store shopping experience, searching for stores on the Internet can be a frustrating experience. Unless explicit terms are entered, web searches tend to return a predictably commercial result and the biggest chains rise to the top. These stores benefit from strong brands and marketing teams dedicated to optimizing web visibility. For people who actually enjoy the act of shopping, this generic search process fails on many levels: It is not exploratory, it does not offer a variety of options, and it poorly adapts to an individual's personal style; and yet few viable alternatives exist.

The Gusto team identified this information gap as a challenge worth addressing and set out to re-think the digital relationship between shoppers and the brick-and-mortar stores that fit their style. Fundamentally, the underlying problem appears to be one of search quality and trust. We propose that in order for users to take more risk and travel to lesser-known retail alternatives, they must have confidence that the options presented to them are relevant to their particular needs. Additionally, for a store to warrant consideration by a shopper, certain details must be presented in a clear, concise manner and its quality must be validated by a trusted party.

GOAL

Armed with academic and user research, the Gusto team sought to develop a service that could address three interrelated shopping problems:

1. Online shopping poorly satisfies hedonic and exploratory consumer motivations.
2. Brick-and-mortar store information available online is often biased, incomplete and/or unreliable.
3. Current store-search sites fail to adequately address the various costs associated with going to a store.

The team's belief was that a single redesigned search site could address all three of these areas intelligently, lowering exploration risk for consumers and increasing exposure for smaller, local merchants. If successful, such a product would overcome common local search issues including crowdsourcing bias, limited online presence/reputation for local merchants, and consumer paralysis from information overload. Gusto would aim to solve one deceptively complex problem well: **To return clear, concise, high-relevancy matches to a consumer that wanted to find local stores - not goods - that fit their personal style and immediate in-market interests.**

APPROACH

In the report that follows, we detail the process of discovery, iteration and development leading to Gusto in its current form. We believe our academic rather than professional orientation has allowed us to take a more holistic approach to store search, with a reduced focus on revenue and an increased awareness of consumer and merchant need. That approach coupled with intelligent site design and iteration informed by usability testing gives us confidence that Gusto is poised to competently solve a legitimate information availability problem. Our discussion will also identify the many potential hurdles to development and adoption at scale. Whether or not we pursue Gusto after graduation, the project has helped us understand the relative homogeneity of existing e-commerce sites and the many opportunities to innovate upon that model from a more human-centric viewpoint.

One of the benefits of addressing a popular research area such as commerce is that there is a proliferation of academic literature to draw from. The Gusto team was interested in exploring multiple areas of this research and focused its effort on reviewing relevant literature written during the Internet Era. We were specifically interested in articles during this timeframe because we wanted to better understand the interplay between online and offline commerce. Thus, the bulk of scholarly articles, papers and reports we relied upon were written in the early 1990's or later.

The intent of this literature review was to identify common themes to inform our hypotheses and product design. Knowing that some of this research would be over a decade old, we carefully evaluated insights and findings in light of modern-day shopping trends; in general, however, even the oldest research findings still proved quite relevant.

After collecting all available articles, we found that most literature attempted to address one of two common questions, each of which significantly guided our product idea and design.

1. What distinguishes the experiences of online shopping and those of in-store shopping?

2. What motivates people to shop?

ONLINE AND IN-STORE SHOPPING ENVIRONMENTS

E-commerce's impact on consumer behavior has been wide ranging. The Gusto team felt it was important to explore research that contrasted online and offline/"in-store" shopping, specifically looking at how the experiences differed in terms of choices offered, motivations, and types of us understand what shopping behaviors were unlikely to change and what frustrations had yet to be resolved.

Chocarro et al (2013) explored situational variables that affect the choice between shopping online and offline. The researchers identified that the type of goods sought in the shopping experience were primary factors in the online/offline decision. In creating a typology of goods, they identified four categories along two dimensions: search goods vs. experience goods, and high-involvement goods vs. low-involvement goods.

Search goods are those that have attributes that can be identified prior to purchase. These goods are great for online shopping. The buyer knows more or less exactly what they want and how they can find it easily. **Experience goods** are those that can be purchased only after previewing. Touching or trying something on is strongly considered in order to make the best purchasing decision possible. **Low-involvement goods** usually have a lower monetary value and are bought frequently. These goods provide a lower risk to the buyer. **High-involvement goods** are goods that have higher monetary value to the shopper and are only purchased every so often.

The research concludes that in-store shopping is most conducive for the selection and purchase of high-involvement, experience goods. This influenced our decision to focus on "style-driven" goods, such as clothing, decorations, and furniture, all of which are reasonably-high-involvement experience goods that often require in-person evaluation.

Chocarro et al (2013) also suggested that the offline vs. online decision often was heavily influenced by costs. In most cases, these costs are higher in offline shopping experiences: transit time, parking headaches, crowded stores and long lines are just a few of the annoyances that are avoided when shopping online. When constructing Gusto, addressing the costs associated with different brick-and-mortar stores would therefore be critical in helping people identify which outlets pass muster in situational cost-benefit analyses.

Non-Product-Oriented Shopping Factors

From a store's aisle width, to clutter, to scent and personnel engagement, research has shown that almost everything about a physical shopping environment can potentially influence a consumer's experience (Baker, 1986). In a seminal 1972 paper, EM Tauber hypothesized that "In the future, the ability [for a store] to gain a distinct differential advantage may depend of catering to shopping motives that are not product related" (Tauber, 1972). Today, these environmental considerations are often insufficiently incorporated into product-centered online stores, leading to sub-optimal shopping experiences. As Babin and Attaway (2000) concluded, "if the physical aura within an environment evokes positive affect as opposed to negative affect, consumers will perceive greater value from their time, and the increased value serves as a reward encouraging further patronage." Researchers have consistently identified factors such as a store's size, design, decor, and ambience as being significant contributors to shopping pleasure (Baker, 1986; Cox, 2005).

The way people view themselves also plays a significant role in how much they might enjoy a particular store. According to Breazeale (2013), shoppers subconsciously evaluate stores through "self-image-congruence" which evaluates how much a store matches a person's idea of their own character and image. This may involve the store decor, the character of the staff, and the music playing through the speakers. Our team, therefore, sought to assess shoppers' styles and personalities as a way to make store recommendations more harmonious and relevant to the user.

In summary, the research on non-product-based shopping factors lends support to our hypothesis that current online retail offerings do not sufficiently meet the needs and desires of certain shoppers. In other words, for some things, it still remains that nothing beats going to a brick-and-mortar store. These particular concepts were the driving force behind Gusto's design and development, and provide the support for the distinct value proposition that our project offers: that by discovering what a person likes about shopping and gauging their personal style, we can find stores that are a great match and make their shopping experiences more enjoyable.

