PollUp Final Report

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pollUp™

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1. Introduction

i. Project Statement

PollUp is a small tech startup aimed to increase communication between the manager and the employee. We are a lightweight, multi-platform, feedback tool for small businesses to be able to integrate very easily into their systems. I have been working on this startup for the past year with two MIS students at Iowa State University. We are finished with our multi-platform development as of 2 weeks ago with the completion of the Android application. The scope of this senior design included the development of the Android app and iOS app.

ii. Purpose

2 out of every 3 employees are not engaged at work, according to a poll by Gallup. Annual surveys, once thought to be the solution, are often tedious and boring to fill out accurately. PollUp's purpose is to eradicate the need for end of the year surveys and replace them with frequent one-question polls in the workplace. We offer flexible polling so that employees can feel free to express their opinions of anything happening in the workplace.

iii. Intended Audience

This product is aimed at small businesses (50-250 employees) who want to get steady, honest feedback from their employees. PollUp intends to be a virtual assistance to HR managers who want to know the state of their company's morale, fix an inhibiting issue in the workplace, or just get feedback from employees. PollUp will act like a company's heartbeat monitor, turning feedback into quality metrics that can help HR improve.

iv. Goals

The goals of this project are defined by two main deliverables. During the senior design two semesters, we wanted to submit an iOS to the app store and will be constantly maintaining it. At the same time, we wanted to finish development on the Android application and submit it to the app store. Some stretch goals we had were adding Slack integration for PollUp and Intercom chat box implementation.

2. Deliverables

iOS Application for PollUp™

The development and design of the iOS version of PollUp. The app is now featured on the Apple App Store and is continuously being maintained to perform any updates to the UI or functionality as per our clients' requests or operating system changes.

Android Application for PollUp™

The development and design of the Android version of PollUp. The app is now featured on the Google Play store and is continuously being maintained to perform any updates to the UI or functionality as per our clients' requests or operating system changes.

3. Design

i. Related Products

As employee engagement has become a concern for more and more companies, the amount of solutions have increased as well. PollUp.io has many competitors, some large and some small. This document will outline the competitors in our market and describe some of the differences between us and them. In the initial stages of our product, we consider our competitors our friends. We can learn from their successes/failures, and incorporate some features that they have into our product.

One of our biggest competitors is SurveyMonkey. SurveyMonkey is a free survey company that allows you to send a quick multi-question survey to your friends or co-workers. This can be used for finding a good meeting time for everyone or asking simple day-to-day questions. SurveyMonkey does not have a focus on employee engagement like PollUp.io and some of the other competitors, naturally putting it at a disadvantage.

OfficeVibe also has a solution for employee engagement. Like PollUp.io, OfficeVibe offers poll templates that help guide the right feedback from employers. They also have mobile apps and good analysis of results. Lastly, they offer the same rate as PollUp.io, at $4 per employee per month. Unfortunately for them, they have less of an emphasis on UI/UX making their product harder to use and less beautiful than PollUp.io.

Next is Peakon. Peakon is a European based HR software, but they are very successful. They have a variety of features, even more than PollUp.io. They offer real-time engagement scores in the workplace and unique metrics that make up these scores. Peakon is a great example of how effective an employee engagement tool can be.

TinyPulse has some big name clients. Working with companies like IBM, Airbnb, and HubSpot, TinyPulse has a very similar platform and feature set to PollUp.io. Like PollUp.io, they offer anonymous feedback and in-depth graphs and analysis. Something that PollUp.io would like to do that TinyPulse is doing is the Cheers Feed. This allows peer-to-peer recognition if an employee wants to recognize another employee in the company. They also encourage one-question polling.

Polly.io is another polling solution for small teams. However, their product is limited by the fact that it is merely a Slack integration and does not have a web site or mobile app to go along with it. However, they do allow multi-question surveys that boost participation rates in certain companies.

Lastly, there's Workify. Workify is an all-in-one employee engagement platform that helps companies measure the entire employee experience. Like PollUp.io, they focus on the results

and analysis of employee feedback. Unfortunately, there website is not as detailed as ours and does not provide enough info to know if they have mobile apps or not.

