

Social Shopping

Supporting bonding through
hybrid retail experiences



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Social Shopping

Supporting bonding through
hybrid retail experiences

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ABSTRACT

For more than a decade now, the rapid adoption and immense success of e-commerce has redefined retail markets. E-commerce, at the same time, fostered a new breed of tech-savvy shoppers, most prominently seen within the millennial generation. They now rely on e-commerce as the primary source for many everyday goods and services due to the convenience it offers. As a side effect, traditional retailers, especially department stores, struggled to effectively offer enough value to incentivize shoppers into visiting. The perceived higher cost of shopping in stores is associated with more and more millennial shoppers, the next generation of power buyers, reserving this activity for special occasions. This thesis explores ways in which traditional departments stores can provide in store experiences that could raise the perceived value of millennial shoppers' special visits. The goals of this study are twofold: 1. To find novel uses for retail environments that would contribute to the development of customer loyalty; 2. To encourage millennial shoppers to treat visiting physical stores as a bonding ritual performed with their loved ones. Based on the insights gained from my exploratory research, related work, and evaluative research, I propose a holistic shopping experience within a hybrid department store environment. This system combines digital and physical services to support a new form of social shopping: one that fosters bonding between loved ones. The design provides tools and opportunities for better communication within groups of shoppers.

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INTRODUCTION

This thesis attempts to investigate how physical retailers may leverage a combination of digital and physical services in stores to encourage bonding for millennials and their loved ones.

INTRODUCTION

For more than a decade, the rapid adoption and immense success of e-commerce has redefined the retail market. E-commerce offers shoppers ultimate convenience: they are able to search and buy anything, from anywhere, at any time. In order to stay competitive, traditional retailers began to venture into e-commerce as well. And thus, the term omni-channel retailing was coined. It refers to businesses having touchpoints across multiple retail channels, ranging from offline to online. This could include, website, marketplace storefronts, social media, physical storefronts, etc.¹

This strategy is great in concept; however, very few traditional retailers are actually effectively leveraging it. Their online channels are not as strong as those offered by pure e-commerce retailers. And their offline channels struggle to effectively offer enough value to incentivize shoppers into visiting. As a result, many traditional retailers, especially department stores, have died and even more are struggling to survive. Large department stores are often hindered by their existing physical infrastructures; they are not nimble enough to make company wide adjustments. A year ago in 2017, Macy's announced it will close up to 15% of its stores.² Earlier this year, Bon-Ton Stores Inc. announced that it will liquidate all 256 of its department stores.³ Even industry superstar like Nordstrom had reported a 1.9% comp sales decline in Q3 2017.⁴

1. Tommy Walker, "Omni-Channel Retailing: What is Omni-Channel Commerce, Really?," <https://www.shopify.com/enterprise/omni-channel-retailing-commerce-what>.

2. Hayley Peterson, "Macy's Shut Down Even More Stores," <http://www.businessinsider.com/macys-might-shut-down-more-stores-2017-5>.

3. Aaron Smith, "Every Bon-Ton Department Store is Closing," <http://money.cnn.com/2018/04/19/news/companies/bon-ton-liquidation/index.html>.

4. Cathaleen Chen, "Nordstrom Earnings Inch Above Estimates, While Comp Sales Dip," <https://www.thestreet.com/story/14385773/1/nordstrom.html>.

E-commerce also fostered a new breed of tech-savvy shoppers, most prominently seen within the millennial generation. They now rely on e-commerce as the primary source for many everyday goods and services due to the convenience it offers. A online survey, involving 1,200 respondents, conducted at the beginning of 2017 showed a result of 78% of those aged 18-29 prefer to shop mainly via mobile and online.⁵ I believe it would be extremely beneficial for traditional retailers to look into recapturing this high value customer base. The millennial shoppers are rapidly growing in purchasing powers. With an estimated projected annual expenditure of \$1.4 trillion, this generation will come into full maturity and represent 30% of the US total retail sales by 2020.⁶ Also by 2020, millennials will make up 35% of the global workforce.⁷

E-commerce is popular amongst millennials because it offers services physical retailers cannot. However, e-commerce also fosters a self-absorbed, individualistic approach to shopping. The browsing process, originally performed through physical human interactions, is now performed alone. The customer can only send pictures or links of products to others to ask for their opinions or to inform them of purchases. The act of picking something out together is poorly supported by the current online shopping ecosystem.

This is actually an area where physical retailers can offer emotional value to Millennials that online retailers cannot. Traditional retailers can capture this high-value customer base through providing the physical environment and activity for Millennials and their loved ones. Shopping allows people to spend quality time together. The action of picking something out together reaffirms relationships. It demonstrates care.

5. Statista, <https://www.statista.com/statistics/694894/primary-household-shoppers-channels-mobile-online-in-store-us-age/>.

6. Christopher Donnelly and Renato Scaff, "Who are the Millennial Shoppers? And What Do They Really Want?," <https://www.accenture.com/us-en/insight-outlook-who-are-millennial-Shoppers-what-do-they-really-want-retail>.

7. Millennial Careers: 2020 Vision (PDF).

Initial research for this study included exploration of opportunities for retailers to create experiences that support bonding for friends, families, and couples. However, I chose to move forward with exploring, more in depth, shopping and bonding between millennial friends starting from the evaluative research phase. To make this decision, I took into consideration insights drawn from the synthesis phase and availability of participants for further research.

The proposed design solution is a hybrid retail space supportive of bonding. Connxt seamlessly blends the best of physical and online shopping to create a digitally enhanced department store fit for Millennials' special occasions. Shoppers use the Connxt smartphone app as the core companion that links the four main components within this digitally enhanced store. These four components consist of: 1. Digitally browse the entire inventory while having great conversations over food in the in-store cafe; 2. Digital location of items and people within the sales floor; 3. The interactive mirrors allows for hands free communicate between individual fitting rooms and virtual try-ons; 4. Move on with the rest of the day bag-free by choosing to leave them at the store after checkout.

In the follow chapter, I discuss the methodologies I used to conduct exploratory research within my proposed problem area

EXPLORATORY RESEARCH

In this chapter, I cover the exploratory research conducted to

1. Narrow down target user to millennial shoppers;
2. Confirm that this target user group is still visiting physical retailers;
3. Synthesis insights that points to physical shopping as a good bonding activity between loved ones.

OVERVIEW

During the exploratory research phase of this study, I used multiple design methods to better understand the problem space and the needs of my target user group. These methods include:
observations, in-depth interviews, and customer journey mapping.

OBSERVATIONS

While walking through a local mall, I noticed that it was a lot more populated than I anticipated especially since the news is constantly reporting on how poorly physical retailers are performing at bring in customers. However upon closer observation, I noticed that these people mainly fell into two categories: teenagers and parents with young kids. Both group are not ideal customers for businesses because these people are not necessarily looking to make purchases. So what is a group of people who would be ideal customers for businesses? And where are they shopping at?

I identified millennials as a potential high value customer base with rapidly growing purchasing powers. More specifically, I'm looking at a subset of millennials, who are in the 20s to early 30s and have no kids. This group of customers have a relatively high level of disposable income and wants to spend it. This generation as a whole is projected to represent 30% of the US total retail sales⁸ and also make up 35% of the global workforce⁹ by 2020. Unfortunately, millennials are no longer strong advocates of physical shopping as 78% of those aged 18-29 prefer to shop mainly via mobile and online.¹⁰ However, there are still occasions when millennials would choose to visit physical retailers.

8. Christopher Donnelly and Renato Scaff, "Who are the Millennial Shoppers? And What Do They Really Want?," <https://www.accenture.com/us-en/insight-outlook-who-are-millennial-Shoppers-what-do-they-really-want-retail>.

9. Millennial Careers: 2020 Vision (PDF).

10. Statista, <https://www.statista.com/statistics/694894/primary-household-shoppers-channels-mobile-online-in-store-us-age/>.

On Black Friday of 2017, I joined a group of my friends, who are all millennials, in the shopping madness at our local mall. Within this group, there was a couple as well as one of my friend's mom, who flew in from China to visit her during Thanksgiving break. For the mom and daughter pair, the mom had a lot of things in mind she wanted to buy. It then became the daughter's job to introduce different brands as well as give advice. Their conversations revolved around sharing of tastes and knowledge. For the couple, it was obvious the boyfriend tagged along purely because the girlfriend wanted to shop. While she was happily picking things out, he faded into the background with her soda and shopping bags. Occasionally when she was making final purchase decisions, she would refer to him; not necessarily looking for actual advice, but more to make him feel more involved.

INTERVIEWS

In order to better understand the target user group, in-depth interviews were conducted with thirteen millennial shoppers in various configurations: six individually, one together with her mom, one couple, and one group of three guy friends. Interview questions focused guiding the participants in revealing their overall shopping habits with digital and physical retailers.

Why do millennials still go to retail stores?

Most participants claimed that although they buy a lot of their appeal items online, they still visit physical retailers periodically.

Shopping trips is an activity that allow people to physically spend time together.

"It's a whole family affair. It's the one activity we can do and argue the least in."

Physical retailers are able to offer services that online retailers are unable to provide for their customers.

"My favorite store remains the one where we know the sales associate by name and she treats us like vips."

The average shipping time for online purchases is two to ten days while a visit to the mall can, in most cases, guarantee the customer can leave with some type of satisfactory purchase.

"I needed it in a hurry."

A shopping trip often involves multiple parties picking out things together.

"I needed my friends to help give me advice."

Images and video online may not be the best representations of the actual items themselves. Especially for apparel items, people ultimately need to try them on before making the final decision.

"I still prefer to try everything on before committing to buying; especially shoes. I can never seem to get the sizing right."

Some customers mentioned that when online orders don't work out, having to complete a mail in return is a daunting task. They would have to print a return label, repackage the order and make a trip to the post office.

"The thought of having to mail back returns scares me."

JOURNEY MAPPING

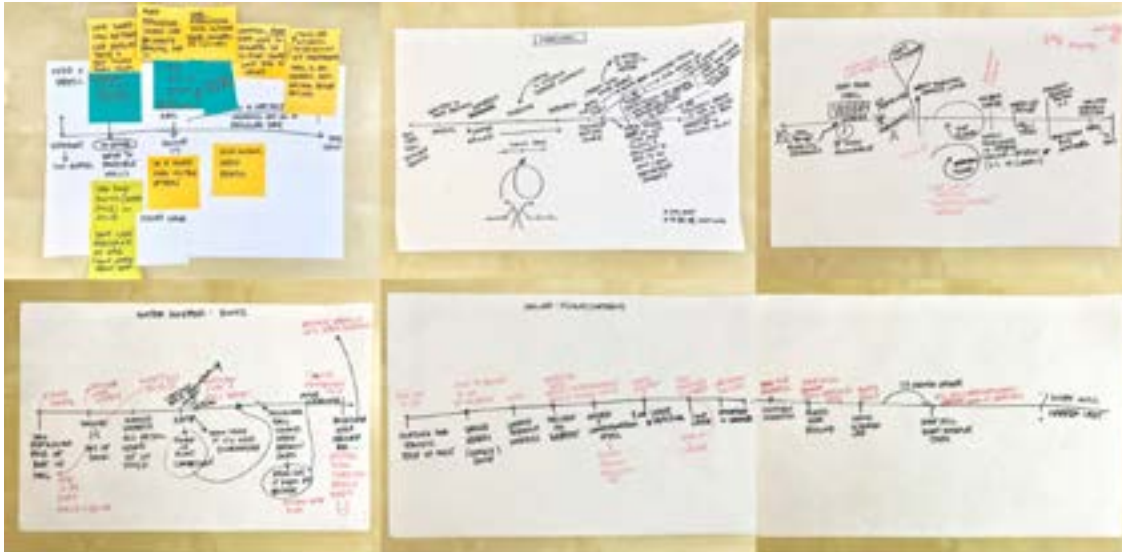


Figure 1: Participants verbally recounted their most memorable (good or bad) shopping experience while I sketched out journey maps of their anecdotes.

