CSE 440 Spring 2011
Contextual Inquiry

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Problem and Solution Overview

Money is stored and spent in a variety of ways: it is kept in wallets, stored in checking accounts, retrieved with debit cards or checks, and borrowed using credit cards. However, people are often limited to certain methods of payment at certain times. As it is, one must have the right amount of money at the right time, using the right payment method; in other words, payment needs to be simplified. We propose a smartphone application called Kibisis, which addresses these problems by allowing users to 1) access all their methods of payment in one place and 2) make immediate and direct payments to other people. Additionally, Kibisis helps users keep track of their monetary transactions with others, so that they can make informed decisions about who to exchange money with.

Contextual Inquiry Participants

We decided that our target users are people who often need to exchange money with each other on the fly. Therefore, we decided to interview business employees as well as college-age groups of friends, since they are more likely to need to frequently lend or borrow money with each other than older people are. Because Kibisis addresses how people exchange money with other people, we mostly interviewed small groups of people rather than individuals.

Jesse, Matt, and **Andreas** are all students or recent graduates of the University of Washington (UW) who are in their early 20s and have different methods of paying at restaurants. Jesse and Matt use debit cards; Andreas only uses cash. We observed how they split and paid for a bill after a Sunday night happy hour at Finn MacCools. Because Jesse, Andreas, and Matt are also roommates, we also inquired about their methods of paying for rent together.

Michael and **Allan**, also both in their early 20s and undergraduates at the UW, are roommates. They live in an apartment a few blocks from campus. Because they share the costs of items like rent and food, they often pay each other to divide up costs equally. We observed them as they had a conversation about paying each other back money that was owed between them. We also observed them as they bought items at a convenience store. Being college age roommates,

they represent one of our main target audiences -- younger people that often exchange money with each other.

Pedro and **Shane** are both waiters at a local French restaurant called Viola. They both have been working as waiters for over three years while finishing school at the UW. The interview took place early on a Tuesday night before the restaurant became too crowded. They both interact with a variety of customers, mainly during dinner hours, and are the main contact point when patrons want to pay. As such, they represent another main section of our target audience.

Zinnia and **Eric** are both undergraduate students at the UW who have known each other for roughly three years. They were two people in a group of seven eating at a high-end sushi restaurant, where bill splitting is uncommon. We observed how their group ordered and shared a variety of dishes, and how their group eventually split the bill, knowing that the restaurant only splits bills two ways. The interview took place during the bill calculation, when each person figured out who owes what amount, and which two people are paying for the bill. In this interview, we asked not only about how they split the costs, but how they expect to have their money returned, and how much trust they place in those who hold onto their money.

Contextual Inquiry Results

Trust

The interview with Zinnia and Eric revealed the need for trust when exchanging money with others. The restaurant their group was at refused to split tab more than two times, and because Zinnia and Eric both had debit cards rather than cash, they volunteered to pay for the tab. However, Zinnia and Eric placed different levels of trust in the people from whom they gathered money, and employed different strategies to fulfill their need for trust. Eric simply kept the bill and made a note of the people he had paid for and which dishes they had ordered. He thought he would have little trouble getting his money back, since he had proof of who owes how much. He did point out, however, that it usually takes long periods of time before he sees his money returned, and reminding his friends how much they owe and why can be difficult, especially when those loans are long forgotten. Zinnia, on the other hand, wanted cash on the spot, or immediately after dinner, because she was not sure if everyone she had paid for would follow through with returning her money. We saw a similar theme when interviewing the groups of roommates (Michael & Allan and Jesse, Matt & Andreas); it was assumed roommates would pay each other back at some undefined point in the near future.

In other words, for our target audience, exchanging money with each other is tightly paired with establishing trust that debts will be paid. Kibisis should therefore be aware of this need for trust, perhaps facilitating it through some kind of debt tracker, or through the ability to see the history of exchanges between the user and other person.

Efficiency

Interviewees also placed an emphasis on the efficiency of money exchange. One way this appeared was that people exchanging money between each other simply had one pay the other

the net difference. For example, Allan needed to pay Michael back for rent and for a pizza they had ordered some time ago, but Michael owed Allan for their Internet bill. So, Allan gave Michael a single check for the amount of “Rent + Pizza – Internet.”