SHOPPING MOTIVATIONS

Having utilized research to inform our hypotheses on the unique benefits of offline shopping and the qualities of stores that our system might incorporate, we subsequently needed to focus on the users themselves. In particular, we propose that, depending on the day, a shopper may be looking to get different things out of a shopping experience: One day they may be looking to browse and explore, and the next day they are more goal-oriented. This proposition feeds our hypothesis that current online shopping sites do not sufficiently accommodate the different reasons that a user may be looking to shop at a particular moment.

Over the past few decades, dozens of researchers have developed typologies for shoppers by identifying the various reasons that they shop (Tauber, 1972; Cox, 2005; Arnold and Reynolds, 2003). In designing our product, it was necessary to dissect this research, find commonalities and consistency between the typologies, and distill them down to a small set of descriptors that could be incorporated into our data models and interfaces. We grouped the dozens of "shopper motivation" terms in a hierarchical organization process that involved analyzing the data underlying the typologies to find terms that were similar in meaning. These terms were then grouped and bucketed under more abstract descriptors.

Utilitarian vs. Hedonic Shopping

In general, the prominent research tended to identify two distinct underlying shopping motivations: utilitarian and hedonic - or, perhaps described as "shopping for work" versus "shopping for fun" (Babin et al, 1994; Childers et al, 2001). Most research assesses utilitarian shopping motivations as devoid of any significant pleasurable aspects. This kind of motivation is often better served by online shopping, with its focus on product, efficiency, and convenience.

Hedonic shoppers, on the other hand, find some form of pleasure or satisfaction in the act of shopping. Whereas utilitarian motivation emphasized efficiency and convenience, hedonic motivations are more likely to be influenced by the overall sensory experience. This was an area that appeared highly relevant to Gusto's objectives, as online shopping and store searches often fail at appealing to significant hedonic motivations of shoppers (Chocarro, 2013).

Gusto's Typology of Shopping Motivations

Many researchers have focused on dissecting hedonic shopping motivations into their core types. While these studies broke down motivation at different levels of granularity, some commonalities are present throughout. The first of these can be generally described as **"Adventure"** motivations - which include diversion from life's stresses (Tauber, 1972), "Idea Shopping" or seeking new trends (Arnold and Reynolds, 2003), shopping to socialize (Backstrom, 2011), and shopping for sensory experiences (Cox, 2005; Tauber, 1972).

The second general motivation is the desire for **bargains**. This factor weighs prominently in essentially every study on the topic; in fact, Cox et al (2005) found that bargain-seeking was the most common component of shopping pleasure across all age groups. Occasionally referred to as

"hunters", bargain-seeking shoppers are motivated by the thrill of finding good deals on unique items. Ambience and socialization are less relevant to these individuals (Cox et al, 2005).

Finally, every study acknowledged that, of course, not every shopping activity is prompted by pleasure-seeking; people are often motivated by **utilitarian** needs for actual items. In these situations, the costs associated with the shopping experience, whether they be related to time expended, the physical surroundings, or the social environment, all weigh into a shopper's decision of where to shop (and whether to do it online, where costs are minimal) (Chocarro, et al, 2013).

Therefore, from this research, we established three categories with which we would allow the user to describe their current shopping motivation: **Adventure-seeking, Bargain-seeking, and Convenience-seeking.**

TAKEAWAYS

Overall, during the research phase, our team learned that the reasons that people shop are complex and multi-dimensional. However, researchers have consistently concluded that the multitude of shopping motivations can be generalized into a few higher-level ones. In reality, of course, no one single motivation is likely to comprise a person's desires when shopping. That said, we hypothesized that understanding a user's primary motivation in a given moment can be of immense assistance in filtering out irrelevant options, maximizing the likelihood of search success, and minimizing cognitive strain. We translated this hypothesis into design ideas which focused on this simple solution to improving the store search and shopping experience.

CONTEXTUAL INQUIRY

To complement our academic research, we also needed to identify and speak with our target users. As a starting place, we identified store owners and shoppers in the Bay Area as an acceptable sample population (Appendix 1). We initially cast a wide net, meeting with consumers, store staff, owners and industry professionals from related companies like OneKingsLane.com. All of these interviews helped us better understand the e-commerce landscape and where Gusto might fill a gap within it.

Our inquiry continued to focus on the relationship between in-person and online shopping. We wanted to hear from both store owners and consumers to understand their unique points of view. For instance, what did store owners do to draw in customers? When did they feel they lost customers to online alternatives? Why did consumers still go to physical stores? When did they prefer to shop online? Our team developed a template of questions for each side and then proceeded to interview a variety of relevant individuals.

From the store owner's perspectives, the reaction to Gusto's idea was positive. Though some initially appeared skeptical of another technical "solution" entering the commerce space, store owners quickly realized Gusto's intent was to actually deliver customers to stores. A theme also emerged related to the place of a local store as a part of the community, not just a source of inventory. For example, Ivan, the store owner of Artillery in San Francisco's Mission District, noted that his store "serves a community outlet for people to purchase a product. Why do you want to sit in your house and open a box?" The stores viewed themselves as curated, particularly organized collections of merchandise serving a community need that could only adequately be fulfilled by a human.

We also interviewed a broad range of shoppers to find out when they chose to shop in-person and what, if anything, they found satisfying about that experience. We quickly realized even those who do most of their shopping online were not opposed to in-person shopping. Instead of being tied to preferences related to the experience itself, decisions were often tied to product availability and the physical or emotional cost to seek it out in person.

For those shoppers that enjoyed exploration, in-store shopping provided an experience online shopping could not:

"Sometimes physical shopping leads me to new discoveries." - Marita, age 30

"Shopping in stores gives me ideas. It's an aspirational tool to help me figure out how to decorate." - Christine, age 28

Shoppers that tended to buy things online noted that they still enjoyed the idea of shopping in-person, even if the costs of doing so had become prohibitive:

"I used to enjoy shopping in stores before my kids were born. I derived satisfaction from finding the best item or fit. Now, time is the limiting factor above all else." - Matt, 35

The more interviews we conducted, the more obvious it became that shoppers broke out into distinctive subgroups typically related to a personal equation balancing the value of time and energy against the value of finding the right store or item.

VALIDATION

The most important conclusion from our initial user research was that a majority of the responses we received validated the research we had reviewed. By conducting a wide array of interviews, we were able to reinforce the hedonic

and utilitarian divide outlined by academic research. What was more, any single user might shift from one mindset to the other depending on circumstances. For Gusto to offer a truly improved solution, it would need to be able to accommodate either mindset.

After completing our academic review and initial user research, the Gusto team met to aggregate the results and begin the process of developing a design concept. Our planned approach involved three distinct steps:

Brainstorming and Affinity Diagramming

In this phase, we planned to extract key insight from research, broken down to small points that could be written on sticky notes. That would then give us the ability to manipulate those ideas, reduce them down to the essential themes and ultimately identify the concepts most valuable to our project.