A journey mapping exercise (figure 1) was conducted at the end of each interview. Participants were asked to verbally recount their most memorable (good or bad) shopping experience. Stories of both experiences within physical retailers and online retailers were shared. However, all anecdotes of in store experiences involved spending time with another person while those of online experiences involved just the participants completely the task of buying something alone.

These results demonstrated correlations between digital retailers and shopping alone; and physical retailers and shopping in a group. Digital retail seems to foster a very individualistic approach to shopping. The browsing process, originally performed through physical human interactions, is now performed alone. Physical retail on the other hand appears to foster a very social approach to shopping: browsing and purchase decisions are made through human interactions.

Why shopping in stores is a great activity for bonding?

The perceived higher cost of shopping in stores is associated with more and more millennial shoppers reserving this activity for special occasions. Many treat it as a social event as it is an easy activity to spend time with loved ones.



Figure 2: Matrix categorizing different types of shopping

Many friends, families, and couples have traditions and practices around shopping together.

"Twice a year, my group of 6 girlfriends get together for an all day shopping date. We always start with brunch, then shop, and end with dinner."

"We [mom, dad, and I] love shopping together because it's the activity we argue the least in."

"Whenever my girlfriend and I travel together, we always try to squeeze in a shopping trip if there is enough time."

Shopping may not be everyone's favorite activity but many still choose to participate if it involves their loved ones.

"Whenever I go home, we have to do everything, as a family. My dad doesn't enjoy shopping but tags along regardless. It's his job to hold all the bags and find the closest seat in each store."

"Shopping isn't my favorite activity; it isn't my boyfriend's either. However, he seems to think I love it so we always end up hanging out at the mall."

"I now voluntarily go with my mom when she wants to shop for clothes. It's an opportunity for us to talk about life, and I get to compliment her on how great she looks."

The action of picking out something together reaffirms relationships. It shows care.

*"When we walk into a store and the same item catches both of our eyes, I feel really proud;
I think, 'That's why we're best friends.'"*

*"Even though my purchase decisions aren't really affected by his comments,
I always asks for his opinion on things I try on. I feel proud when he likes something."*

*"I used to get annoyed when my mom insisted for me to try-on clothes she picked out. But now that
I've started to help her pick out her clothes, I've realized the stubbornness is born from caring."*

The physical artifact symbolizes time spent together.

"I feel unaccomplished if I go on a shopping date and end up coming home with nothing."

*"I took my mom shopping after getting my first job and bought her a cashmere scarf with
my first paycheck. She babies it some much that she rarely wears it."*

The exploratory research phase allowed me get a better understanding of the problem space and the needs of my target user group: millennial shoppers within the retail environment. In the follow chapter, I will discuss key findings from related work I have reviewed.

RELATED WORK

In this chapter, I examine relevant work in three areas: technology used in physical retail, novel retail models, and social shopping. Findings within these areas help inform how my research can make a novel contribution to the field.

TECHNOLOGY IN PHYSICAL RETAIL

IoT

IBM divides the use of IoT for retail into three main categories: supply chain, store operations, and customer experience.¹¹ Currently, one of the most popular IoT solution within the retail industry is RFID technology, which involves digital tagging of products. This technology is seen used in all three categories mentioned by IBM. Walmart introduced the RFID to its supply chain back in 2003.¹² Zara, a world leader in fast fashion, had plans to RFID tag all of their items by 2016. This move provided greater efficiency in inventory checking as the brand is now able to check inventory every six weeks instead of every six months.¹³

Bluetooth beacons are another popular IoT solution for the retail industry. Businesses generally use them for two purposes: location based advertising and data collection. These small devices can communicate with customers' smartphones through radio waves. Therefore, with enough of them in a single area, stores can detect the locations of its customers and push personalized, corresponding ads to them. At the same time, beacons can track customer behaviours through collecting data on their preferences and actions.¹⁴

11. IBM, <https://www.ibm.com/internet-of-things/iot-zones/iot-retail-stores/>.

12. Bob Violino, "Wal-Mart Expands RFID Mandate," <http://www.rfidjournal.com/articles/view?539>.

13. Christopher Bjork, "Zara Builds Its Business Around RFID," <https://www.wsj.com/articles/at-zara-fast-fashion-meets-smarter-inventory-1410884519>.

14. Asena Atilla Saunders, "Beacons and Proximity Marketing: All you Need to Know," <https://www.digitaldoughnut.com/articles/2017/march/beacons-and-proximity-marketing-all-you-need-to-k>

Digital Mirrors

There are two generations of digital mirror implemented in stores. The first generation debuted as early as fall 2001 when Prada introduced smart mirrors into their New York Soho dressings rooms.¹⁵ RFID tagged items were recognized upon entering in the dressing room. Customers could access smart mirrors to check information about the items such as inventory. The project quickly failed: one of the top contributing factors being inaccuracy and crashing of system during peak hours.¹⁶ However over a decade later, digital mirrors are making a come back. In 2014, Ebay partnered with Rebecca Minkoff to create a connected store that featured touch screen mirrors.¹⁷ In 2015, Ralph Lauren also introduced the smart-mirror fitting rooms concept at its Fifth Avenue flagship store in Manhattan.¹⁸

The second generation of smart mirrors involves augmented reality technology that allows for customers to try on clothes virtually. The first of its kind was introduced by Cisco back in 2011 called, StyleMe and marketed as a virtual fashion mirror.¹⁹ In 2015, Amazon filed a patent for its own version of the mirror called blended reality systems and methods. The patent was approved at the beginning of this year (2018).²⁰

15. Koolhaas, R., OMA - Office for Metropolitan Architecture, & Exhibition OMA. (2001). Projects for Prada. Milano: Fondazione Prada Ed. <http://www.worldcat.org/title/projects-for-prada/oclc/961354038>

16. Greg Lindsay, "Prada's High-Tech Misstep," http://money.cnn.com/magazines/business2/business2_archive/2004/03/01/363574/

17. eBay Inc. Staff, "eBay Inc., Rebecca Minkoff Deliver Next-Generation Shopping," <https://www.ebayinc.com/stories/news/ebay-inc-rebecca-minkoff-deliver-next-generation-shopping/>

18. Hilary Milnes, "Inside Ralph Lauren's Connected Fitting Rooms," <https://digiday.com/marketing/retailtech2016-inside-ralph-laurens-connected-fitting-rooms/>

19. Lisa Fretwell, "Cisco StyleMe™ Virtual Fashion Mirror," https://www.cisco.com/c/dam/en_us/about/ac79/docs/retail/StyleMeEngagementOverview_120611FINAL.pdf

20. Charles Shearer Dorner et al., United States Patent 9,858,719.

Augmented Reality

Retailers are also beginning to tap into augmented reality technology as extensions of physical retail. For example, back in 2010, Lego introduced in-store kiosks that revealed finished Lego models on top of their packaging once customers physically held up the corresponding boxes in front of the kiosk display.²¹ In 2012, China's largest food e-commerce site, Yihaodian, announced its plan to open up virtual stores in physical locations, such as parking lots and college campuses, across the country. These stores can be accessed through the brand's app, which provides an AR experience where customers interact with virtual items, in virtual aisles, while walking through a physical space.²² Zara, the Spanish fashion brand, just unveiled their AR retail experience in April of 2018. In designated areas within selected stores, customers use the Zara AR app on their smartphones to activate an AR fashion show.²³

21. Augment, "The Top Examples of AR in Retail," <http://www.augment.com/blog/best-of-ar-in-retail/>.

22. Lance Eliot, Retail's New Reality: Invisible Shopping Centers and Airtual Assistants," <https://www.cnbc.com/2015/04/24/retails-new-reality-four-ways-technology-can-boost-sales-commentary.html>.

23. Tommy Palladino, "Zara AR App Brings Virtual Models to Life in Stores," <https://mobile-ar.reality.news/news/zara-ar-app-brings-virtual-models-life-stores-0184105/>.

NOVEL/EXPERIMENTAL PHYSICAL RETAIL MODELS

Amazon Go is Amazon's latest prototype grocery store focuses on total automation. It uses a combination of cameras and sensors to create an intelligent retail space that detects the exact location of each customer and the specific item they are interacting with. And as a result of this, customers no longer have to perform the traditional notion of checking out. They scan in with their Amazon app at the door, grab their desired items and "just walk out" without any kind of checkout. Within minutes of exiting the store, their Amazon account will be automatically charged and receive a digital receipt on their app.²⁴

The Localized Model

Nordstrom Local is a new concept store being tested by Nordstrom. The first and only prototype store opened in downtown Los Angeles at the end of 2017. The store is only 3,000 sq.ft compared to a typical department store at 140,000 sq.ft. It actually does not carry any merchandise inventory. Instead, the store is meant to provide more personal, complimentary services. The intention is for customers to place orders online like a normal e-commerce transaction but have the order delivered to Nordstrom Local instead of their home address. When they are ready, customers can drop by the store and while enjoying drinks from the complimentary bar, they can try on the clothes they have ordered in a spacious changing room area fitted with couches and large mirrors. There is also stylists and a tailor on site. Whatever they do not like they can leave at the store to be returned.²⁵

24. Amazon, "Amazon Go," <https://www.amazon.com/b?ie=UTF8&node=16008589011>.

25. Kate Taylor, "Nordstrom Just Opened a Tiny Store that Doesn't Sell Any Clothes," <http://www.businessinsider.com/nordstrom-new-store-concept-opens-2017-10>.

Experiential Model

In order to provide superior in store experiences for their customers, Williams Sonoma, the high-end retailer for kitchenwares and home furnishings, actually offers live cookings demos and classes.

Cooking is done using the tools being sold in stores. This in combination with the food tasting at the end give customers the sense of confidence in being able to actually use and prepare great food with the kitchenwares they are looking to purchase.²⁶

Restaurant-Retail Hybrid Model

Retailer Mark Werts is the owner of a home goods business called Maison Midi. He actually came up with a really interesting secondary business model that supports his home goods business. Werts opened up another business that was a restaurant. Beau Soleil Kitchen & Bar operates just like any other restaurant, except pretty much everything in the restaurant was for sale. All the decor within the restaurant comes from Werts' home goods business, Maison Midi. The Maison Midi website is also posted all over the restaurant to encourage people to visit with their smartphones while they are having their meals.²⁷

26. Williams Sonoma, "Cooking Classes & Event," <https://www.williams-sonoma.com/pages/store-events/cooking-classes-events/#technique-classes>.