Interviewees also wanted efficiency in terms of time. For example, Eric and Zinnia both expressed that they wanted to paid back sooner rather than later. Jesse also showed that when he collected checks from his roommates, who were paying him back for rent and utilities, he would wait until he had received checks from all of them so that he could cash them during a single trip to the bank.

Kibisis, by being a method through which people can pay each other immediately and directly, will address this desire for efficiency. In addition, we may want to include features like calculating the net amount owed between the user and another person.

Payment Limitations

There are often limitations on how and when people can make a payment. For example, a restaurant may take only certain forms of payment, or they may not allow groups to split the total bill. This was the situation with Eric and Zinnia, who volunteered to pay for their group because the restaurant they were at would only split the total bill two ways.

People also may not have the required form of payment with them at the time it is needed. When being paid back by others, Zinnia ended up rounding up or down because not everyone could give her exact amounts in cash. Because of this, people still ended up owing her (or Zinnia owed them) a little bit of money.

Finally, even if people remember that they need to make a payment, people may not be in a situation where they are able to do so. When roommates Allan and Michael were discussing what they need to pay to each other, Allan was playing a computer game during their discussion and so was not able to pay immediately. Instead, Allan ended up handing Michael a check a few days later.

By allowing people to pay each other directly, Kibisis hopes to prevent situations where users are limited in how they are able to pay. Kibisis could additionally allow users to schedule future payments, in case they are unable to make a payment immediately.

Security

Some participants were uncomfortable carrying around certain forms of payment. When asked why he paid for something using a card, Allan replied that “cards can be cancelled if they’re stolen, but if cash is stolen, you can’t cancel that.” Jesse similarly mentioned that he was uncomfortable with carrying around large amounts of cash, which he would receive from roommates paying him back for rent and utilities. Obviously, it should not be easy to steal money from a user through Kibisis. Our designs will need to take into account the fact that people sometimes lose their phones or leave them in insecure places. Ideally, Kibisis should be trustworthy enough so that users can continue using their phone the way they always have.

Other Observations
In our interview with Pedro and Shane, we were able to see that restaurants have their own systems installed which handle which customers have ordered what, and how much they owe. The graphical representation used by their computers to keep track of customers orders and bill separation was efficient and something we thought could help inspire our system design.

Existing and New Tasks

Easy: Paying back a friend
Mark is 22 years old and lives in the U-district with his roommate, Sam. Sam has sent Mark a Facebook message asking to be paid back for rent, so Mark wants to use Kibisis to see how much he owes Sam. In addition, Mark would like to know if there is anything else he owes Sam for and if there is anything Sam owes Mark for. Sam works during the day and is hard to contact during the week, so it would be most convenient if Mark was able to figure out the net amount he needs to pay Sam, so that Mark only has to pay once.

This is an easy task that demonstrates how a common task of our target audience can be improved. Our target audience are people that are mobile, busy, and, because they exchange money with each other so often, have to keep track of debts by memory and often forget the reasons for debts or the exact amount owed. Kibisis should make this basic payment task much easier by providing a quick method of payment and automatically calculating net debts for the user.

Medium: Shared payment of a concert ticket
Bob Dylan wants to attend a rock concert with his friend John Doe. Each ticket costs $40. While both are sitting at their computers at their own apartments, Bob discovers a deal for the tickets: buy two, get $10 off each ticket. This offer only works when both tickets are bought together, so Bob calls John, details the terms of the deal, and offers to pay via his credit card. John promises to pay Bob back when he sees him next. John makes a note to himself that he owes Bob $30. Bob purchases the two tickets under the deal (at $60 instead of $80), and notes that John owes him $30. Bob paid $60 out of his own account, with John now owing Bob $30, and both parties created documentation to help them keep track of the transaction to ensure future repayment.

A very important task performed by the people we interviewed was ensuring repayment of debts, though different people did this in different ways. Often, people lack a way to pay money owed right away, which makes taking steps to ensure repayment necessary.

