



Uomi: Transaction Management System

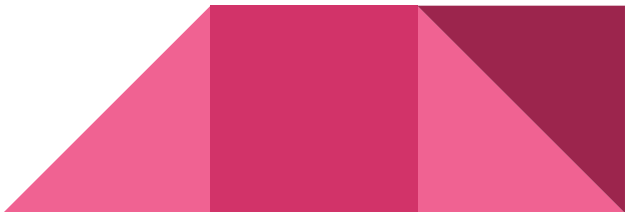
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Problem

- Issues

- Sharing the cost load of group experiences fairly
- One-time transactions are less frequent for longer-spanning events
- Delayed settlements for longer-spanning events are easier to forget
- Harder to settle post-fact, especially with strangers

- Interest

- Awkward Social Interaction
 - Losing Money versus Stressing Relationships
 - Fairness versus Forgiveness
 - Social Pressures
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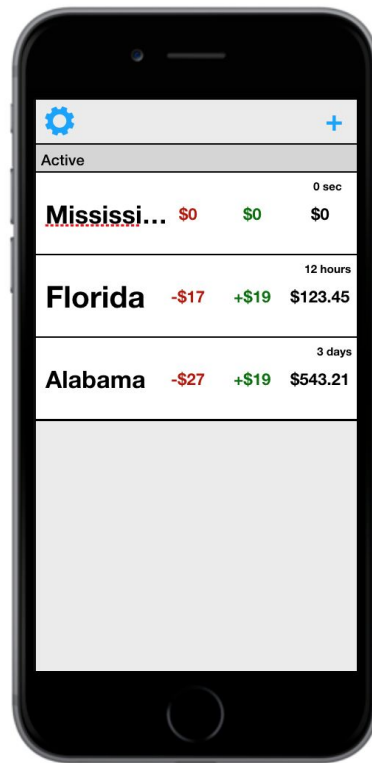
Solution Developed

- iOS Application
- Cost Tracking for Events
 - Balances per event
 - Dividing costs per transaction
 - Easily compute imbalances between parties in shared costs
- Multiple ways to split a cost
 - Itemized Cost
 - Percentage Cost
- Receipt Saving



Application Design - Events

- Event information
 - Displaying transaction amount
 - Displaying activity time period
- Color Correlation
 - Green for owing or owes?
 - Red for owing or owes?
 - Other colors correlate to what?