While most people would be discouraged by the results of this market research, we see all of these competitors as proof that the market is big enough for a lot of players. HR tech is a 14 billion dollar industry and that number is growing. When we see our competitors' features and rates, we feel like we are right on par with them. PollUp.io is dedicated to creating unprecedented company unity and engagement. Our goal is to help companies and employees grow together for years to come. We will use the successes and failures of our competitors as indicators of our decisions to accomplish this goal.

ii. Related Literature

The most important thing to do when trying to create a product is determine the problem you are trying to solve. You must research every detail of the problem to truly understand the best solution and who you are helping when you build your product. My project is PollUp.io, and the main problem we are trying to solve is the decrease in employee engagement in the workplace. Rates have hit a severe low, a concerning number for companies that want to lower turnover and increase employee satisfaction. In order to create a viable product, we had to research the employee engagement problem and the best ways to poll users.

The first research paper I read discussed the growing problem with unengaged employees in the workplace. It talked about the benefits of employee engagement: higher levels of productivity, better retention, more healthy employees, and less turnover. Only 32% of employees are engaged at work, meaning that "their goals do not align with the companies' goals". This could be an issue with the millennial generation but also with the way companies are treating their employees in today's day and age. Now that companies are aware of the problem and the detriment it could have to their bottom line, they are turning to software to identify the causes for unengaged employees and cultivate metrics that determine their employees' satisfaction rates. These metrics can be determined by polling employees and getting feedback on things they would like to see changed. This shift in power from employer to employee has been a trend in a lot of new companies, especially startups and tech jobs.

I read a few research articles on questionnaire design to determine the best way to ask employees these important questions. Perhaps the most important part of the survey process is the creation of questions that accurately measure the opinions, experiences and behaviors of the workplace. Designing the questionnaire is complicated because surveys can ask about topics in varying degrees of detail, questions can be asked in different ways, and questions asked earlier in a survey may influence how people respond to later questions. First, you must determine which questions to ask. Then based on those questions, you can anticipate the responses. With PollUp.io we determined that single question polling would be more beneficial and feasible for an employee to dedicate his or her full attention to. Many times, annual surveys fail because of the lack of the employee's attention to the unnecessary

questions that are asked. They are tedious and not effective. With more frequent, single question polls, feedback to more abundant and accurate.

We decided to cultivate a list of poll templates to help managers pick questions that would pinpoint underlying issues in certain areas of their company: training, onboarding, productivity, etc. To design these polling templates, we have been working with the Iowa State psychology department and multiple local HR managers. This research is ongoing and we want to become more and more relevant to HR to help small businesses get an accurate feel of their employee satisfaction.

iii. Design Considerations

Tab bar vs Hamburger menu

We decided to stick with the trend and implement a hamburger bar in Android like most Android applications. The iOS PollUp application features a tab bar navigation. This allows faster navigation but its shortcomings include only room for 4 or 5 max tabs. Hamburger menus add extra flexibility to the user experience; however, they are more commonly found in Android apps.

App Functionality vs Web Functionality

Our web app is our most comprehensive product. Since our mobile apps are mostly used for giving feedback and posting polls, we decided to leave out some administrative features such billing and subscription settings.

iOS vs Android

For a polling software, a multi-platform experience is essential. We decided to develop **native** Android and iOS applications for the Google app store and Apple app store.

Lost connectivity

Mobile phones lose connection all the time, we coded for this appropriately so the apps do not crash and lose data.

Auto login

We do not require user to log in every time by saving user credentials in the device keychain.

Background threads

As we are constantly pulling data from APIs, we needed to enable use of background threads to ensure we do not block up the main UI thread and slow app performance. A mobile phone is thin on resources that have to be shared between all the apps.

Versions to support

Android OS versions are frequently updated. At any time, it is expected that our target user base to be spread across at least 3 different OS versions. The iOS app also must be compatible with the newest OS.