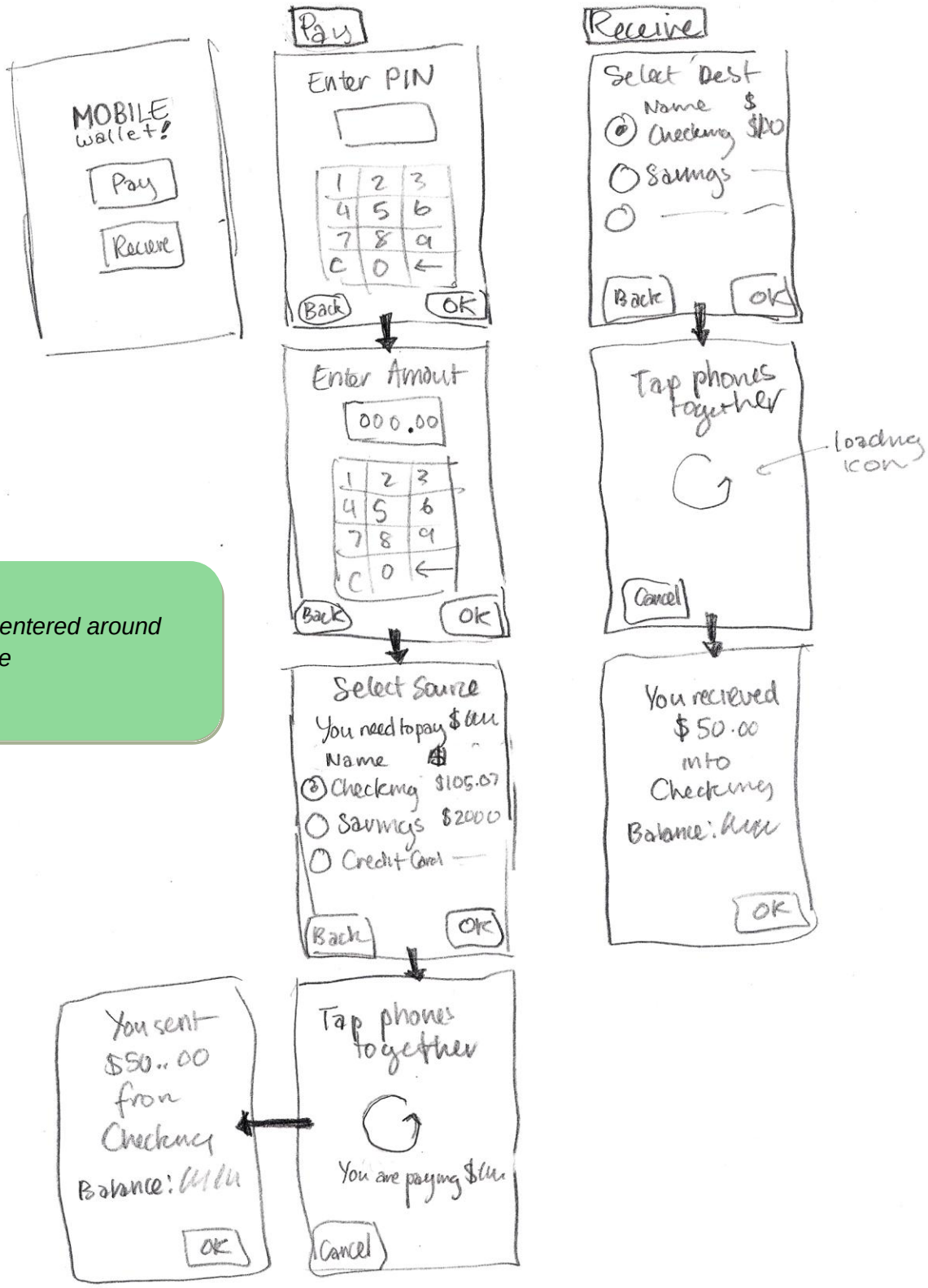
Difficult: Mixed payment methods at a restaurant
Kurt, Rachel, Finn, Santana, and Brittney finish eating dinner at a restaurant that does not allow the check to be split. They discover that they all have varying methods of payment and owe different amounts. Kurt has a credit card, Rachel has a debit card, Finn and Santana have cash, and Brittney does not have money at all. Brittney points out that Finn still owes her money from a previous dinner. Finn then offers to pay for Brittney's portion of the dinner. Rachel points out

to Kurt that she could run to an ATM after the meal to repay someone in cash, so Kurt decides to pay the total bill and asks everyone to pay him back as soon as they can.