27. Alejandra Reyes-Velarde, "Come for the food, stay to buy clothes? To attract shoppers, retailers add restaurants to their stores," <http://www.latimes.com/business/la-fi-eat-shop-beausoleil-20180117-story.html>.

SOCIAL SHOPPING

The current definition of social shopping involves the combination of social media and online shopping. People make digital purchase decisions based on their social network; what others have said about the item and/or what others will say about it. Businesses capitalize on this online groupthink mentality to expand their brand reach.

Ways retailers are leveraging social media in stores

C&A, the European fashion retailer, introduced FashionLike in their Brazilian stores in 2012. This campaign involved digital hangers with a led screen that provided real-time data on the number of likes each article of clothing received on Facebook.²⁸

Nordstrom brought Pinterest into its stores in 2013. Employees attached physical markers that with the Pinterest logo to clothing articles that had the most engagement on Pinterest. This made it easy for salespeople to show customers trending products.²⁹

Instagram worthy corners bring more exposure for businesses. Many retailers are now creating physical locations, such as Instagram walls, within their stores to attract customers. People love these things are willing to make posts about it. These posts becomes free advertising for these businesses.³⁰

28. Sam Laird, "High Tech, High Fashion: Clothes Hangers Show Real-Time Facebook Likes," <https://mashable.com/2012/05/08/hangers-update-facebook-likes/#xeLnldwSjSqx>.

29. Pinterest, "Nordstrom," <https://business.pinterest.com/en/success-stories/nordstrom>.

30. Alexandra Sheehan, "Instagram-Worthy Interiors: How to Make Your Retail Shop Picture Perfect," <https://www.shopify.com/retail/how-to-make-your-retail-shop-instagrammable..>

SUMMARY

This study will focus on bring forth a new type of social shopping: one that involves friends physically coming together to shop in a retail space. My research attempts to make a novel contribution to the field as it will strive to incorporate digital services to in store experiences that support bonding between customers and their loved ones. My hypothesis is that this would give physical retailers the opportunity to provide emotional values to their customers and therefore contributing to the development of loyalty. In the following chapter, I will discuss the synthesis drawn from key findings made from both exploratory research and related work.

SYNTHESIS

In this chapter, I analyzed and synthesized findings from the exploratory phase and related works in order to reframe the problem and determine the most suitable direction for the the study. In the end, a final design opportunity space was identified and three personas were created.

CUSTOMER JOURNEY MAP

Based on findings from the exploratory phase, a customer journey map was generated for the three main shopping group configurations: friends, couples, and families (adult child + parents). Through this exercise, the similarities between pain points and needs when they shop in different configurations surfaced.



Figure 3: A combined customer journey map for friends, couples, and families

THE FINDINGS

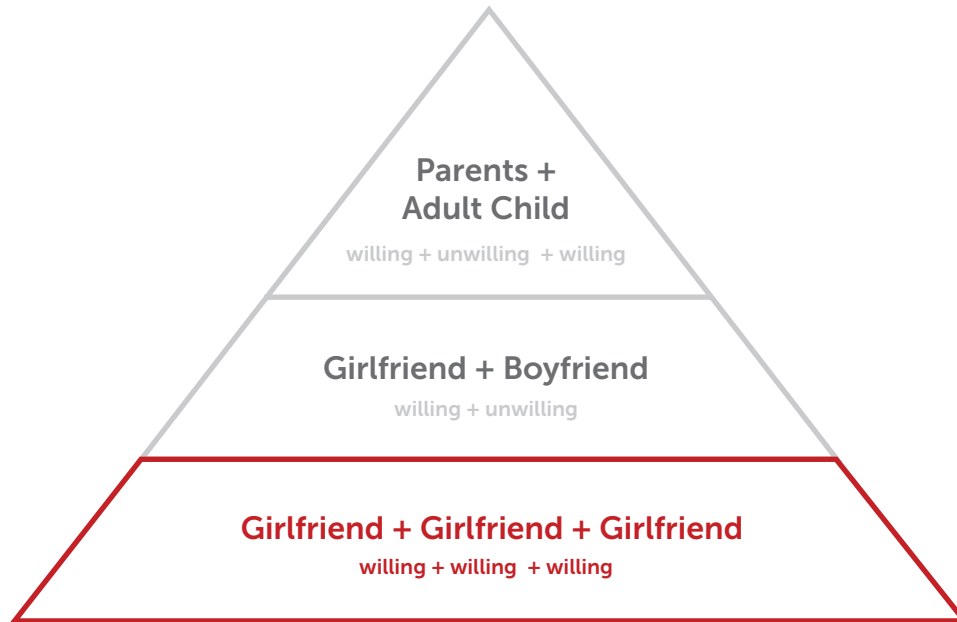


Figure 4: This shows the overlapping of pain points by the three different groups

From the customer journey map, the overlapping of pain points and needs when they shop in different group configurations surfaced. Starting from the group of friends, members are most likely to be willing participants of shopping expeditions compared to the other two groups. Therefore, their pain points or needs tend to be more universal. Couples and families, on the other hand are more likely to have conflicting interests and therefore, would encounter more pain points. Because the pain points and needs of friend groups are more universal and these people are more access for further research, the millennial friends group configuration is chosen to be the primary users of the design.

DESIGN OPPORTUNITY SPACE

Based on conclusions drawn from the customer journey map and the initial intentions of this study, the scope is narrowed down to designing a holistic shopping experience within a single retail space for millennials friends. This retail space will consist of physical services as well as digital services that can only be activated at specific locations. People's purpose for going to physical retailers are changing. More and more are treating shopping at physical stores as a special, social occasion reserved for spending time with family and friends. This gives physical retailers the opportunity to provide emotional values their customers. This hybrid retail space will serve as a new type of social shopping: one that fosters bonding between loved ones. In order to accomplish this goal, the design will focus on providing the tools and opportunities for better communication within millennial customers' shopping groups.



Figure 5: Design opportunity space identified on the bonding & shopping matrix

PERSONAS

Emma

Age: 26

Fashion profile:

- fashion guru/style icon
- growing Instagram following
- loves to give fashion advice

Shopping Habits:

- shop mostly online
- rarely makes purchases while shopping with others:
- picky buyer; afraid to waste others' time
- view shopping dates as pure social events

Olivia

Age: 25

Fashion profile:

- look to social media for fashion inspirations
- have a defined personal style

Shopping Habits:

- shops 50/50 online & offline
- rarely shops offline alone; enjoys others' company
- always plans ahead for shopping trips with styles and looks up inventory

Jenny

Age: 23

Fashion profile:

- look to friends and family for fashion advice
- still developing personal style

Shopping Habits:

- shops mostly offline
- binge buys clothes at the change of the seasons
- shops with others to get introduced to unfamiliar brands/styles and advice on final purchase decisions

EVALUATIVE RESEARCH

In this chapter, I will discuss how I arrived at the final concept. Ideation generated concepts were based on the opportunity area identified in the previous chapter. Storyboards were also created to test assumptions generated by the concepts. And finally, a single design concept was selected and iterated upon through wireframing and bodystorming with users.

Based on the identified opportunity area and corresponding personas, concepts were generated to support the following categories:

- Seeding conversations
- Sharing of knowledge, tastes, and preferences
- Ask/give advice that informs purchase decisions
- Negotiation
- Wayfinding and people finding

SPEED DATING

In order to test assumptions made from the concepts generated during ideation, storyboards were created to use for speed dating with five millennial customers. The storyboards and lead questions mainly probed for customers' habits regarding planning for their shopping trips (figure 6-7), their preference in pairing different activities together (figure 6-7), and their affinity to the use of different technologies within a physical retail space (figure 8-10).

Scenario

Eat + Shop 1



After Emma and Olivia decided to go shopping over the weekend, Emma prepares for the trip by selecting the clothes she's interested in in advanced.



On the day of the shopping trip, a SA will gather all of the pre-selected clothes for Emma and Olivia. After they arrive, they have tea and dessert while looking through those clothes.



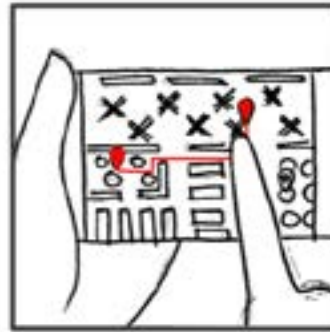
After they finish eating and browsing through, the two friends can then go try things on in the fitting room.

Figure 6: Storyboard for the scenario "Eat + Shop 1"

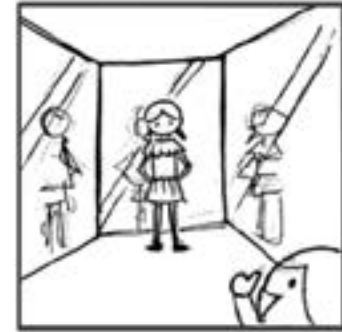
Scenario
Eat + Shop 2



Emma and Olivia decides to go on a shopping trip. They begin the date by grabbing brunch at the Nordstrom cafe. While eating, they browse through Nordstrom's digital inventory.

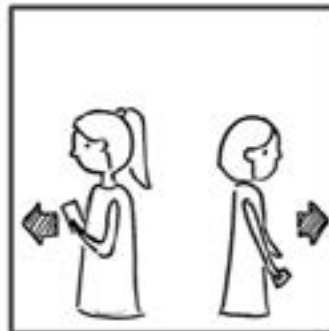


After selecting the items they are interested in, the system calculates a suggested shopping route for them. After finishing their food, Emma and Olivia browse through the physical sales floor to find these items.

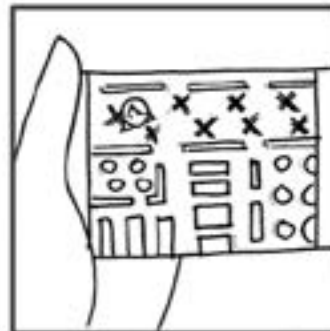


After locating all interested items, Emma and Olivia heads to the fitting room to try the items on.

Scenario
Splitting Up to Browse 1



After walking into Forever 21, Emma and Olivia decides to head to different sections of the store separately.



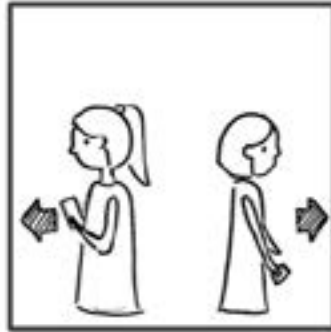
While in the dress section, Emma finds something she thinks Olivia will love. So Emma uses GPS to quickly locate her friend in the store to show her the dress.

Figure 7: Storyboard for the scenario "Eat + Shop 2"

Figure 8: Storyboard for the scenario "Splitting Up to Browse 1"

Scenario

Splitting Up to Browse 2



After walking into Forever 21, Emma and Olivia decides to head to different sections of the store separately.



Olivia finds a shirt that she thinks will look great on Emma. She marks it for Emma to find.