Persona Development

Using insights derived from the affinity diagrams, we planned to outline typical users of our product and to define them in realistic terms by creating representative personas. In order to make these personas come to life, we intended to build out a full profile, including personality and behavioral details that weren't directly relevant to Gusto-specific activity.

Scenarios

Scenario development allowed us to apply our personas in envisioning the common circumstances that would motivate a user to use Gusto. This exercise was expected to surface key themes and pain points that Gusto could address with its redesigned search experience.

As intended, the process of working through each stage helped provide project clarity and highlighted the attributes that mattered most in addressing the problem areas. In fact, at times it felt as if the process actually surfaced too many opportunities, requiring a final round of scoping and perspective to keep the development plan reasonable for the timeline allotted. The details of each part of this process are outlined in the rest of this section.

AFFINITY DIAGRAMMING

Our affinity diagramming process involved a review of all user research to call out key insights and included the posting and organization of those insights on a whiteboard. Each team member then selected and ranked the items he or she deemed most important.

The result of this process was a matrix that allowed us to logically cluster items into themes, identifying whether items applied to online or offline shopping, and into which problem area they fell. "Parking is important," for example, was an insight that was relevant only to offline shopping
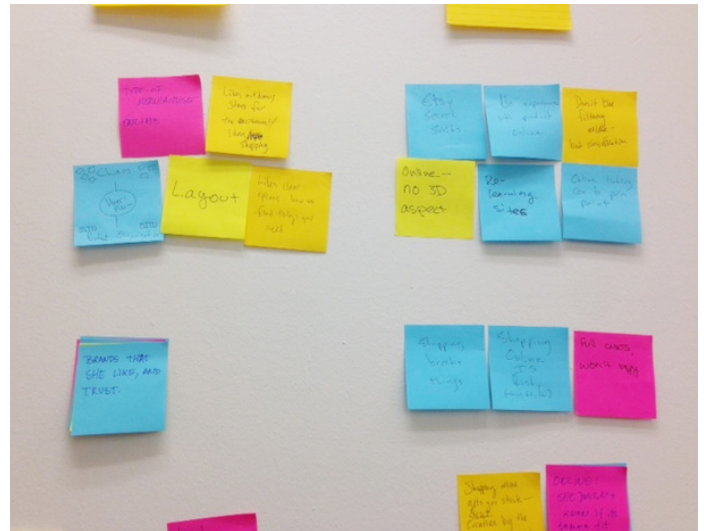
and that fit most logically in the shopping motivation category of "convenience." As our matrix crystallized, we began to remove items that, while interesting, were not relevant to our project, ultimately leaving us with a collection of the most important insights, organized by key research themes.

The final step of our diagramming process was to have each participant select three sticky notes that they felt were most important. This was intended to surface the most striking insights and most significant pain points in order to focus Gusto on areas of biggest potential impact. As hoped, three key themes emerged:

Online shopping is unlike in-person shopping
Consumers frequently brought up the stark differences between online and in-person shopping. Online shopping lacked the multi-sensory experience, made it hard to get a feel for the store and was less likely to inspire discovery. Brick-and-mortar stores, however, were less efficient, and introduced a variety of logistical and emotional costs.

Shopping is a risk equation
Consumers frequently referenced the risks associated with the uncertainty of shopping. People mentioned that it is frustrating to order items online that don't end up fitting; conversely, it is annoying to drive to a store just to discover it doesn't have what they need. Decision-making, whether utilitarian or hedonic, often came back to a calculation of risk and reward for a shopping decision.

Store, not product
Consumers, particularly those with hedonic motivations, were frustrated and unsatisfied by online tools to find brick-and-mortar stores. They sought alternative ways to identify stores with products and traits of interest, where results were explicit and could be trusted.

These insights began to build the backbone for the Gusto idea: could a website be created that catered more to human shopping instinct and delivered options for brick-and-mortar shopping that had a high probability of success? In exploring this question, our next step was to envision what Gusto's core users might look like and how they might interact with the system.

PERSONAS AND SCENARIOS

The affinity diagraming process produced two distinct personas. Each had a rationale for wanting to find local stores to visit, but their motivators were quite different. By developing each persona fully, including personality, demographic information and shopping habits, we were able to construct two semi-complete images of our target consumers:

Emily
Emily is a single, cost-conscious graduate student with an eclectic sense of fashion and more time than money.

Matt
Matt is a married, mid-30s tech worker with limited time to spend searching for items, but a desire to occasionally find clothes and furniture that uniquely reflect his style.

We also then created a separate persona for a shop owner to represent someone who would be motivated to fill out or update a store profile for Gusto. The team developed problem-based scenarios that our personas would likely find

themselves in. This process helped us envision how real-world interaction between our target audience and our application might work.

SCOPE

It became apparent that Gusto's ambition was likely greater than its resources. Therefore, the team engaged in a process of scoping in order to focus on building an effective minimum viable product that successfully and simply solved the problems we identified. To that end, we isolated the most important features that would set Gusto apart from existing e-commerce and store search sites. See **Table 1.**

It is always difficult to make decisions about what to include and what to cut, but ultimately the Gusto team focused on the minimum elements necessary to focus on innovation related to the three key insights from our affinity diagramming. Returning to those themes helped us at later points in the process as well, when minor details or long-term vision sometimes sidetracked us from the task and time frame at hand. In both cases, we kept copious notes so that we could later reference those ideas if warranted by future development.

VERSION 1 PRIORITIES	FUTURE VERSIONS
Upfront assessment of personal style preferences	Incorporation of social media detail to validate/enhance storefront profiles
Common language questions to help identify shopper mindset	Allow multiple people to input store profile information
Simple options to narrow search by selecting semi-abstract attributes	Highlight detail to validate/enhance storefront profiles
Result page highlighting stores, not goods	Provide a mechanism to vote up/down store profiles and categories
Emphasis on transparent visual cues to help a customer determine a good fit	Auto-generation of placeholder store profiles to seed database
Vector-based search algorithm to cross personal style with shopping motivations	Ability to save stores to a personal list
Manual store entry form to populate database with uniform vocabulary	Allow user to connect to Pinterest and other accounts to feed style profile

**Table 1: Feature sets for current and future versions**

We transformed our initial design ideas into a high-fidelity prototype to begin the process of visualizing and testing our site. Our goal at this stage was to design a simple, clean interface that touched on the core questions and problems that we sought out to address.