Santana and Finn are able to pay Kurt back the amount they owe. Meanwhile, Rachel has run to a nearby ATM to withdraw some cash. The bills she receives are not the exact cash amount that she owes, so she ends up overpaying Kurt a little. Kurt says that he will pay her back the difference later.

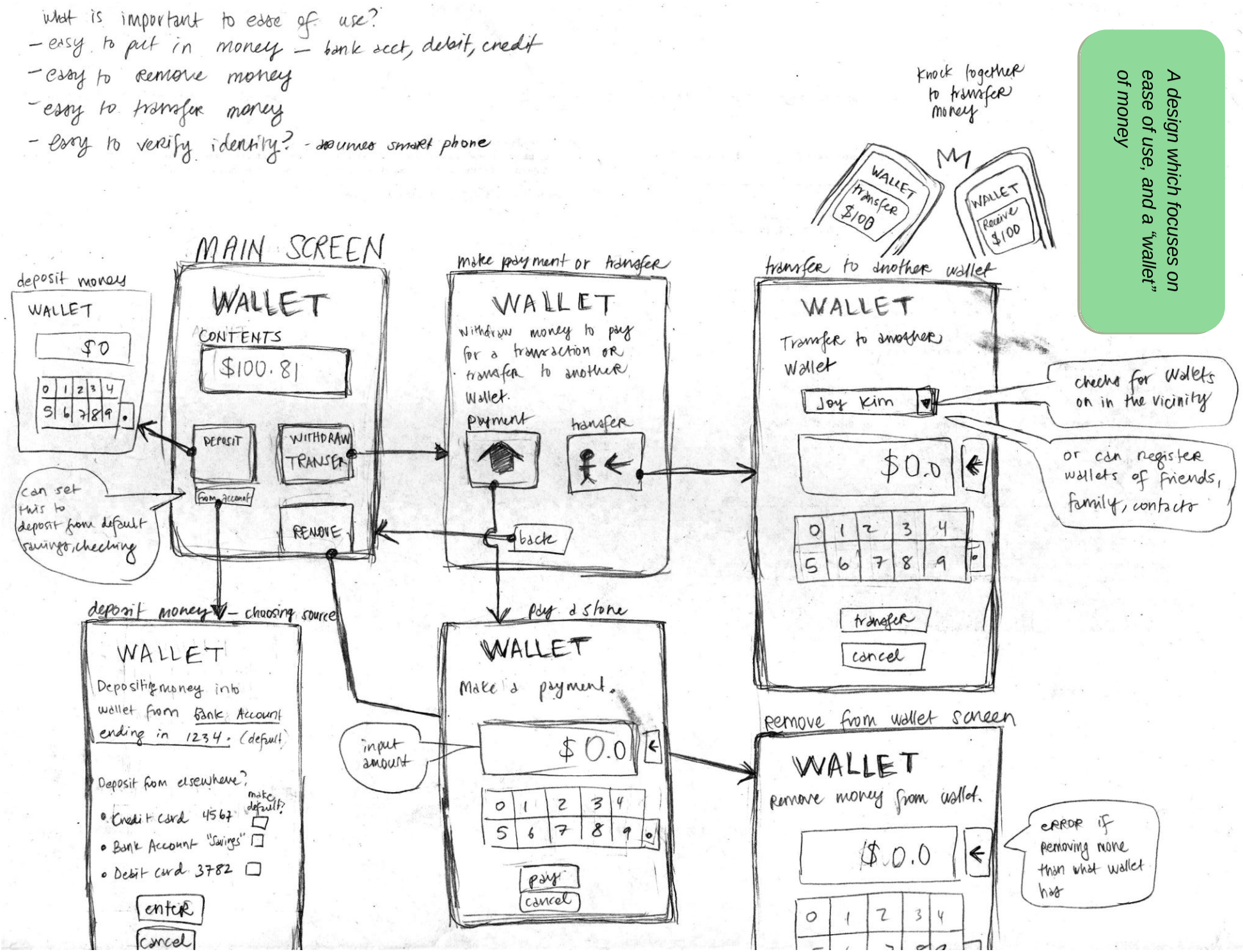
This task describes how the current methods of money exchange are inefficient and make debt tracking between friends difficult. The difficulty in this task lies in each member of the party trying to pay each other indirectly; credit and debit cards cannot directly transfer funds from one account to another, and cash may be in short supply, or not split into the exact amounts. Not all restaurants or bars can support the effort and time required to split tabs for large groups, as discovered in our interviews with Jesse, Matt and Andreas. With Kibisis, a large variety of payment methods could be consolidated into a few short actions on a mobile phone. Kibisis could also transfer the necessary funds to a user without the need for physical currency or a trip to a bank while reducing the additional work done by restaurant staff and patrons, since they no longer need to deal with these complicated bill splitting transactions,