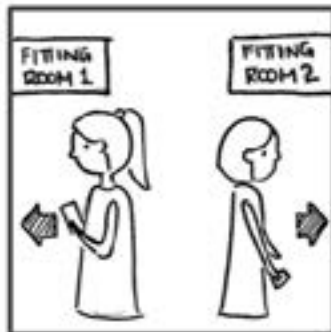


Emma walks by the section with the shirt Olivia has picked out for her and uses a digital marker highlighting the item.

Figure 9: Storyboard for the scenario "Splitting Up to Browse 2"

Scenario

Fitting Room Communication



After Emma and Olivia enters the fitting room area, they are assigned to individual fitting rooms.



Emma tries on a dress but wasn't sure whether it suited her. So she takes a photo of herself with her fitting room mirror and sends it to Olivia's fitting room mirror.



Inside Olivia's fitting room, she receives Emma's photo and message and replies that she thinks Emma looks great in the dress.

Figure 10: Storyboard for the scenario "Fitting Room Communication"

FINAL CONCEPT DIRECTION

Based on the findings generated from speed dating, a final concept was identified. The entire in store experience will be controlled through a smartphone app. First, customers begin their journey at a in store cafe that combines two activities together: eating and planning (digital browsing). Second, a personal interactive map within the app will help customers locate desired items and their friends as well. Third, digital mirrors inside fittings rooms allow for better communication between friends within individual fitting rooms as well as customers and store employees.

BODYSTORMING

After the final concept was selected, wireframes were created to test the UX flows for the app and interactive mirror. These wireframes were made into paper prototypes and shown to five customers to bodystorm with. Based on their feedback, multiple iterations were made.



Figure 10: Results from bodystorming with different participants

Key Findings

While there were relatively minimum changes needed to be made to the UX of the app, a couple of major changes were made to the UX of the interactive mirror.

- 1.** The location of liked items were changed. Originally when customers digitally browsed and picked out items they liked, the items were directly saved to their shopping bag. However, this would cause a lot of extra work during checkout. Customers would be forced to remove all items they no longer wished to purchase. This is counter intuitive as most of the time, the number of items that needs to be removed will be higher than those that will remain. The solution to this was to have the items on default saved to a wish list. When the customer commits to certain items, they can then move them into the shopping bag.
- 2.** Restructure the way products are organized on the mirror display. Instead of having virtual items and physical items be separated into two different tabs at the top navigation level, they were collapsed into one single items tab with two sub categories.
- 3.** The location of the shutter buttons for capturing photos and videos. They were determined to be most comfortable placed at elbow heights at the center of the screen, in between the navigations on the two sides.

DESIGN

In this chapter, I will introduce the final design solution. First, there will be overview of the product system and followed by a user scenario. Finally, I will give an in-depth explanation of the design details.

OVERVIEW

With current shopping trends, the cost for customers to shop in stores is extremely high compared to convenience shopping online. Therefore, customers now tend to reserve visiting stores for special occasions. The Connxt system is designed to raise the value of these special visits by providing opportunities for unique bonding experiences worthy to be cherished. Connxt is a retail model that works to seamlessly blend the best of physical and online shopping to create a digitally enhanced department store. It facilitates a new form of social shopping that brings people physically together for that bonding experience.



Figure 11: Connxt system map

The Connxt system divides the entire shopping experience within a single retail space into four main components. This hybrid retail space is created through a network of sensors, special displays, and services. From their smartphones, customers use the Connxt app as the central hub to connect to the in store network and activate all features within the physical retail space.

Snack & Browse

In the in-store cafe, large displays at every table allow visitors to browse the entire inventory while having great conversations over tasty treats.

Locate & Collect

The interactive map helps visitors locate not only their wish list items but also keep tabs on everyone in their party.

Try-On & Share

The interactive mirrors allow for virtual try-ons and hands free communicate between individual fitting rooms.

Check-Out & Store

To move on with the rest of the day bag-free, visitors can leave their purchased items at the store to be picked up later.

USER SCENARIO

Snack & Browse

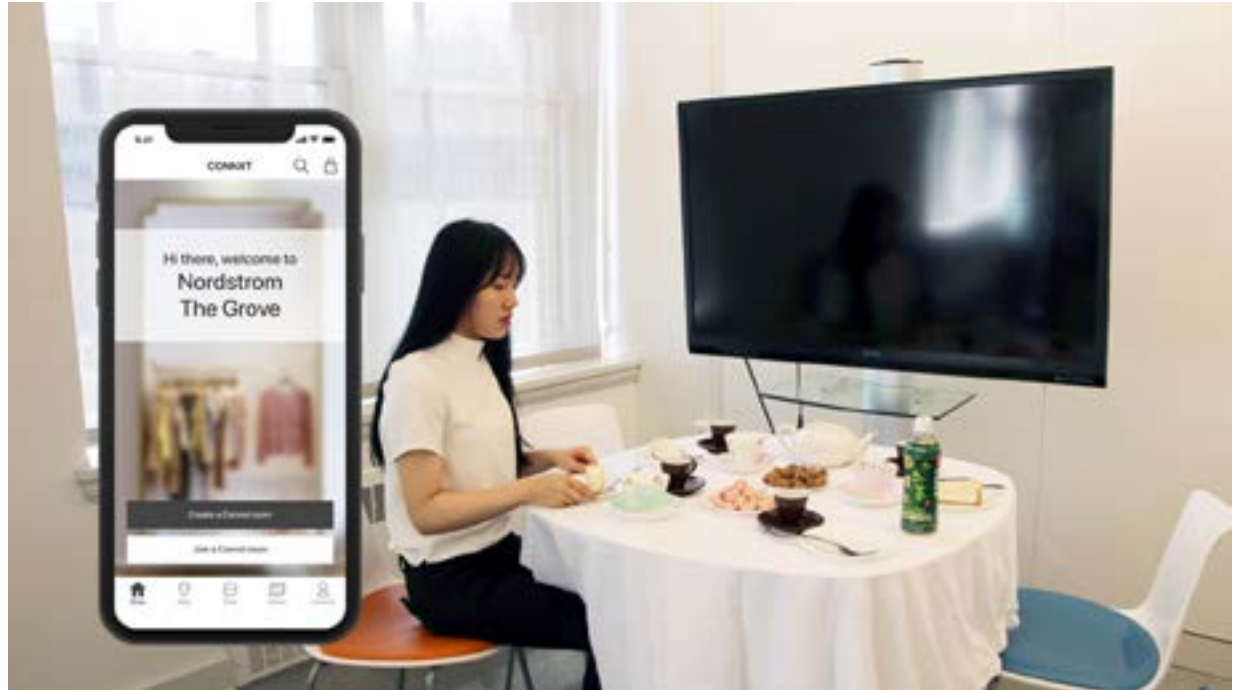


Figure 12: Connxt app landing screen

It is Saturday noon and Emma has arrived at Nordstrom for her and her girlfriends' spring shopping spree. The in store cafe serves as a meeting place the group of friends. And since she is the first to arrive, she sets up a Connxt room for the group using the Connxt app.

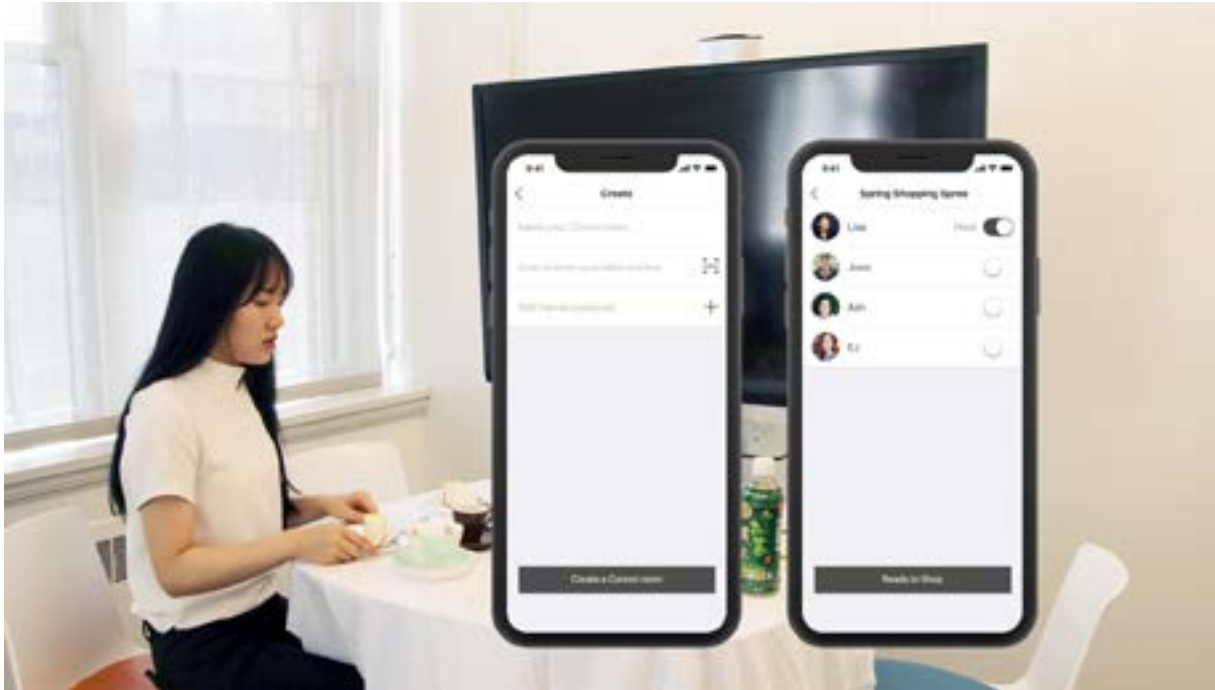


Figure 12: Create a Connxt room

Snack & Browse: Create a Connxt room

Creating the Connxt room essentially connects the group to the specific display at their table.

As the creator of the room, Emma by default becomes the host, which means her phone becomes the remote for the large display.



Figure 13: Connect phone
to large screen

Snack & Browse: Connect phone to large screen

Once everyone arrives, they begin to browse through the digital inventory, such as runway shows and editorials, while enjoying great conversations over brunch.



Figure 14: Phone as remote

Snack & Browse: Phone as remote

Since Emma is the host, she controls the content being displayed on the large screen. All corresponding items available for sale shown in the large screen will be displayed in tiles on everyone's individual phones. When Emma and her friends see items they like, they can view them in details and add them to their individual wish lists.