Because our site structure was relatively simple in terms of pages, navigation, and functionality, and anticipating limited time to test and iterate, we felt it was appropriate to build and test a prototype with a higher level of detail than offered by popular prototyping software. Thus, we decided to build our prototype in HTML/CSS and JavaScript, to allow the user to experience the site much as it would feel in a real web-browsing session. This allowed us to implement certain JavaScript interactions and other user interface details that would have been difficult in a lower-fidelity, software-based prototype. As a result, we were able to get nuanced reactions and detailed feedback during testing.

The higher fidelity of the prototype also enabled a smoother transition to the final prototype, which we developed in Ruby on Rails. The primary sections we sought to incorporate in our prototype were:

1. The main store search page, with a search/filter bar and a results list

2. The store profile page

3. The surveys used to record a user's style preferences

At this stage in our design, we planned on incorporating a significant level of detail with which the user could learn about and interact with each store. Through our subsequent design and needs discussions, we ended up altering and removing a good deal of complexity.
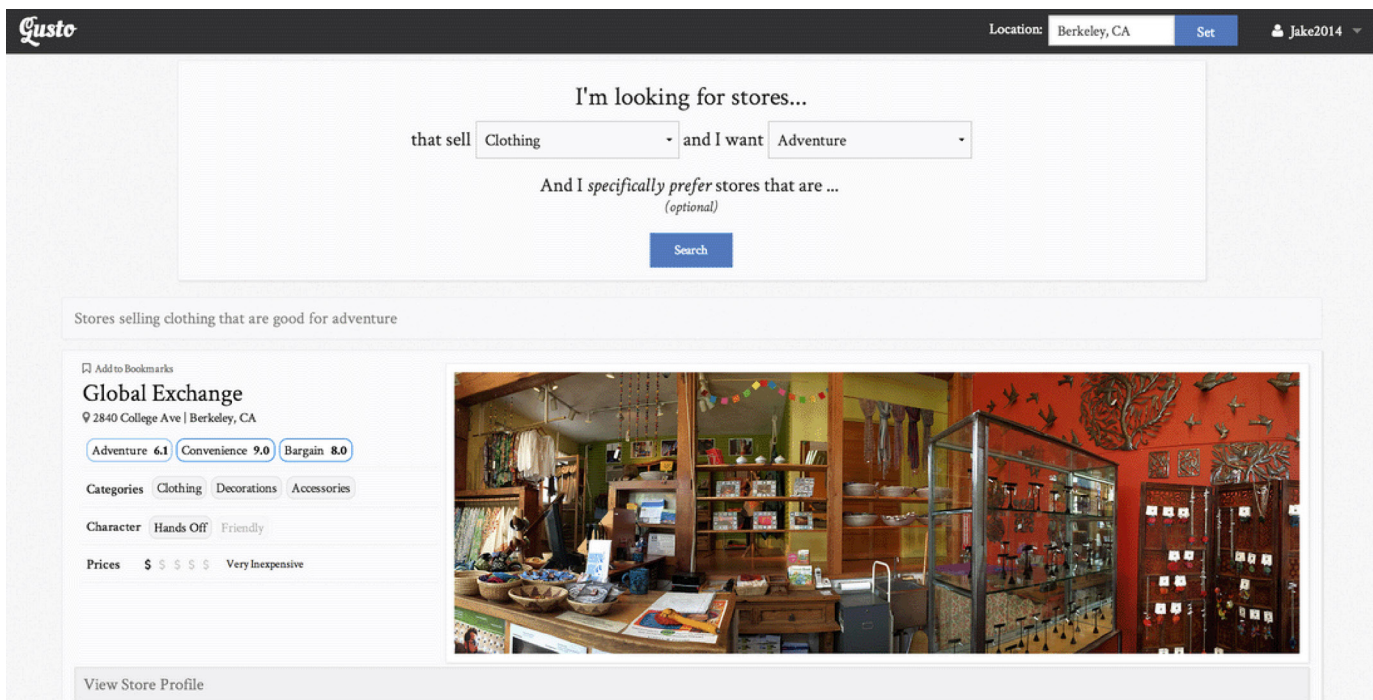
Hi-fidelity Prototype and Styling

For instance, our first iteration of the store profile page included a breakdown of each store attribute "score" (e.g. "Noise level") into component parts: the store owner's rating, an expert's rating, and the community rating. In subsequent versions, we removed this complexity. This decision was based on our goal of simplifying the user shopping experience while focusing on more abstract, rather than more granular, ways of describing stores.

Additionally, our prototype included feedback mechanisms through which users of the site could register their own ratings of each store attribute. We eventually decided to remove this interactive feature, as it was not an essential functionality, and its inclusion would have introduced significant technical challenges when building our final product in Ruby on Rails. In considering the limited time we had available to build the site, we decided to forego this complexity and focus solely on core functionality.

Gusto's first functional prototype coincided nicely with our planned timeframe for another round of user research. Rather than needing to use true lo-fi prototypes, we were able to test reactions using a functioning website that could legitimately represent some of the basic activities we expected users to undertake. That process provided excellent validation for some of our concepts and also highlighted areas that needed to be improved. Below, we describe the three key components of this testing process.

FORMATIVE EVALUATIONS

A core premise of Gusto is that searching for local stores should be intuitive and simple. Formative evaluations were a good fit for this goal because they typically involve assigning a task to a user and then observing without intervention. If Gusto was to be as straightforward as we intended, a user should be able to intuitively move through the store search process.

With each user, our team set up the Gusto demo on a computer and then asked users to proceed through a series of simple tasks, such as sign-up. As users worked through each task, they were asked to use the "think out loud" method and describe their thought process as they proceeded. Gusto team members were then able to take notes and record observations without interfering in the natural thought process. At the end of this process, we had a collection of notes and observations that we then synthesized into key feedback points.

The formative evaluation process led to a number of important positive conclusions. First, our ongoing battle to keep the site as simple and elegant as possible was working; users enjoyed the clean interface and natural language related to search options. Second, the concise and visually-stimulating display of results was meaningful. Users responded well to the visual cues provided by panorama-style photos. Finally, and perhaps most importantly, users were willing to trust curated feedback rather than social feedback. There was an appreciation for the simplicity and consistency of the curation model, though users did often look for socially-driven features such as reviews and likes.