Login Capabilities

We initially allowed a user to only log in with his or her email address and password. But as our clients' needs changed and we found that most employees did not have company email accounts, we also implemented logging in with your phone number. To do this, we used Facebook's library called Account Kit.

iv. System Block Design

This diagram outlines how the client and server interacts with our software. The mobile application uses a REST API to communicate with the SQL database.
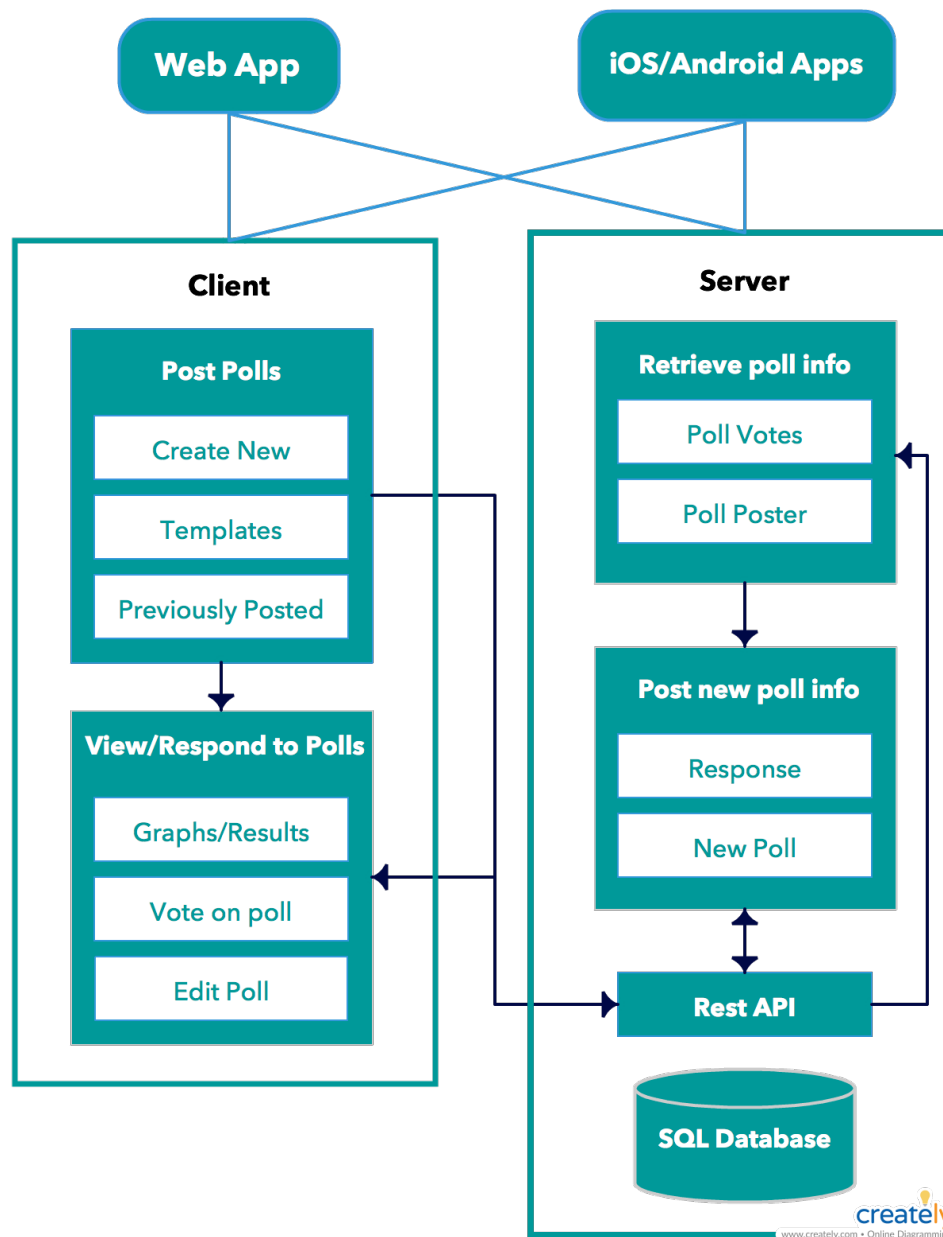