Locate & Collect

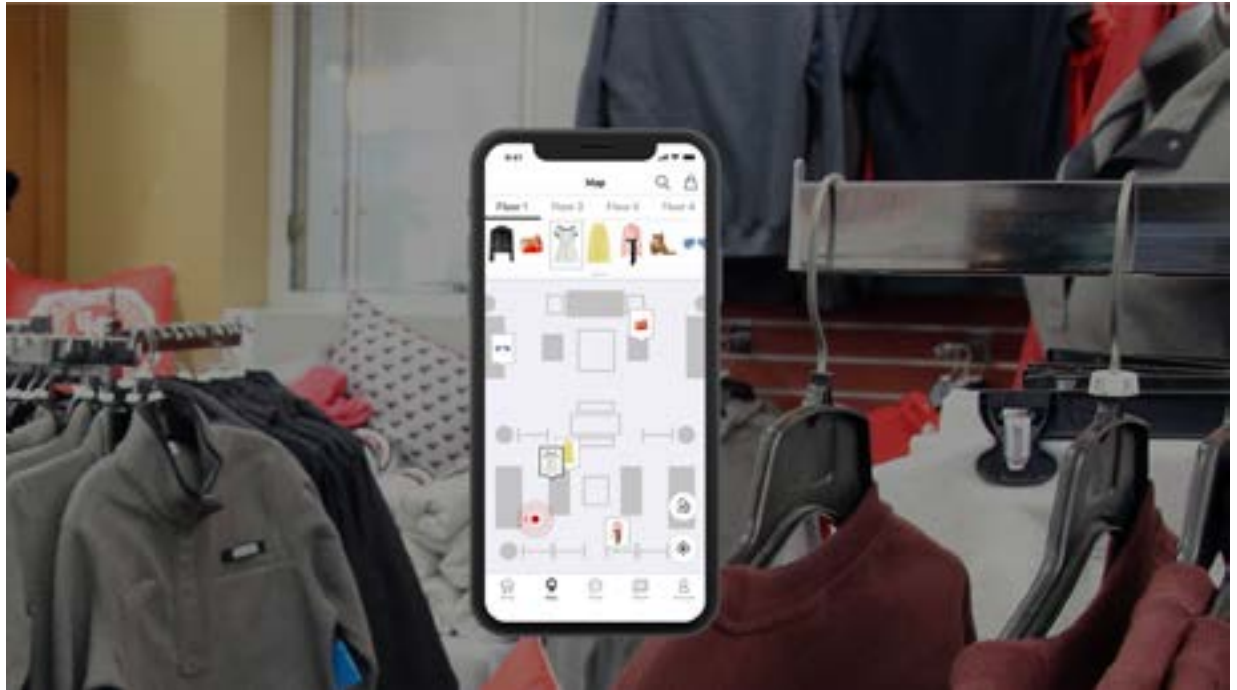


Figure 15: Interactive map with all wish list items

Once they are done eating and chatting, they can move onto the sales floor. To help Emma better navigate the sales floor, all items in her wish list automatically shows up on the interactive map within the app.

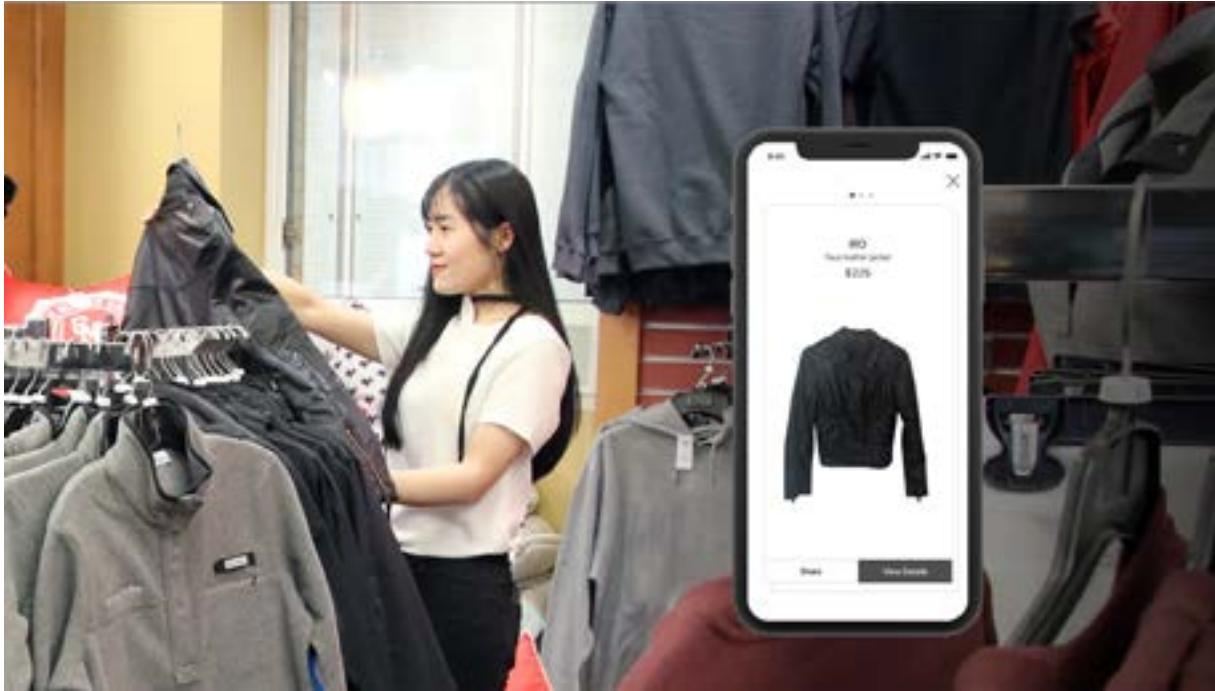


Figure 16: Location based product notification

Locate & Collect: Location based product notification

As she wanders around the store, she'll be notified when she is in close proximity to a wish list item.



Figure 17: Image search and product share

Locate & Collect: Image search and product share

Emma and her friends decides to temporarily slit up and browse around. While exploring, Emma comes across something she thinks suit her friend. She runs an image search of the item on the app and shares it with her friend.



Figure 18: Product share

Locate & Collect: Product share

On the other end, Emma's friend is notified of this and is able to preview the item. She likes it and wishes to find it and try it on. Therefore, she adds the item to her wish list to have it show up on her interactive map so she locate it.



Figure 19: Locating people

Locate & Collect: Locating people

When Emma is finished with exploring alone, the map helps her quickly and easily locate her friends.

Try-On & Share



Figure 20: Phone connects to interactive mirror

Once the group is ready, they head over to their individual fitting rooms. The room auto detects the number of items Emma has brought in while her phone connects to the interactive mirror.



Figure 21: Conference line

Try-On & Share: Conference line

For hands free communicate between fitting rooms, Emma and her friends call into the auto generated conference line.



Figure 22: Life size video feed

Try-On & Share: Life size video feed

When someone is ready to share, she turns on her camera and unmute her mic. Everyone else in the conference line is able to see the life size video feed. They are able to give each other advice without having to deal with awkward and ill-timed leaves from their personal fitting rooms.



Figure 23: Virtual try-on

Try-On & Share: Virtual try-on

While trying on a black faux leather jacket, Emma sees that it also comes in a pretty mint color. However, she cannot request for it to be brought to her room because it is not in stock at the store. But she is still able to try it on because the interactive mirror can allow her to do virtual try-ons.



Figure 24: Mirror selfie

Try-On & Share: Mirror selfie

Emma loves the way this mint faux leather looks on her so she captures the moment with a short video clips. The clip is saved to her album and she shares it with her mom who is currently on the other side of the world.

Checkout & Store



Figure 25: Store and pickup later

After trying things on and making final decisions. Emma and her friends checkout with their Connxt app. Then, they choose to leave their purchased items at the store to be picked up later. This way, they are able to continue onto the rest of the shopping spree burden-free. Later on when they are ready to call it a night, they pick their bags while heading back to their cars.

DESIGN DETAIL: SNACK & BROWSE

The Snack and Browse component within the Connxt system combines eating and digital browsing together. In the in-store cafe, large displays at every table allow customers to browse the entire inventory while having great conversations over tasty treats.

During in-depth interviews, majority of millennial shoppers included food and drinks as a component of their usual in store shopping experience. Some view having a meal as a nice to have component while others claim to plan entire shopping trips around particular restaurants.

During speed dating, most shoppers claimed that planning ahead for shopping trips, by browsing through online inventory beforehand, is ideal because they believe it would make the actual trip more efficient and fruitful. However, it is something that is rarely performed because people don't want to invest the extra time. If they were going to browse online then they may as well just place the order directly online.

Therefore, the proposed design solution combines something people always do (eat together) with something most believe they should do (digital browsing). First, it serves as a common meetup place. Then it provides an ambiance where people can bond through calm, stationary face-to-face conversations over a common topic of interest.

Create/join a Connxt room

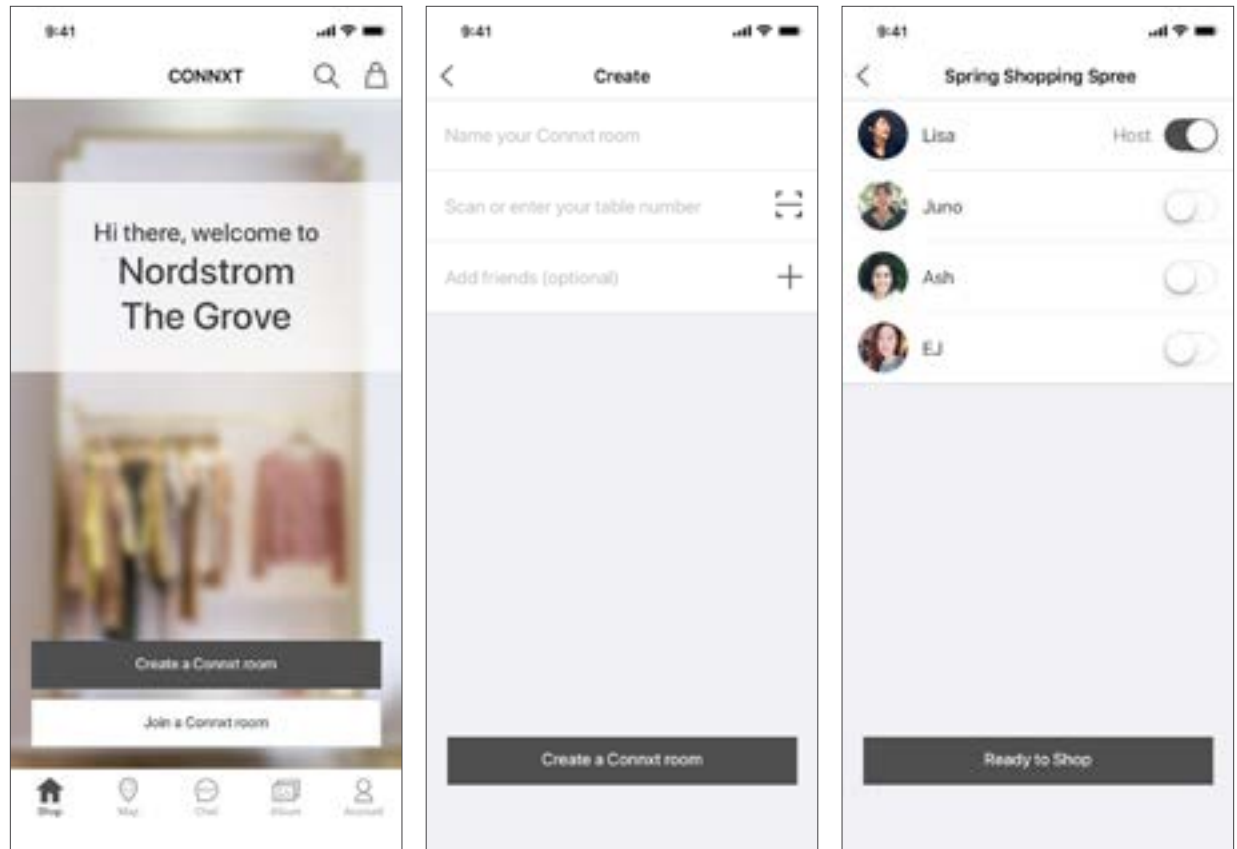


Figure 26: Create a Connxt room UI

A Connxt room is generated from within the Connxt app. This common room is meant to let the in store network connect individual customers to the same party, which allows customers to enjoy access to certain features automatically generated for shopping in a group. By scanning or entering a table code at the cafe, customers' phones are connected to the large display at their table.