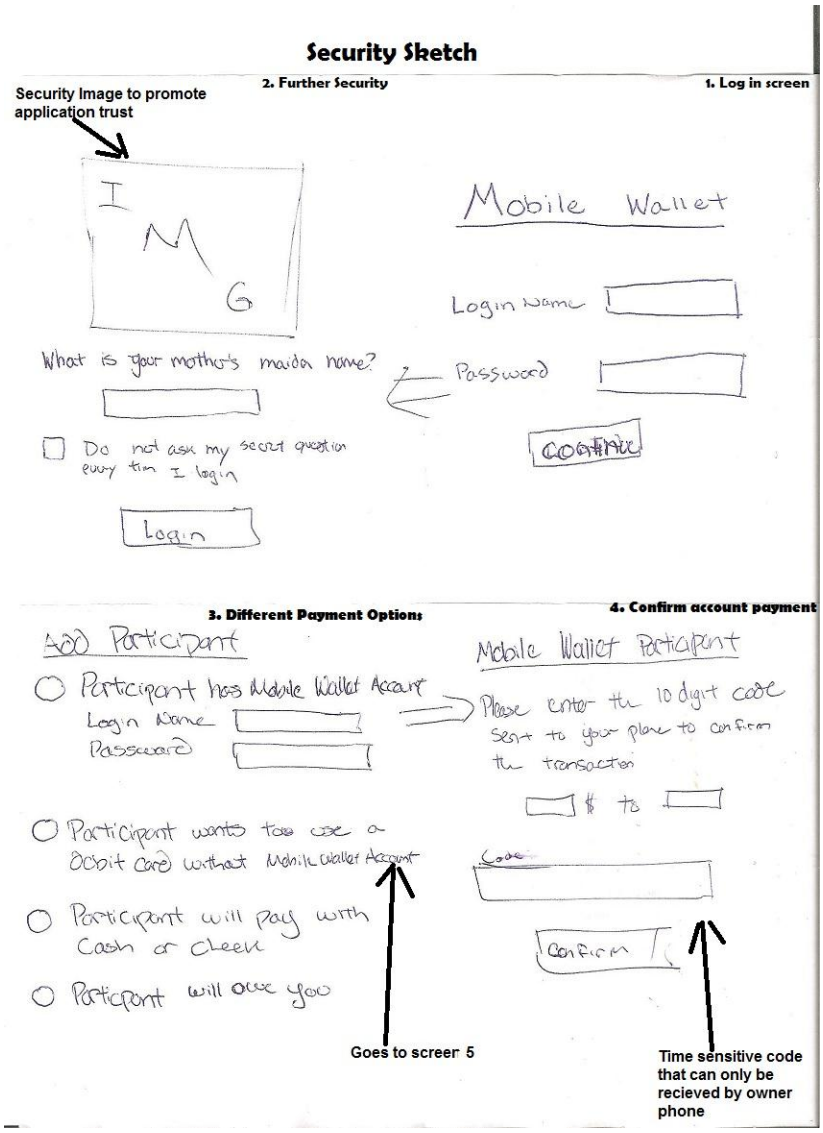
Design Sketches



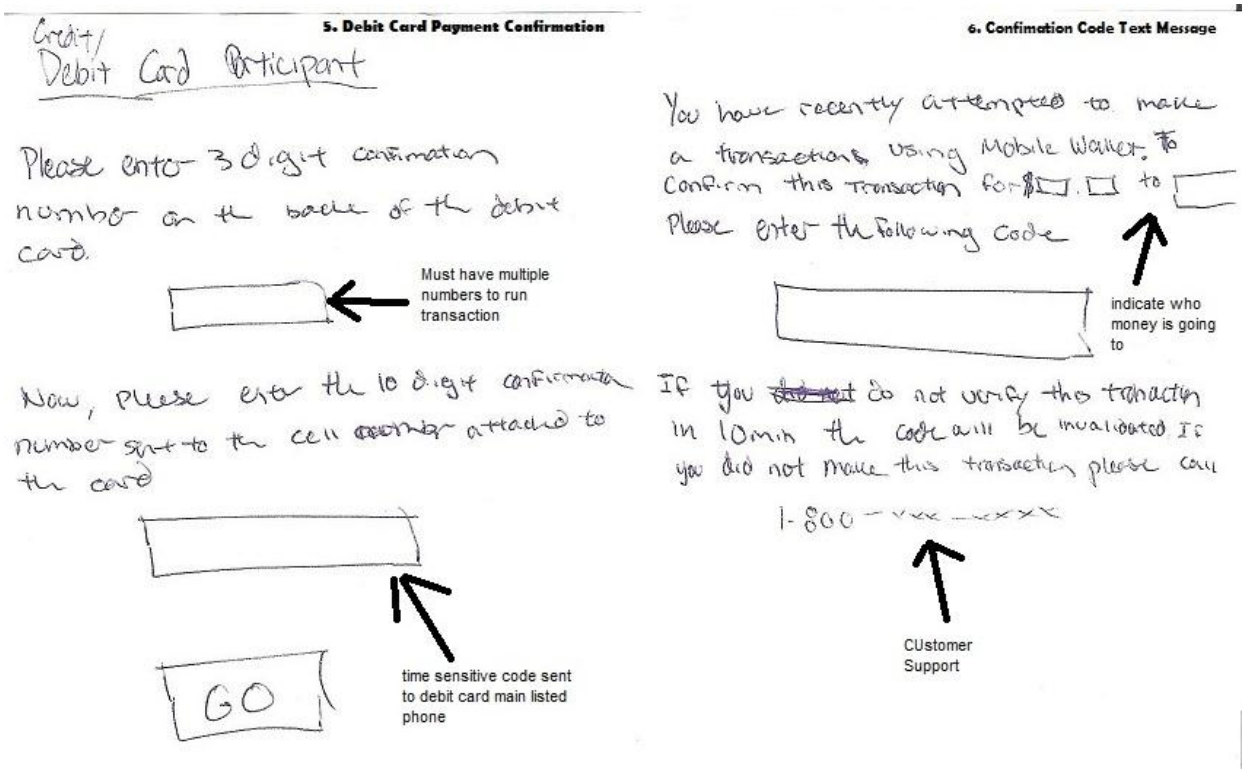
A design centered around ease of use

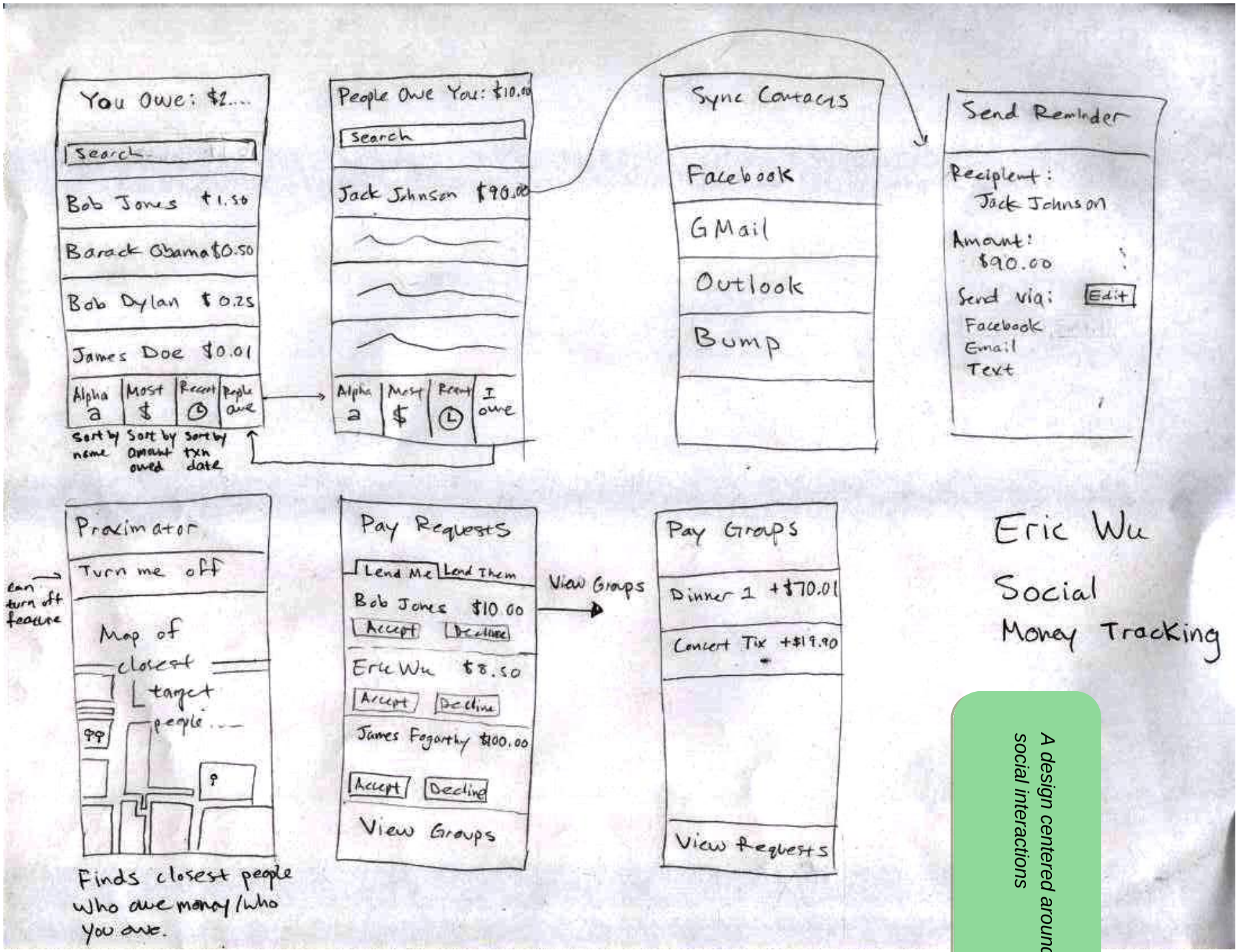
A design which focuses on ease of use, and a "wallet" of money





A design which focuses on security




You Owe: $2....
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Bob Jones $1.50
Barack Obama $0.50
Bob Dylan $0.25
James Doe $0.01
Alpha a
Most $
Recent
People owe
Sort by name
Sort by amount owed
Sort by txn date
People Owe You: $10.00
Search
Jack Johnson $90.00
Alpha a
Most $
Recent
I owe
Sync Contacts
Facebook
GMail
Outlook
Bump
Send Reminder
Recipient:
Jack Johnson
Amount:
$90.00
Send via:
Edit
Facebook
Email
Text
Proximator
Turn me off
can turn off feature
Map of closest target people
Finds closest people who owe money / who you owe.
Pay Requests
Lend Me
Lend Them
Bob Jones $10.00
Accept
Decline
Eric Wu $8.50
Accept
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James Fogarthy $100.00
Accept
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View Groups
View Groups
Pay Groups
Dinner 1 +$70.01
Concert Tix +$19.90
View Requests
Eric Wu
Social
Money Tracking
A design centered around social interactions