There were, naturally, also more critical points of feedback. For one, users did wish for more information about why certain results appeared when they did. It became clear that even though we had the scores for "Adventure", "Bargain" and "Convenient" next to each store, those ratings weren't standing out sufficiently enough to help users easily gauge result relevancy. Users also had a tendency to ignore the optional dropdown with additional filter options on the search page. When they found it, it seemed obvious, but it wasn't uncommon for them to miss it altogether. As mentioned above, users also exhibited an expected desire to see indications of why they received the results they did.
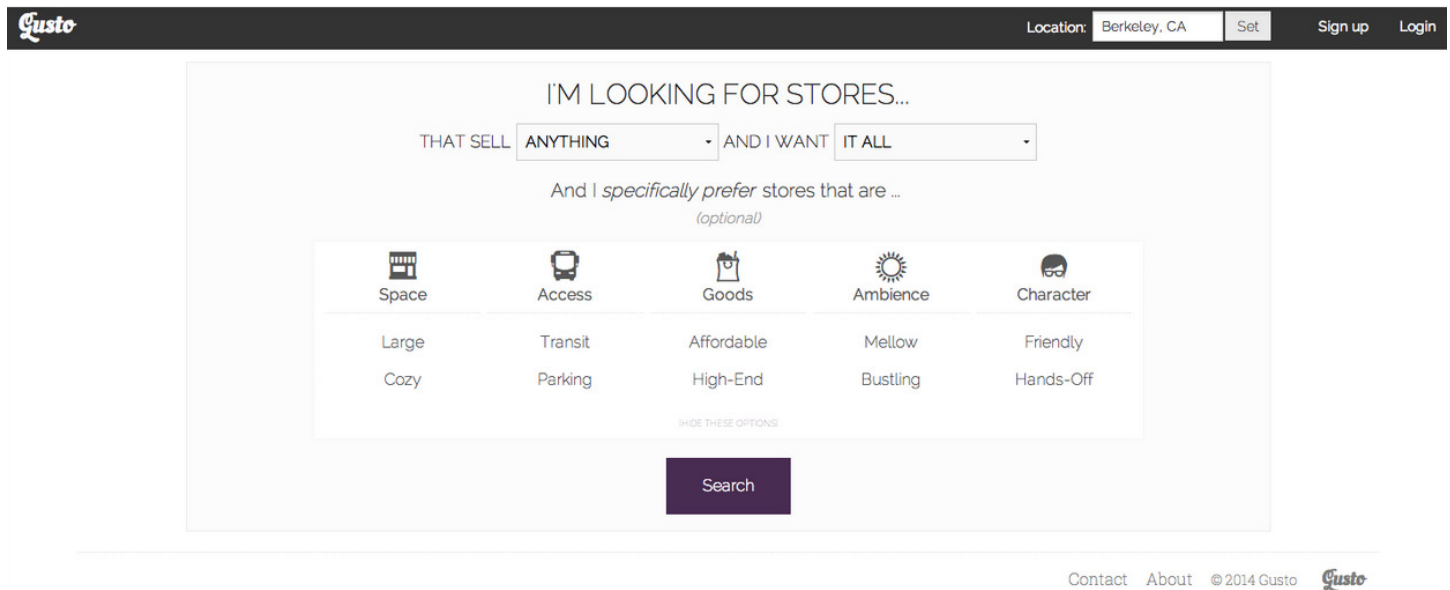
ITERATION

With our feedback synthesized, the Gusto team set out to make a series of modifications intended to address various concerns and problem points. This included new highlighting on results pages to call out store scores and the possibility of always showing secondary filter options. For each potential innovation, we rolled out the change to our prototype and then conducted another series of more targeted formative evaluations to determine the effectiveness of the modifications.

This process of iteration would continue until our planned "drop-dead" date at which point we would lock the version we had in preparation for final project delivery and presentations. It also forced us at times to accept that some things were "nice-to-haves" in the eyes of our team or our users, but couldn't reasonably be included in our development timeframe. As is almost always the case in software development, we were forced to prioritize based on all available data points and

had to routinely acknowledge that some things were going to be left out. The delivered version of Gusto represents our preferred version based on user feedback, technical capacity and our team's best judgment.
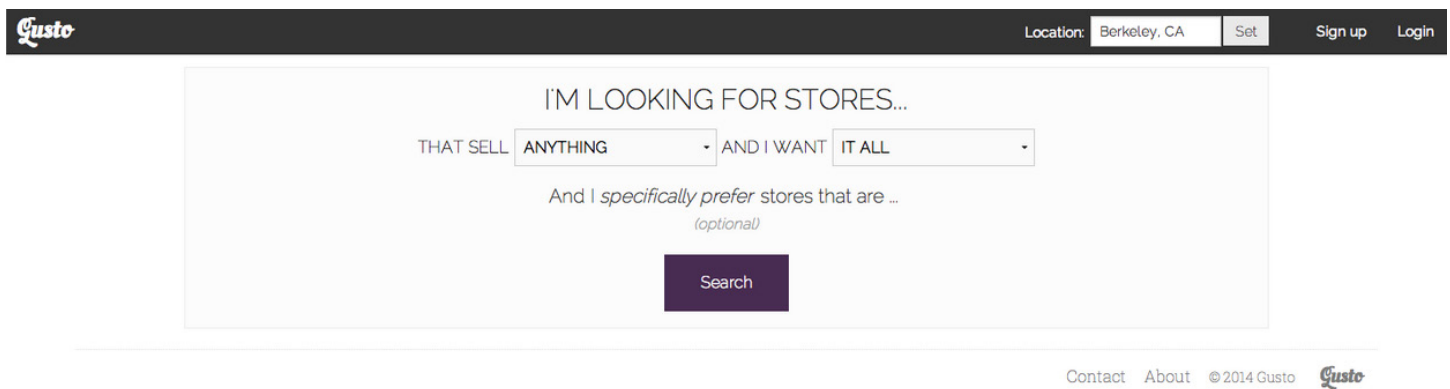
Iteration, Search

Iteration, Search Expanded

DEVELOPMENT

We decided to use Ruby on Rails because it is an open-source web framework that has been optimized for rapid development. Compared with other frameworks like Django (Python), or Zend (PHP), Ruby on Rails' design allows developers to create functional prototypes without writing and specifying all the methods and logic that they intend to employ. Its structure avoids useless programming and repetition, extracts the model from the database without writing specifications, and includes powerful tools like scaffolding, which allow developers to create complete usable components in a short amount of time.

Ruby on Rails' ecosystem includes a vast catalog of libraries that facilitate the creation of fast prototypes: authentication, cloud services, geolocation and other such libraries were added to our prototype with minimal effort. Ruby on Rails is also deployable on Heroku, a cloud platform as a service (PaaS) that is currently hosting our website. This combination of characteristics (fast development and cloud support) were essential in order to create a fully functional website in the timeframe available.

DATA STRUCTURE

Offering users relevant results that match their preferences was a significant early challenge. We wanted to offer a high match rate from a straightforward experience, without depending on our users' behavior, private information, or contact list. The logical alternative was clear: we had to ask our users to identify their basic preferences. That led to an additional challenge: How to ask relevant and important information in a way that is easy, flexible, extensible and non-intrusive.