Browse: Different content displayed on different screens

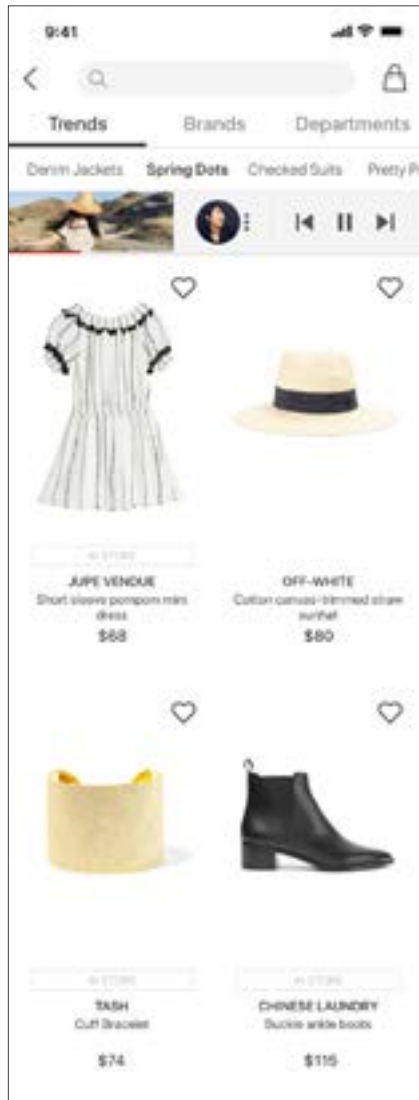


Figure 27a (left): product list UI for the Connxt app

Figure 27b (right): corresponding content shown on the large screen

While browsing, the large screen serves as a secondary display, not mirror display, for personal smartphones. This means that the content displayed on the large screen differs from those on phone screens. The large screen showcases single pieces of photos and videos one at a time, in a carousel. The contents can be in different forms, such as full runway shows, editorials, street shots, etc. All corresponding items on sale shown in the composition will be displayed in tiles on customers' phones. Therefore, when the carousel on the large screen advances, so does the list of corresponding items on individual phones.

Although all users are looking at the same large screen, they are free to navigate around on their personal smartphones. They can jump to individual item detail page and also add items to their personal wish list.

Browse: Host

The Connxt smartphone app operates as the remote for the large screen. Only one person within a party can have control at a time. This person is called the host. The host role is automatically assigned to the person who initial creates the Connxt room for the group. The host's UI contains an extra control bar near the top the screen. With this control bar, the host is able to control the advancement of the carousel and also assign the host role to any member within their Connxt room.

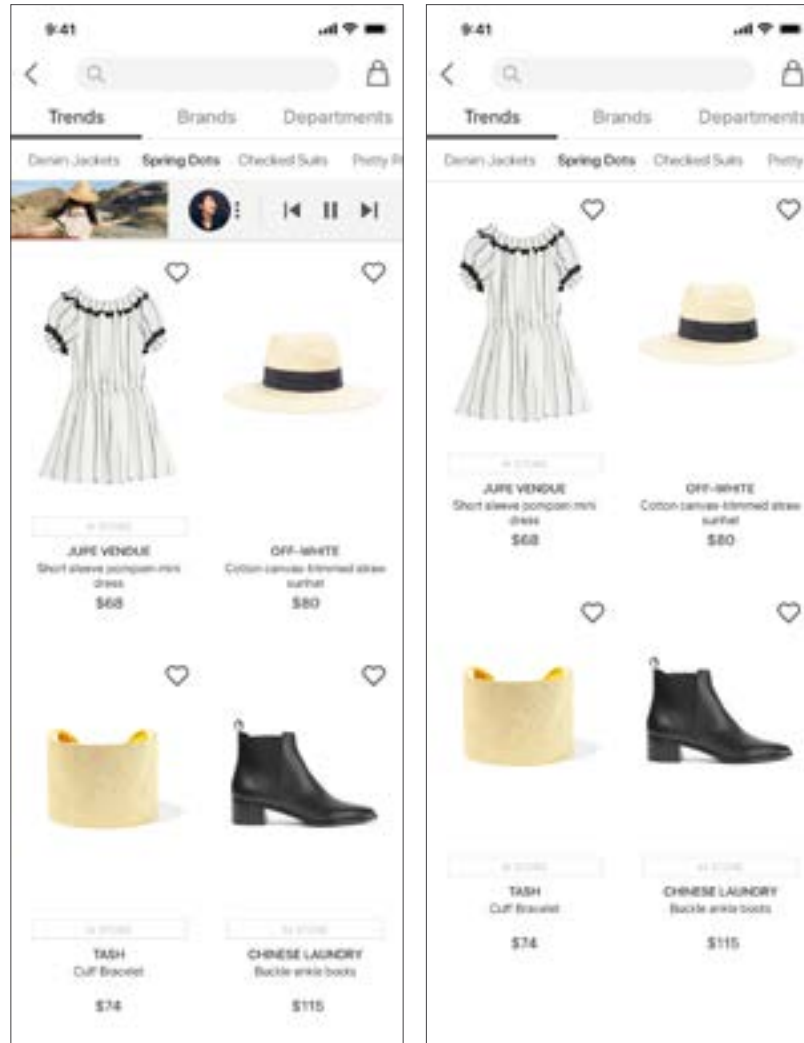


Figure 28a (left): UI for host

Figure 28b (right): UI for non-host

DESIGN DETAILS: LOCATE & COLLECT

The Locate & Collect component of the Connxt system involves a personal interactive map within the app that works in conjunction with a network of bluetooth sensors within the physical retail space to help visitors locate not only their wish list items but also keep tabs on everyone in their party.

During in-depth interviews, many mentioned the frustration that comes with navigation within stores. For individual brands, there is rarely a map of any kind within the store. There is only two options: wonder around and hope for the best or hunt down an employee. Department stores are slightly better with in store signage but the signages themselves are often times confusing.

Besides difficulties in navigating the stores to find desired items, millennials also expressed frustrations in regrouping with people within their party. Often times when they shop in a larger group (more than three people), they will naturally break up into smaller groups and shop in pairs or individually for small chunks of time. When they eventually need to regroup, they waste a lot of time trying to find each other. Even talking on the phone does not seem to absolve the problem.

Therefore, the proposed design solution uses spatial intelligence to offer customers a personal interactive map that helps them more easily navigate the store to locate their desired items as well as people so that there is more time for conversations rather than frustrations.

Locating wish list items

All items placed in a customer's wish list will automatically appear on the interactive map. If the department store is multistoried, the items will also be organized by floors. Bluetooth beacons all over the store track the customer's location through their smartphone connection. When they are within close proximity of an wish list item, they will receive a notification on their phone. If there are multiple wish list items within the same area, only one notification will be sent. This is to avoid customers becoming bombarded with notifications.

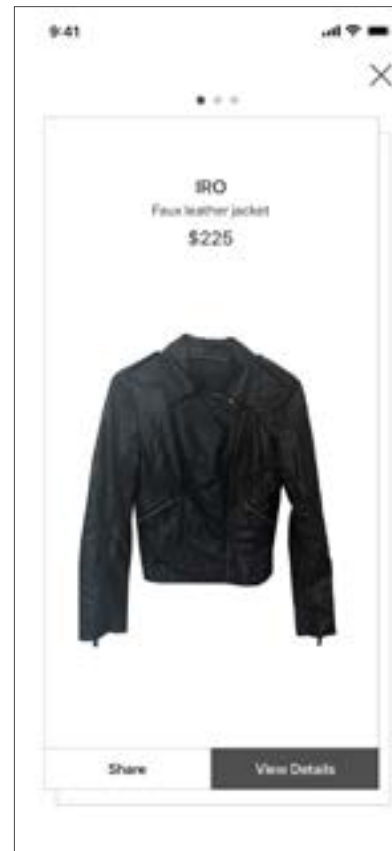


Figure 29a (left): Interactive map

Figure 29b (right): Item notification

Item search

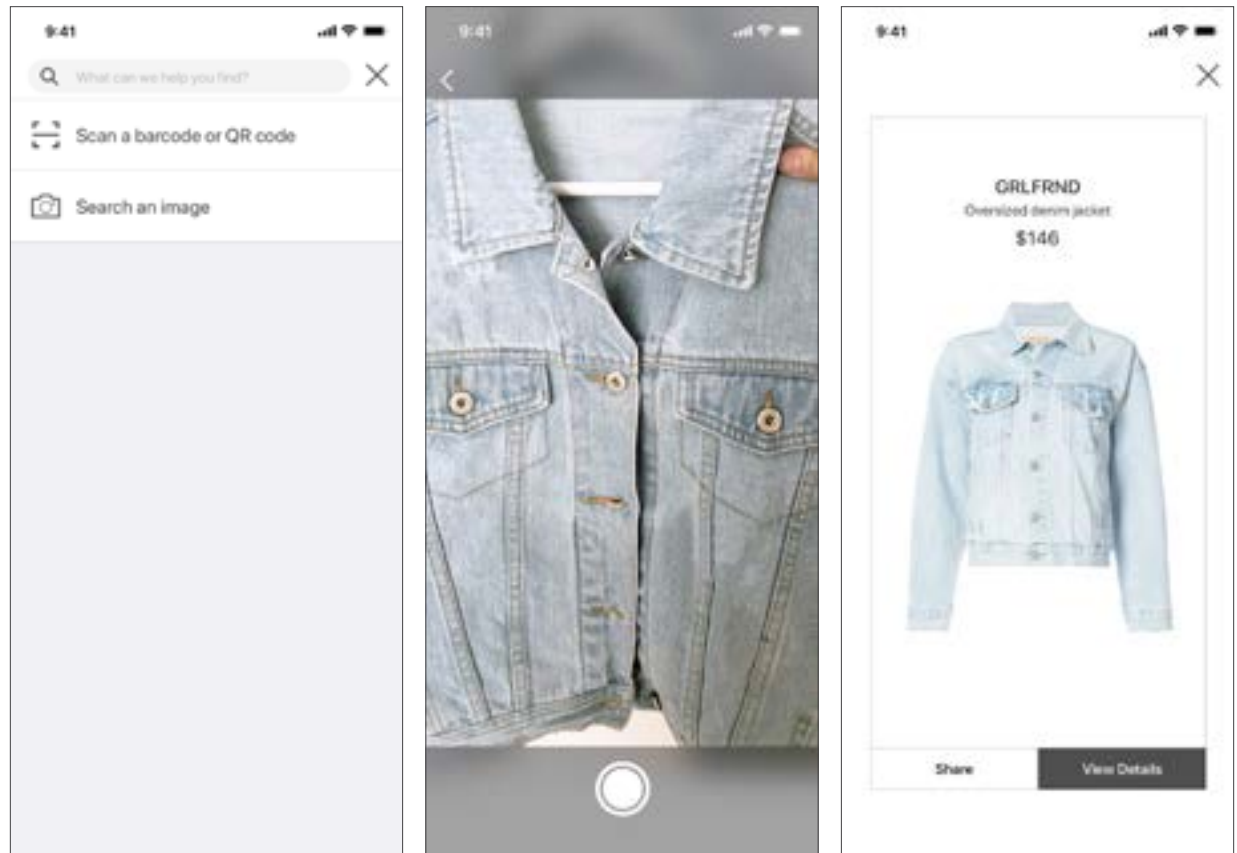


Figure 30: Image search
for item details

When a customer wants to digitally look up an item, they can search by keywords, the tag code, or an image. The search will pull up the item's quick view. The customer can choose to view it in more details or share it with someone else.