Figure 1: Client - Server Interaction Diagram

v. Use Case Diagram

The screen flow outlines how a user can navigate through the application. This outline shows the most important use cases in the application and the types of users that the app caters to. Employees are the main users and can vote on polls sent out by Moderators. Admins oversee accounts but can also interact with polls and view all results. These roles are the base for how most of the product runs.
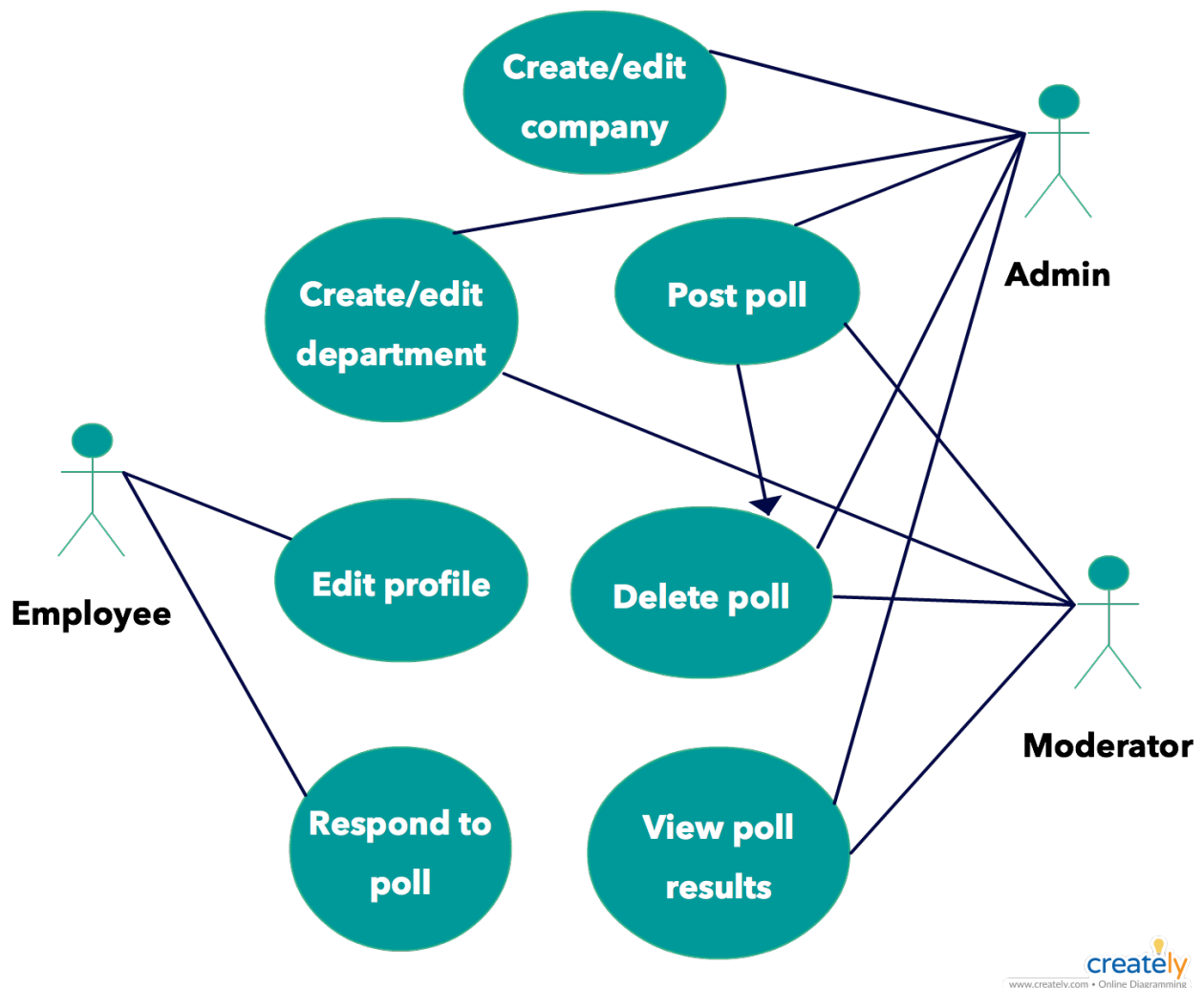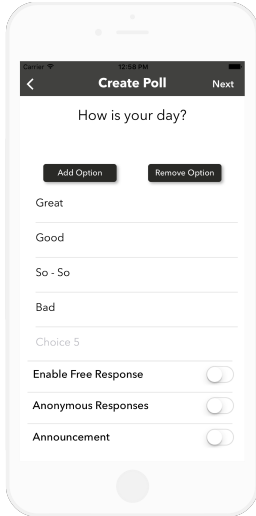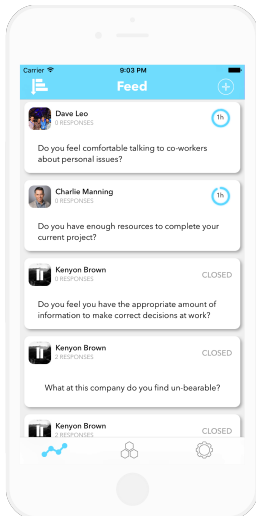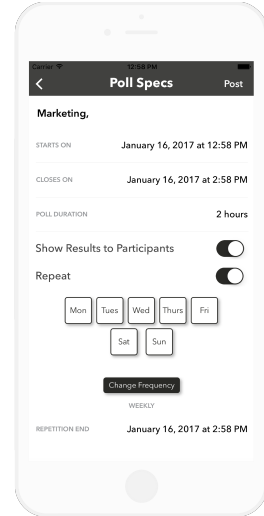