Our survey model consists of a series of associated records. One survey can contain many questions and each question can contain many

responses. The extensibility is the key to this model. Surveys are not static and can be modified in the future with new questions and answers, allowing our comparison model to be extended and improved over time. In the long term, users might complement their options and preferences by answering new surveys without repeating the old ones. These new surveys will extend the information that our system manages about users' preferences and will increase the relevance of our results.

To actually match user preferences with stores that were the best fit, we turned to vector analysis using cosine similarity. In its current iteration, our survey model generates style preference vectors for each user and store. Each survey response submitted by a user feeds a dimension on our preferences vector, represented with one or zero depending on the user responses. For now, store owners will use the same survey to populate similar information about their store. For the purposes of generating a prototype, a Gusto team member acted as "owner" of each store to generate its style preference vector.

There are a number of improvements we would ultimately like to make. For example, we might include catalog analysis to improve store vectors. It would also be optimal to offer some type of feedback from users. Finally, there are a number of additional user cues that may help us improve a user's vector. Options to write reviews, choose favorite stores and check-in during visits may help enhance the matching process.

STYLING/USABILITY

As our final design and functionality clarified, the Gusto team conducted a last round of user testing and cosmetic modifications. These improvements involved color palette adjustment, highlighting of stores and improving photo display. We continually reinforced the simplicity of the site and worked hard to reduce clutter wherever possible.

Tradeoffs were sometimes necessary and not all features made it into our final prototype. The current version of Gusto represents what we believe are the most important attributes and features to serve as proof-of-concept.

FINAL PRODUCT

Gusto's final product design incorporates academic research, user feedback and technical accommodation to deliver a simple, intuitive experience to find brick-and-mortar stores. In many ways, the product's success is reflected by what is not available on the site rather than by what is. Every facet of Gusto's design represents calculated decisions and a thoughtful process. The styles, filters, sub-categories, ratings, layouts, colors and virtually everything else accessible by a user were developed and included with specific intent. Continually exercising this discipline was difficult, but we believe the end result is a proof of concept that demonstrates the legitimate possibilities for a next generation local search application.

The current version supports three key user experiences as outlined below:

Store Registration

A store owner signs up with Gusto. The owner fills out a store survey, providing detail about the store's basic information, attributes, and ambience. The store owner completes visual style surveys to create a style profile for their store.

Shopper Signup

A shopper signs up with Gusto. The shopper fills out visual style surveys to provide details about their personal style preferences.

Shopper Search

Once registered, a shopper uses the search page to select from two primary combo-boxes with controlled vocabularies. The system considers those filters as well as the shopper's style preferences to identify stores that are the best matches. The shopper can further refine their search by using optional binary filters to pick store attributes that they find most appealing. The shopper can select any search result to see the unique store page for more detailed information.

FUTURE UPGRADES

Throughout the course of the research and development process, the Gusto team was frequently faced with difficult decisions about what options to include. While we are satisfied with the current version as a proof of concept, there are a number of enhancements we would potentially pursue in the future. Examples of these improvements include:

Backend

Allow multiple users to contribute to store information so that more than one approved curator could influence store data. Increase the diversity and complexity of style surveys and associated matching techniques so that users could more precisely define their style choices.

Design

360 degree panoramic pictures that swivel, using technology such as Google Photo Sphere. More cues to indicate the specific store attributes that led to the match. An option to add stores to a favorites list for later retrieval.

Social

Ability to vote up or down a result depending on agreement or satisfaction. Option to check-in at a store when actually visiting. Inclusion of ratings from social networks in either the results pages or the actual store vectors.

SCALABILITY AND CHALLENGES

Gusto's biggest challenge may be in its curation. To populate store data in the current version, our team spent many hours visiting stores, capturing store information and taking photographs for the site. We envision a future where that role may be passed on to hired "curators" or even local users that are "verified" in some way.

The benefit of such a model is that Gusto gets to control the rubric for how a store is rated and catalogued, protecting against the various problems that crop up with crowdsourced information. The cost, however, presents significant issues if Gusto were attempt to grow at scale. Populating the databases would take time, money and require continual refreshing in order to keep up with the current status of a store.

As mentioned at the beginning of this report, the Gusto team intentionally took an academic, revenue-neutral approach to development in order to focus on satisfying user need. While we feel we have demonstrated how a service like Gusto might help in an ideal environment, we recognize that our model fails to consider the implementation, scaling and adoption challenges inherent with any product intended to be financially self-sufficient. For example, we have not currently determined how Gusto would generate revenue and would need to explore various forms of advertising, promotion and subscription to identify the most viable model. Were we to move forward with Gusto, our immediate next step would be to revisit a number of critical business issues to determine the product's actual sustainability.

CONCLUSION

The Gusto team set out to identify an opportunity to more effectively connect shoppers to brick-and-mortar stores and build a prototype based on that insight. We believe we have accomplished both goals through a diligent, research-driven development process. Our initial findings supported our belief that existing search options failed to adequately address shopper needs, and feedback on our high-fidelity prototype has established that shoppers see value in our resulting approach. As with any prototype, the path forward for Gusto is complex and uncertain. We believe more than ever that e-commerce and related search sites disproportionately focus on transactional commerce as an objective.

Our research indicated that this approach is not always satisfactory for consumers, whose needs and mood can vary widely. In instances where a consumer's mood exhibits hedonic tendencies and a preference for exploration, it seems that there is much room for further innovation. Gusto demonstrates one approach, favoring human sensibilities and easily accessible, transparent store information to encourage the best match rather than the fastest purchase. Our hope is that more commerce-related sites will identify and pursue this opportunity to introduce a human, exploratory component to the online shopping ecosystem.

For all of the optimism generated by Gusto's real-world reception, our team also acknowledges the complex current state of commerce in today's connected world. We understand that simply matching a consumer to a brick-and-mortar store that meets their needs may not be enough. Physical stores must still compete on price, inventory and experience as they always have while also fending off electronic alternatives. Gusto and sites like it cannot address or resolve all of these challenges, but we hope that they can help make sure that commerce changes because consumers prefer it, not because limited information availability compels it.

Our semester-long experience has made it clear that shoppers still find tangible value and multi-sensory thrill from real-world stores. So long as that is the case, the current online ecosystem will fail to adequately address store search needs. Gusto, we hope, provides a roadmap and proof of concept for an alternative. With the right design, structure and data, we believe such a site can reduce shopper risk and encourage them to explore the abundance of local stores just beyond their front door.

APPENDICES

Questions for Store Owners/Managers

Thank you so much for meeting with me today. I'm part of a Masters program at UC Berkeley and we're interested in talking to store owners to garner some insight into how we can better link small stores with their ideal customers, and how we might use the Internet to do this. I'd like to ask you some questions about your store, including how you interact with your customers. I'll then ask for your opinions on online shopping, including on how it has factored into your business. This will take about 15 minutes of your time. Is it okay if I record our conversation?