Item share

The receiver can then easily add the item to their wish list and have it appear on their map as well. This design solution solves two particular problems surfaced during the interview process. People had mentioned that one of their favorite parts about shopping together with others is the opportunity to pick out or share items with each other. But often times when bigger groups break into smaller groups, the daunting task of hunting someone down to share a particular item discourages them from sharing.

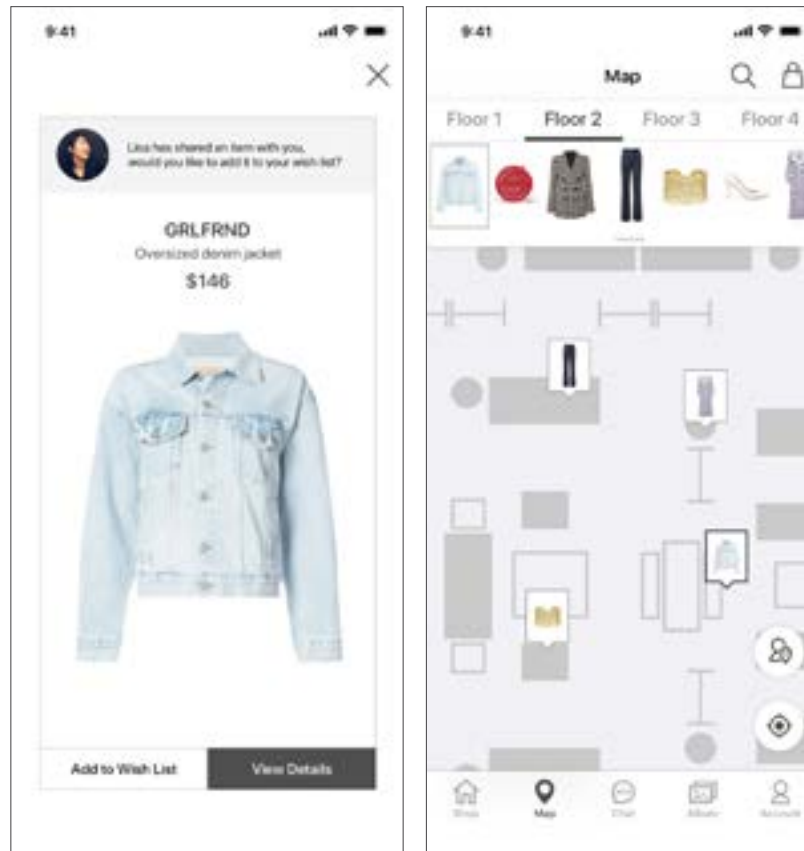


Figure 31a (left): Notification when receiving a shared item

Figure 31b (right): Item shows up on map once it is added to wish list

Others claimed that their work around the problem is to send pictures of the items; however, the task of then having to hunt down those particular items surfaces.

Locating People



Figure 32: Friends' locations indicated on map

Bluetooth beacons all over the store track the customer's location through their smartphone connection. As an opt-in feature, people can allow the rest of their group members have access to their location are all times within the store via the interactive map. During speed dating, some voiced the concern that not everyone may be comfortable with sharing their location at all times.

DESIGN DETAIL: TRY-ON & SHARE

During in-depth interviews, many brought up frustrations and awkwardness involving the fitting room area. When shopping in a group, people want to stick together in order to get each other's opinions. However, fitting rooms are usually either too small to fit multiple people or only allow one person per room. When people are in their individual fitting rooms, they then have to come out in order to share what they have tried on. Many view this as undesirable: don't know when others' are ready, don't want strangers to see what they have on, etc. In these situations, some simply choose to not come out of their fitting room and share with each other. This is far from ideal as the sharing process is extremely crucial to the overall bonding experience.

Therefore, the Try-On and Share component of the Connxt system is designed to alleviate those pain points. This design solution involves the implementation of interactive mirrors within each fitting room that allows for virtual try-ons and hands free communicate between individual rooms.

As soon as the user enters the fitting room, the Connxt app automatically connects to the digital mirror, making it into a secondary display. The user is able to interact directly with the mirror like a large touch screen, which eliminates the danger of multitasking with a tiny phone that is extremely drop-prone.

The UI is separated into left side and right side to leave room in the center for the user to have an unobstructed view of their reflection. Left side is the main navigation menu displaying of personal information. The right side navigation consists of social items: interactions with others.

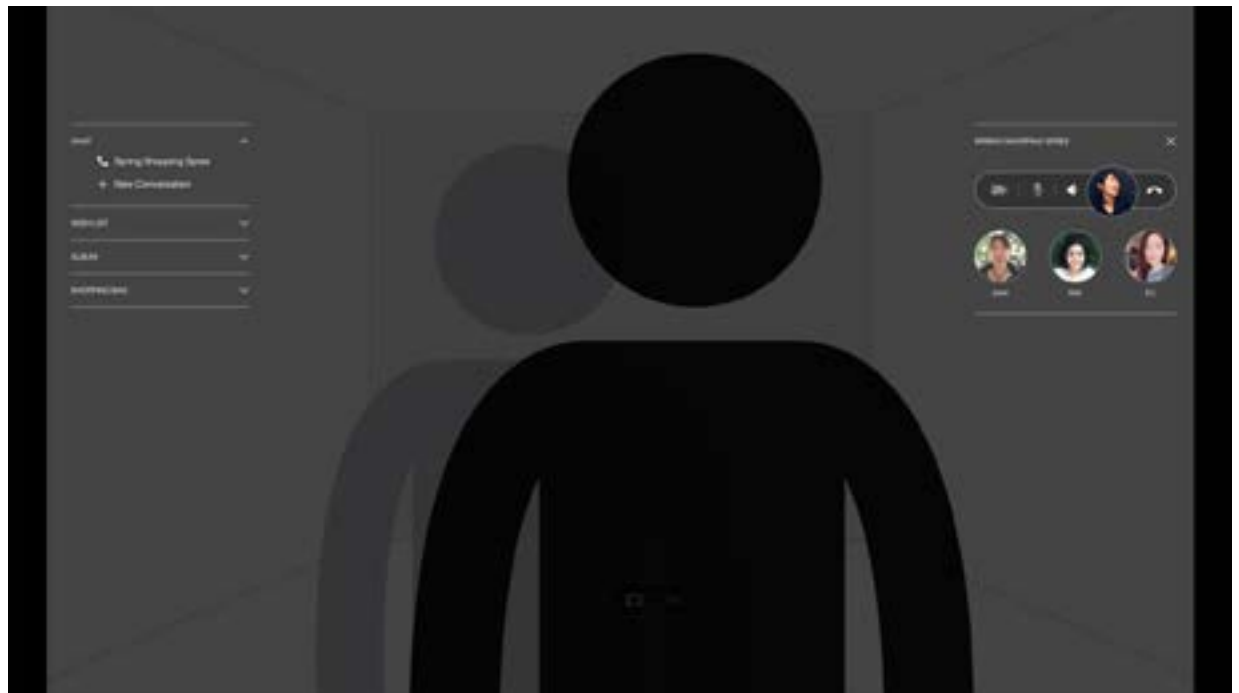


Figure 33: Overall UI placement for digital mirror

Connxt room conference line

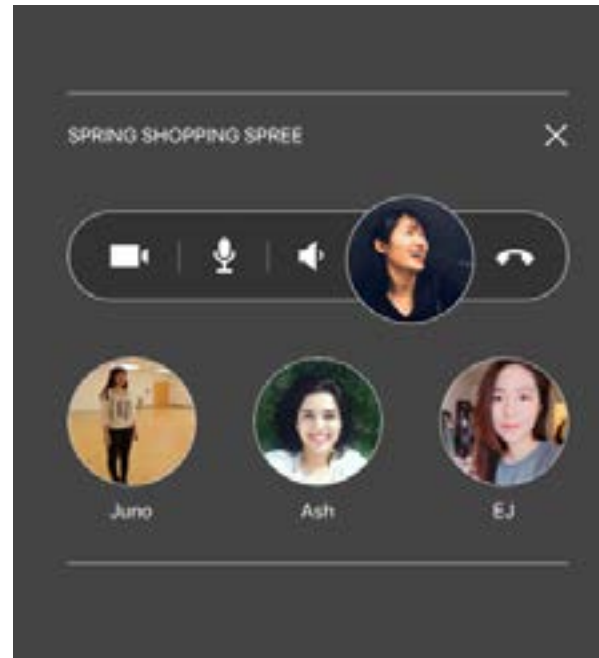
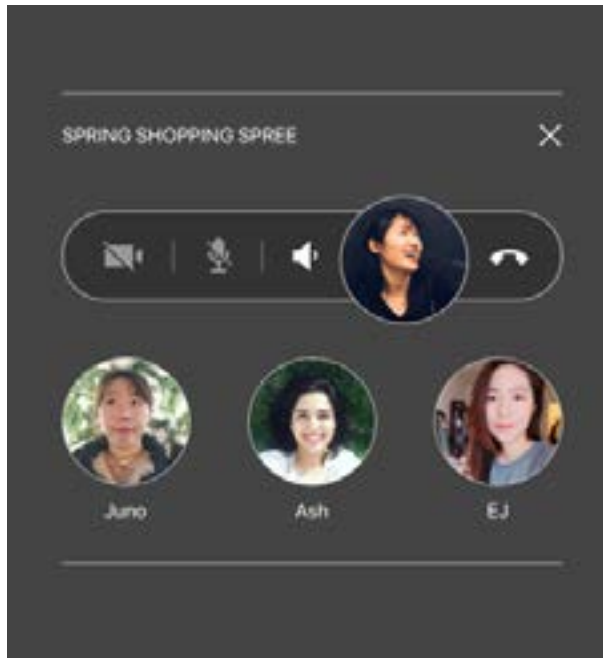


Figure 34a (left): Profile image is displayed when camera is turned off

Figure 34b (right): Profile image turns into thumbnail of video feed once camera is turned on

When the Connxt room is initially created, a corresponding conference line is automatically generated as well. Within their fitting rooms, members of the Connxt can call into the conference line that allows communication between all the individual rooms. The user has control over their individual mic and camera. They have the option to mute the mic and turn off the camera for a more private fitting. When they are ready to share, they can turn everything back on. When they do so, others will see and hear a live video feed. The video feed can be viewed in thumbnail or be enlarged to life-size.