Figure 2: Use Case Diagram with User Roles
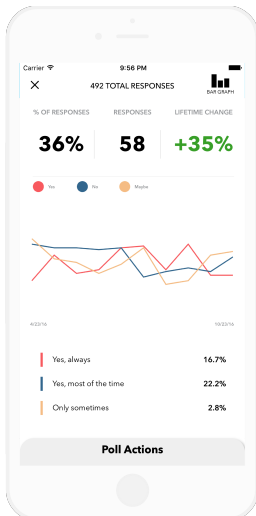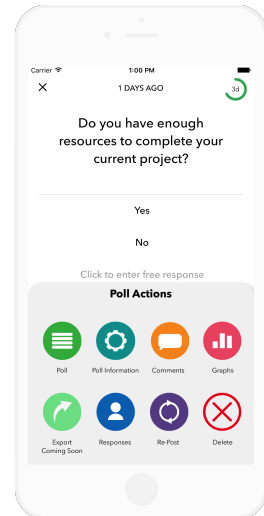
vi. Wireframe

These wireframes will show the main functionalities of the current Android and iOS apps on the app store.

Step 1: Post polls

Step 2: Respond to polls

Step 3: Analyze Results

4. Software Requirements

i. Functional

Admin must be able to register company

One user must be able to register new company to use PollUp. Sign up requires logging of billing info, signing up users to company, customizing color of company.

User must be able to to log in

Once a user is assigned a company, a temporary password is sent to their email. The first time the user logs in, they are able to change passwords, update profile pictures, and add their job title. We have also included phone number logins recently using Account Kit integration.

User is able to post polls

User will be able to post polls to specific departments in the company. These polls can be anonymous, multiple choice, free response, or repeating (automated reposting). A user cannot vote on their own posted polls.

User is able to vote on polls

A user will be able to vote on polls that they didn't post. After voting, they are enabled to comment on the poll, view the results through a bar graph or line graph (repeating polls), or see other voters' responses.

User is able to change profile details

User must be able to change their name, picture, or job title in the app.

User is able to be put in a department

Departments are the groups the users are put in. They can be in more than one department at once. They will only receive polls that are posted to the departments they are in.

User is able to create/edit departments

Users will be able to create a new department and add users to that department. They will also be able to edit a pre-existing department's name and add/remove users to that department.

ii. Non-functional

Data encryption

All companies' secure data will be encrypted in the database with 128 bit encryption.

Database Scalability

The MySQL database will be able to handle a large amount of users and adapt quickly to an increase in users.

User is able to access data on any platform

Web app, iOS, and Android versions of PollUp must all access the same SQL database to ensure consistency across all platforms.

iii. Standards

As we are trying to keep everything very professional and documented for our startup, this project will follow suit. The code will be up to IEEE standards and ethics and everything will be properly documented.

5. Testing Strategy

Emulators/Simulators

Using Xcode and Android Studio simulators and emulators was a great way to unit test the apps during development. They allowed me to simulate difference screen sizes and real-world use cases.

Firebase Test Lab

Firebase's Test Lab allowed me to test on multiple Android devices and operating systems at once to determine which 3rd party libraries could work on which devices. I caught a lot of bugs very quickly using this product.