Background about their store and how they interact with customers:

First, tell me about [store name]. (e.g. how long has it been here? etc...)

1. What type of customers does your store cater to?
2. How do you choose what to sell in your store?
3. Is there any particular intention in the arrangement/organization/collection of your store?
4. When people come into your store do most people seem to know exactly what they want, or are they usually browsing/exploring?
5. What are your interactions with customers when they come in? What cues do you get from them that determine how you interact with them?
6. How do you help the users find the products they are looking for, or help lead them to purchases?
7. Why are you in the retail business, and how did you choose the particular niche that you are in?

Online shopping and its effect on their store:

1. Does your store have an online presence? If so, what effect do you think it has had on your in-person business? If not, why have you decided not to set up shop online?
2. Overall, how has the emerging popularity of online shopping affected the viability of your business?
3. Why do you think people still shop in person at your store instead of shopping online, where they can possibly find the same products?
4. What, if any, is your opinion of Yelp? Are there things you think it does well, or poorly?
5. Have you thought about ways that you could use technology to get more people in your stores, or sell them more once they do come in?

Personal opinions of online shopping:

1. What kind of stores do you like to shop in yourself?
2. Do you primarily shop online or in brick-and-mortar stores?
3. Are there things that you personally like about e-commerce? Are there things that you dislike about it?

Feedback about Gusto:

Our team is working on developing a website where people can discover local stores that match their personal style and shopping preferences. This would be a service similar to Yelp, except it would focus on creating strong matches between the shopper and the store.

1. What is your initial reaction? Is this a site that sounds interesting?
2. What aspects of your store's "shopping experience" do you think it would be important to try and factor into your store's profile on our site?
3. We recognize that matching people's tastes to stores will be a challenging problem to tackle. Are there things in particular that you think we will have trouble with? Are there "intangibles" that don't translate well to computers?
4. Are there any ideas for our service that you think would be helpful?
5. Is there anything you'd like to share with me?

Questions for Customers

I'm going to ask you some questions about how you like to shop, and I'm going to focus in particular on shopping for "style-driven home goods" - things like clothes, decorations, things for your living room and bedroom, artwork, things like that. Stuff that you would buy to reflect your own personal style. Is it okay if I record our conversation?

Personal shopping habits:

1. What percentage of your shopping for "style-driven home goods" do you think you do online, and what percentage do you do in physical stores?
2. Are there certain things that you never buy online? If so, why not?
3. Are there things that you personally like about e-commerce? Are there things that you dislike about it?
4. What are things you like about shopping in actual physical stores? What are some things you dislike?
5. How many times a month do you actually go shopping in a store for "style-driven home goods", the types of things I mentioned?
6. When you go shopping, do you tend to be a browser/window-shopper, or do you go into stores knowing exactly what you want?
7. How would you describe your own personal style?
8. What are things that you first pay attention to when you go into a store that tell you whether or not you are going to like it? What are some of your favorite stores?

Experiences shopping online:

1. Do you generally find it easy online to find stuff that matches your style?
2. What are some ecommerce sites that you frequent?
3. Have you ever been frustrated online trying to find a particular item that fits your style? Maybe finding a gift for somebody that matched their taste? If so, why do you think this is?

1. I'm going to give you a scenario, and I'd like you to walk me through how you would go about it. [If you are with them at a computer, get them to actually demonstrate it.

> You want to find something unique to hang on the wall in your living room, over your couch. You have a general idea of what will work there, but don't have anything specific in mind. You decide to go on the web to look for this. Please tell me/show me what you would do.

2. Now that you've done this, do you think this task would be easier to do online or in a physical store?
3. If there were a website that you could log into and it knew your personal style, and recommended a local store that had the types and styles of things you were looking for, while also matching the shopping environment you prefer, is that something you would be interested in?

Feedback about Gusto:

Our team is working on developing a website where people can discover local stores that match their personal style and shopping preferences. This would be a service similar to Yelp, except it would focus on creating strong matches between the shopper and the store and would be focused only on the specific area of "style-driven home goods".

1. What is your initial reaction? Is this a site that sounds like something you would use?
Are there features for this service that you think would be helpful?

....

EMILY, 30 YEARS OLD

Persona
Emily is a user experience designer who lives in San Francisco. She does fairly well for herself financially, and likes to spend her expendable income on clothes, home goods, dining out, and traveling. She considers herself to be style-conscious, but is not constantly upgrading her wardrobe or decor – she likes timeless clothes that are comfortable, and doesn't change with the seasons too much. She considers her tastes impeccable, and knows exactly what she likes. She is a loyal Mac and iPhone user, and her favorite bands are Wilco and My Morning Jacket.

Emily does a fair bit of shopping online, primarily because of the convenience and ease of browsing. Her go-to sites are Etsy and Pinterest, which help her find things that match her personal style. She has a lot of confidence in her own style and taste, and primarily uses these sites to get ideas of things she wants to own (or make herself). As a result, most of the time she is just "window-shopping" on these sites – she doesn't actually purchase things.

She does most of her utilitarian shopping online. She is a loyal member of Amazon Prime and uses it to get books, home items, and other "search goods". She will often buy clothes online too, but only from trusted outlets that she has used in the past – J Crew, Free People, Anthropologie – because she knows basically what the quality will be, and how it fits, she doesn't feel the need to go to their stores to try things on. User experience is a big thing for her too – she won't use sites where she has trouble navigating or browsing the items. She also prefers sites where they lay out the items in a more contextual way – not just items laid out on a white background. The best sites also have similar items clustered together so it's easier to browse them.

In general, she doesn't like the hassle of obtaining items in physical stores. She is very busy and doesn't have a car, so it's tough to make time for the trip. The convenience of online outweighs any benefits of finding these things in stores.

However, she does do a fair bit of shopping in physical stores when she has free time, for one primary reason: It is an aspirational tool to help her decide how to decorate her own space. She can envision the things in the store in her own place. When she goes into a store, she is not in utilitarian mode, it's more to explore and get ideas.

Emily likes finding areas that have several stores that she likes that are clustered nearby to each other - this takes a lot of the pain out of physical shopping (which often involves traveling around from place to place and can be exhausting). Another pain point she experiences in stores is when employees try and talk to her when she's shopping. She does not go shopping for social interaction, and feels very uncomfortable when she feels like she's being "watched" by personnel – this makes her feel pressured. If she needs help, she will ask for it.

Emily will often go shopping when she travels or goes on day trips to the North Bay. She will try and find the "cute" shopping districts and walk up and down the streets to find stores that interest her. She

can often tell when a store matches her taste simply by glancing in the window, by the decor, displays, and items clearly visible. When she sees a store she thinks she would like, she will always go in and check it out... and frequently, she will buy something.