Figure 35: Life size video feed

Because of the difference in people's heights, eye contact may become problematic when not everyone's cameras are switched on. When only one person is sharing their camera feed, they would be looking straight ahead at themselves, instead of making eye contact with others who are either taller or shorter than them. In order to avoid this problem, the design utilizes people's profile heights to adjust the sense of depth of the video feed accordingly. For example, if a person at 5'3" is looking at their friend who is 5'11", the display will make it appear as if the 5'11" friend is standing more at a distance. This manipulates perspective to create the illusion that the 5'11" friend is actually at the same eye level as the person standing at 5'3".

Items in room

Once an user enters a fitting room, the room auto detects the number of physical items they have brought in with them through RFID tags on individual items. Details on these particular items are pulled up in the main navigation. If the user needs an item in other color or size, they can make a request directly on the mirror screen and have the item delivered to their room.



Figure 36: Displays all items in room and remaining items in wish list

Virtual try-ons



Figure 37: Option to virtually try-on clothes

Under the main navigation, all items not physically within the fitting room are listed under virtual items regardless of whether or not they are available in the store. The user has the option to virtually try-on any item. The mirror display uses augmented reality technology to superimpose the item onto the user without them having to physically try put it on.

Camera + album

Regardless of whether they are doing virtual or physical try-ons, users can take selfies or short video clips of their try-ons. The recordings are saved to their Connxt album for sharing and keepsakes. The recordings of the current session is available for viewing on the mirror display while all history is saved within the Connxt app on users' phones.

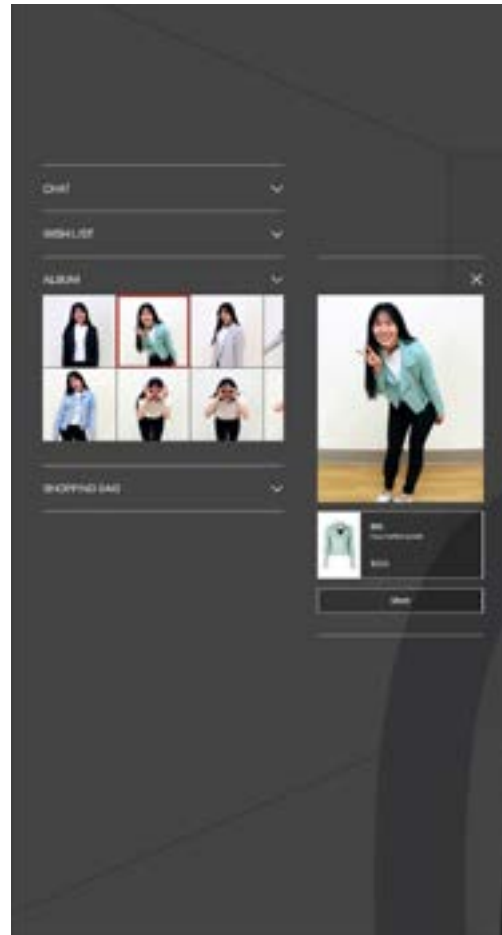


Figure 38: Album saves all selfies taken with the mirror camera

DESIGN DETAIL: CHECKOUT & STORE

In current situations, carrying shopping bags around quickly becomes a burdensome task as the day progresses and the number of bags add up. All too often does one person out of the group end up sitting out in odd corners of different stores as the bag-watcher while the rest of the party continue to browse around. This is undesirable as it keeps the person from participating in the bonding ritual of interacting with the rest of the group.

Therefore, the Connxt system is designed with the intention of alleviating this problem. After checkout, customers can choose to leave their purchased items at the store to be picked up later.

This way, customers are able to move on with the rest of the shopping trip with less baggage to carry around. Combining this service with the in store cafe, Connxt invites customers to begin and end their shopping trip at the same store, which builds upon brand exposure.

REFLECTION

In this chapter, I will discuss the limitations and future research opportunities for this study.

REFLECTION

I began this study because I had previously worked on a project designing for an omni-channel retail platform. I was introduced to the industry and was intrigued by it. The exchange of goods and services is very much a part of our everyday lives so these global business model shifts have immediate impact on the way we live. I hypothesize that physical retail will never die; but the way we utilize the retail environment will change. We will move on from striving for an omni-channel retail model—where businesses have separate touchpoints from online to offline—to a new form of retail where digital and physical services are completely integrated. This thesis study makes an attempt to design with these in mind.

As mentioned in previous chapters, although research was conducted for three different shopping group configurations—friends, couples and families—, the final design direction was based on further research completed with millennial friends. However, this does not limit the design solution to only millennial friends. Connxt is proposed with the intention of providing the tools and opportunities for better communication within groups of shoppers; therefore, it serves a set of universal needs.

Nevertheless, considering other possible use cases, some parts of the final design solution remains to be further explored. The features and design details for these use cases were taken into consideration during the design process but not fully conceptualized.

- To use the Connxt app to shop when not present at a storefront.
- Communication with others when not all parties are inside fitting rooms (e.g. one person is in a fitting room while another is outside waiting).
- Engagement with people who are not physically present for the shopping trip.
- Salespeople's role in this system. How would they differ from previous one?
- To social shop with strangers: if shopping alone, the possibility of being matched with others who are also there by themselves.

REFERENCES

Works cited within this thesis study.

Walker, Tommy. "Omni-Channel Retailing: What is Omni-Channel Commerce, Really?." ShopifyPlus. January 29, 2018. <https://www.shopify.com/enterprise/omni-channel-retailing-commerce-what>.

Peterson, Hayley. "Macy's Shut Down Even More Stores." Business Insider. May 12, 2017. <http://www.businessinsider.com/macys-might-shut-down-more-stores-2017-5>.

Smith, Aaron. "Every Bon-Ton Department Store is Closing" CNN Money. April 19, 2018. <http://money.cnn.com/2018/04/19/news/companies/bon-ton-liquidation/index.html>.

Chen, Cathaleen. "Nordstrom Earnings Inch Above Estimates, While Comp Sales Dip." The Street. November 9, 2017. <https://www.thestreet.com/story/14385773/1/nordstrom.html>.

"Primary household shoppers who prefer to shop mainly via mobile, online or in-store in the United States as of February 2017, by age group." Statista. n.d. <https://www.statista.com/statistics/694894/primary-household-shoppers-channels-mobile-online-in-store-us-age/>

Donnelly, Christopher and Renato Scaff. "Who are the Millennial Shoppers? And What Do They Really Want?." Accenture. n.d. <https://www.accenture.com/us-en/insight-outlook-who-are-millennial-Shoppers-what-do-they-really-want-retail>.

"Millennial Careers: 2020 Vision." ManpowerGroup. 2016. https://www.manpowergroup.com/wps/wcm/connect/660ebf65-144c-489e-975c-9f838294c237/MillennialsPaper1_2020Vision_lo.pdf?MOD=AJPERES

"Watson Internet of Things." IBM. n.d. <https://www.ibm.com/internet-of-things/iot-zones/iot-retail-stores/>

Violino, Bob. "Wal-Mart Expands RFID Mandate." RFID Journal. August 17, 2003. <http://www.rfidjournal.com/articles/view?539>.

Bjork, Christopher. "Zara Builds Its Business Around RFID." The Wall Street Journal. September 16, 2014. <https://www.wsj.com/articles/at-zara-fast-fashion-meets-smarter-inventory-1410884519>.

Saunders, Asena Atilla. "Beacons and Proximity Marketing: All you Need to Know." Digital Doughnut. March 9, 2017. <https://www.digitaldoughnut.com/articles/2017/march/beacons-and-proximity-marketing-all-you-need-to-k>

Koolhaas, R., OMA - Office for Metropolitan Architecture, & Exhibition OMA. (2001). Projects for Prada. Milano: Fondazione Prada Ed. <http://www.worldcat.org/title/projects-for-prada/oclc/961354038>

Lindsay, Greg. "Prada's High-Tech Misstep." CNN Money. March 1, 2004. http://money.cnn.com/magazines/business2/business2_archive/2004/03/01/363574/

eBay Inc. Staff. "eBay Inc., Rebecca Minkoff Deliver Next-Generation Shopping." Ebay. November 12, 2014. <https://www.ebayinc.com/stories/news/ebay-inc-rebecca-minkoff-deliver-next-generation-shopping/>

Milnes, Hilary. "Inside Ralph Lauren's Connected Fitting Rooms." Digiday. April 12, 2016. <https://digiday.com/marketing/retailtech2016-inside-ralph-laurens-connected-fitting-rooms/>

Fretwell, Lisa. "Cisco StyleMe™ Virtual Fashion Mirror." Cisco. December 2011. https://www.cisco.com/c/dam/en_us/about/ac79/docs/retail/StyleMeEngagementOverview_120611FINAL.pdf

Charles Shearer Dorner et al., United States Patent 9,858,719.

"The Top Examples of AR in Retail." Augment. March 8, 2017. <http://www.augment.com/blog/best-of-ar-in-retail/>.

Eliot, Lance. "Retail's New Reality: Invisible Shopping Centers and Airtual Assistants." CNBC. April 24, 2015. <https://www.cnbc.com/2015/04/24/retails-new-reality-four-ways-technology-can-boost-sales-commentary.html>

Palladino, Tommy. "Zara AR App Brings Virtual Models to Life in Stores." Next Reality. April 12, 2018. <https://mobile-ar.reality.news/news/zara-ar-app-brings-virtual-models-life-stores-0184105/>

"Amazon Go." Amazon. n.p. <https://www.amazon.com/b?ie=UTF8&node=16008589011>.

Taylor, Kate. "Nordstrom Just Opened a Tiny Store that Doesn't Sell Any Clothes." Business Insider. October 3, 2017. <http://www.businessinsider.com/nordstrom-new-store-concept-opens-2017-10>.

"Cooking Classes & Event." Williams Sonoma. n.p. <https://www.williams-sonoma.com/pages/store-events/cooking-classes-events/#technique-classes>.

Reyes-Velarde, Alejandra. "Come for the food, stay to buy clothes? To attract shoppers, retailers add restaurants to their stores." Los Angeles Times. January 17, 2018. <http://www.latimes.com/business/la-fi-eat-shop-beausoleil-20180117-story.html>.

Laird, Sam. "High Tech, High Fashion: Clothes Hangers Show Real-Time Facebook Likes." Mashable. May 8, 2012. <https://mashable.com/2012/05/08/hangers-update-facebook-likes/#xeLnldwSjSqx>.

"Nordstrom." Pinterest. n.p. <https://business.pinterest.com/en/success-stories/nordstrom>.

Sheehan, Alexandra. "Instagram-Worthy Interiors: How to Make Your Retail Shop Picture Perfect." Shopify. December 6, 2016. <https://www.shopify.com/retail/how-to-make-your-retail-shop-instagrammable>.