200+ User iOS Beta Test

We were fortunate to be able to test the performance and scalability of app with a few companies such as Kingland Systems and Hy-Vee. We also reached out to family and friends to join our beta test and this allowed us to find a lot of defects in the software. Also, it gave us a proof of concept and a considerable about new use cases.

Fabric & Google Analytics

We integrated Fabric and Google Analytics into both mobile apps to ensure we had long-term analytics in both. This enables me to be notified whenever the app crashes for a user and receive log reports determining the cause of the crash. It also allows us to know more about our user base including demographics and more use case information.

6. Conclusion

I was very excited about the opportunity to work on PollUp as part of my senior design project. We were able to make significant progress on our development during the last two semesters, during which we launched our product to the public. It will nice to see the fruits of our labor when companies start using our project. I believe I definitely learned professional development techniques through the 491/492 courses. My advisor, Dr. Ponpandi, was very supportive and a great reference for me to ask any questions regarding mobile application development.

Appendix I: Operation Manual

Step 1: Visit app.pollup.io or download the iOS or Android app.

iOS app: https://itunes.apple.com/us/app/pollup-io/id1197942375?mt=8
Android app: https://play.google.com/store/apps/details?id=com.pollupsolutions.pollup

Tester login credentials:
Email: nsaigal@iastate.edu
Password: 123456

Step 2: Follow in-app tutorials or explore app freely

We have integrated screen-by-screen tutorials to use our app. Visit our help center for more questions: https://intercom.help/pollup.

If you would like to explore freely, go to the Feed tab and click on one of the active polls to vote on it. The testing account is an Admin, meaning it has all functionality to post polls, delete polls, and change company settings.

Line graphs are available for polls that have been repeated over time.

Departments can be used to separate groups of employees and can be created, edited, or deleted.

Admin Settings allow you to change the theme color of the app, the company name, and any billing information. Feel free to ignore this section and focus on the main functionality of the apps.

Appendix II: Initial Versions

Slack Integration

We initially set out to include a Slack integration in our deliverable list. We wanted companies to be able to use a PollUp plugin to easily ask polls across Slack. However, we did not have enough time and need to create this so we scrapped the idea. A lot of the companies that were using our product did not use Slack.

Minimum Viable Product for Android

Seeing that most of our users that used the mobile apps were employees whose only purpose was to respond to polls, we limited the functionality in the Android app. We did not include a lot of Admin functionality but this was a blessing in disguise. We are now able to build on a solid minimum viable product to add more features slowly and test every step of the way.

Account Kit Integration

This was a major upgrade and update to the functionality. With one of the companies we were working with, a lot of the employees did not have email addresses to sign up with. We searched for a solution until we found Account Kit, a Facebook library that allows users to log in with their phone number. It slowed down development a little but was a necessary integration.

Intercom Integration

We also realized that users needed a way to ask for help in the app, receive guidance and helpful tips, and just give their feedback overall. We found a chat box integration called Intercom. Using this 3rd party integration, we were able to create in-app tutorials, communicate with our users, and find out the demographics of our user base.

Appendix III: Other Considerations

Challenges

PollUp presented some challenges for me. For one, I am the only person working on development for this project. I am working with two other MIS students on the startup, but they are only concerned with the business/management side of things. Two mobile applications was a sufficient amount of development work, along with the required write-ups/ reports.

Another challenge was the calibration between new development and maintaining old development. Since I am working this project as part of a startup, there was changes and updates needed to be made to the existing project to keep up with customer demands. This means that the proposed end project was constantly changing, even if it was only in the fine details. There were times when the app had bugs that limited users from using it. This was frustrating but a great learning experience for me.

Overall, I learned a ton about how to work with designers to ship a beautiful product to the app store. I also learned how to test and debug apps that are meant for enterprise use.

Adherence to the Project Timeline

Our initial timeline was to finish the iOS application first semester in 491 and finish the Android application early second semester. Due to some bugs and delays, we were forced to ship both apps during second semester, which really cut into the Android app testing time. Overall, I am pleased that we were still able to complete both apps and put them on the app store.

Companies We're Working With

During the last two semesters of senior design, PollUp is honored to have had the opportunity to beta test our product in a few midwestern companies. We are currently working with Hy-Vee, Land O' Lakes, Metalcraft, Dwolla, and Kingland Systems.

Appendix IV: References

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