Scenario

Emily is on vacation in La Jolla, California. Summer has just begun, and she wants to spend the afternoon shopping to pick up some seasonal outfits. She has no idea where to go. A quick walk down the street from her hotel tells her that La Jolla has a different vibe from her native Berkeley, and lots of the stores are more high-end and frou-frou than are right for her tastes. She prefers places that have moderately-priced, hand-made goods that are unique and not mass-produced. She also likes clothes that are brightly colored and vibrant. She likes things that are timeless and comfortable, and which have somewhat of an earthy-crunchy quality - particularly for her summer wardrobe. She also is limited by transportation – she will have to take a cab from her hotel, so she wants to go to a shopping district where she will have several shopping options – she can't make multiple trips around the city.

Emily decides to check Gusto. She opens the site, logs in, and the site automatically detects that she is in La Jolla. It asks her what categories of items she is interested in shopping for today, and what her top priorities are – she says she wants clothing that is moderately priced, and stores that are nearby and located in a convenient shopping area near other relevant stores.

Gusto already knows her style preferences – it has learned that from the profile it has developed for her as she has used the site throughout her travels. It knows not to show her clothing stores that are really trendy, or which are noisy and boisterous. It also knows she doesn't like stores where the owners/managers tend to be more "in-your-face" with shoppers – Emily hates these qualities of shopping.

Gusto takes this taste profile along with her stated goals and preferences for the day, and delivers a nice, clean layout of stores for her to browse through. Each store listing has vivid, clear photos of the interior and of some specific items. It also has an explanation of why Gusto chose this particular store for Emily, along with some other metrics that it uses to describe the store (e.g. a convenience rating and a noise level rating).

Emily finds a handful of stores that are clustered in the same area by looking at Gusto's "map view" of her search results. With a simple interface, she adds these stores to her "shop itinerary" which sends store info to the MyGusto app on her phone. She will look at this app throughout her day to make sure she isn't forgetting any of the spots she wants to check out.

MATT, 35 YEARS OLD

Persona

Matt is a newly married guy living in San Francisco. He works in Mountain View. His commute starts at 7am everyday, and he is back at home at 8pm.

Matt and his wife are trying to decor their new 3000 sqft condo. They don't like department stores

because they feel that they do not offer a unique experience. They are trying to do the decoration together but he cannot visit any other store on weekdays because almost every furniture store in San Francisco is closed at 7pm. He and his wife have a very different taste in furniture and they are trying to find unique products that reflects their preferences.

Because of his work, they only have the weekends to visit the stores that they are finding on Internet, but so far the are not finding what they think they want. Some of those stores are also not open on Sunday.

3. FLOW CHART

Early Proposed Screenflow

Login/Register

If registering as a user → Basic Info → Style Choice 1 (3 Choices presented, user picks favorite) → Style Choice 2 (3 Choices presented, user picks favorite) → Style Choice 3 (3 Choices presented, user picks favorite)

can keep going, refining profile

If logging in as a user

If registering as a vendor → Basic Info → Create Store Profile - Categories, styles, ambience, accessibility, etc - Upload photos

If logging in as a vendor

Create Your Search Query

I'm Looking For...
Stores that have _____ and are _____

Additional clauses available but optional:
- with very attentive staff
- with a quiet ambience
- with plentiful parking

(No results shown until the user tells us what they want)

Existing users could also recall a saved query

User Profile Page

Profile history - review pictures they clicked on/ rate more stores

Update profile information

Saved Stores
(Bookmarks)
Links to store page
Map view?

Saved Searches
(Links back to search results page)

Results Page

Restate query/phrase area at top
User can save search
User can adjust location
Result filters (distance away, open now, public transit)
Large store photos, width of page, possible small photos of products lined along bottom
Interaction: Favorites

Store Profile Page

Still showing search query at top
Basic Store info (location, hours, etc)
Attribute scores (efficiency, adventure, bargain, bustle, ...)
Photosphere, other photos of products (store contributed?)
Expert descriptions (V2?)
Similar Stores (encourage flow, searching)
User can save to bookmarks

Vendor can update basic info, categories, styles, see some basic stats

4. USABILITY TESTING

APPROACH

For the most part you should allow users to figure things out on their own, so tell them in advance that you will not be able to help during the test. If the user gets stuck and you aren't measuring, give a few hints to get them going again. Terminate the test if the user is unhappy and not able to do anything. User can always voluntarily end the test.

OVERALL SCENARIO

You are sitting at home on a Saturday afternoon. You realize that your living room is looking a little dated and you'd like to spruce it up with new items. You live near Elmwood in Berkeley, with many local merchants in your neighborhood as well as distributed throughout nearby neighborhoods and towns. You've decided to go shopping and heard about a great new site, Gusto, that might be able to help...

Motivating Scenario (Sign-up): You've heard all the hype about Gusto and now you're thinking it might be able to help with your shopping needs. You go to the website and decide you're going to sign-up.

Tasks:
1. Click on the link to **create an account.**

2. Enter your **account information.**

3. Follow the instructions

4. Return to the home page

Motivating Scenario (Search): You don't really feel like driving, but you're in the mood for some adventure shopping. You want to find a store that has a variety of unusual home decorations where store clerks will make you feel comfortable and welcome.

Tasks:
1. Confirm that your location is set to **Berkeley, CA.**

2. Select the option for stores that sell **Decorations.**

3. Select the option for stores that are **Welcoming.**

4. Select the option for stores that are **Adventurous.**

5. In additional options, choose stores that are **Nearby Other Stores.**

6. **Search** for stores.

USABILITY TESTING (CONTINUED)

Motivating Scenario (Results): Now that you have results, you want to see what store(s) are closest to you and if they offer something that satisfies your shopping interests. Using the search results, collect information about your options.

Tasks:

1. Identify the store that with the highest **Convenience** score.

2. Write down that store's **Style.**

3. **View** that store's profile page.

4. Write down **where** the store is.

5. Write down how often the store has **sales.**

FEEDBACK

Thanks for participating in Gusto's user research! Please rate your response to the following statements on at scale of 1-5, where 1 is "Completely Disagree" and 5 is "Completely Agree."

Statement 1: "I found Gusto to be easy to navigate"

1 ----- 2 ----- 3 ----- 4 ----- 5
Comment:

Statement 2: "The terminology used by Gusto made sense"

1 ----- 2 ----- 3 ----- 4 ----- 5
Comment:

Statement 3: "I can understand how this is different than other local search options like Yelp, Google, etc."

1 ----- 2 ----- 3 ----- 4 ----- 5
Comment:

Statement 4: "I would use this for my local shopping needs in the future"

1 ----- 2 ----- 3 ----- 4 ----- 5
Comment:

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