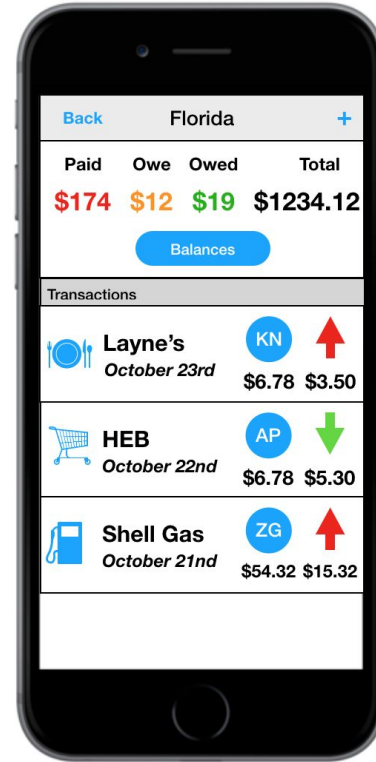
Application Design - Transactions

- Displaying balances

- Owe
- Owed
- Paid
- Total

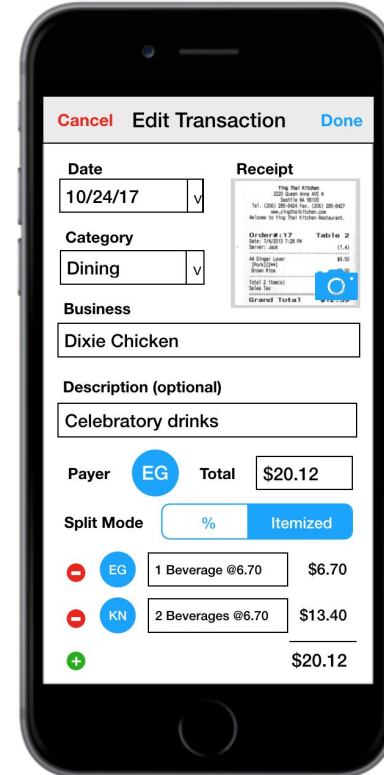
- Owing Amounts

- Arrows
- Colors
- Phrases



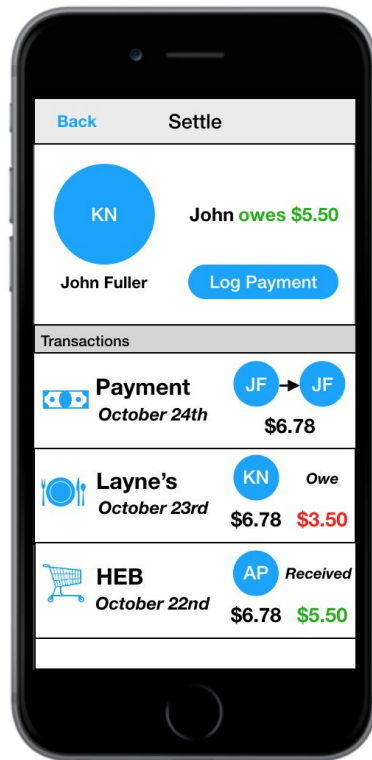
Application Design - Transactions

- Type of Fields
 - Category
 - Business
 - Description
- Order of Fields
- Receipt Parsing



Application Design - Settle

- Displaying payment settlements
 - You owe
 - Somebody owes you
 - You paid
 - Somebody paid you
- Button for settlement
 - Display logging or paying

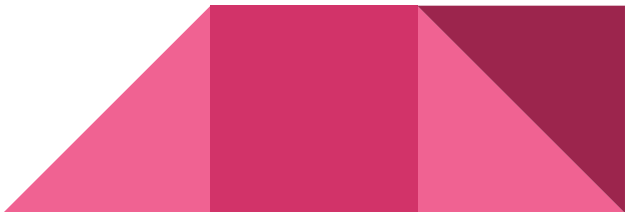


Demo




Evaluation

- Approach: Field Study
 - Follow groups on planned outings spanning multiple days
 - Observe behavioral changes in splitting costs over time
 - Assess intuitiveness of transaction logging
 - Comparing applications (SplitWise)
 - Automatically log user interactions
- Cognitive Issues:
 - Managing transactions and dividing costs
 - Recognizing transactions with minimal hints
 - Maintaining network
- Social Issues:
 - Fairness
 - Trust



Evaluation

- Pre-Test Questionnaire
 - What budgeting systems if any have you used?
 - What applications have you used to help with cost sharing?
 - How would you describe your usual approach to splitting costs in group events?
 - How would you describe your experience with sharing costs on multiple-day events?
 - How comfortable are you sharing costs with others?
 - What is your primary method of settling costs (if applicable) in group events?
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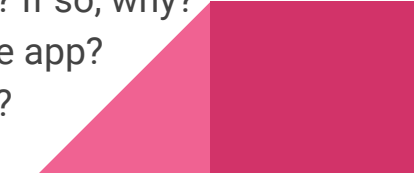
Evaluation

- Post-Test Questionnaire

- System Usability Scale

- I found the application complex
 - I found the application easy to use
 - I needed to learn a lot before I could use the application
 - I quickly learned how to use the application
 - I found the functions in application well integrated

- Task Completion Assessment

- How would you describe your experience settling costs with the other members?
 - Did your approaches to logging change as time went on? If so, why?
 - Was your willingness to pay for others affected using the app?
 - Were there transactions that you did not log? If not, why?
 - How well were you able to record your costs?
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Evaluation

- Quantitative Analysis
 - Ratio of percentage to line-item transactions
 - Cost dynamics of recorded transactions
 - Number of transactions per event
 - Number of distinct contributors per transaction
 - Number of logged payments per event
 - Number of interactions per page
 - Time spent on each page
 - Page visit behavior over time



Future Work

- Automatic percentage redistribution
 - Artificial Intelligence and OC up for receipt parsing
 - Integration with other payment systems such as PayPal, Venmo, etc.
 - Improve user experience for understanding balance amounts
 - Platform-independent implementation
 - Support for splitting tips/tax separate from main split interface
 - Provide messaging capabilities to directly communicate between users
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