Flavr

Instantly connecting hungry students with food while reducing waste
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Problem Solution and Overview

The words "free food" have been the bait for students attending countless events and gatherings across college campuses for good reason. Food is often high on a college student's agenda. However, events advertising free food are often met with an unenthusiastic turnout, spawning a host of problems ranging from food waste to unnecessarily hungry students. Flavr remedies these problems by connecting students with food in real time through a more extensive food distribution network.

Contextual Inquiry Customers

We interviewed a total of six people, but for the sake of relevance, we will only focus on four interviewees in this essay:

N.N. - 18-25-year-old researcher at the Stanford University School of Medicine and Co-Chair of the Cultural Committee of the Stanford Vietnamese Student Association (SVSA). She was recruited after going to an event with free food which she heard about via email. She is appropriate for the problem domain because she acts as a provider of food on a college campus that hosts many food-related events for her club. We observed her work at SVSA's first event at the Asian American Activities Center (A3C) where we watched her prepare the food and present it to the club. We then participated in the club activities and icebreakers and asked her questions as she distributed food and cleaned up afterward. We asked her where she got her materials to make the food, how she knew how much to get, and where she was taking the leftovers. She provided information about how clubs typically get funds for food, how much food is typically bought, how food is sometimes prepared, and how excess food is given away or consumed. She is excited to use the app for her club because they have had bad situations in the past with too much food.

Figure 1: Che Ba Mau (Three Color Dessert) was made by N.N. and other SVSA core members for their first club meeting at A3C. At the end of the club meeting, there were three extra that were left uneaten.

B.D. - 26-year-old computer science grad student at Stanford recruited because he organizes food delivery for his research group on campus. He provided a rich source of information on logistics and typical flow of food purchase and walked us through how he normally goes about ordering food. For example, he normally buys enough food to accommodate 25% more people than the estimated attendance for an event. He also spoke in his capacity as a student and a seeker of free food and gave insight into his normal patterns for obtaining free food. We watched him order pizza for an event and then leave the food for others to take in a specified location. We asked him questions during this process like how much food does he know to order, where does he leave the food, and how does he inform students to get the food at the specified location.

Figure 2: When B.D.'s pizza event is done, he leaves the leftover pizza on a table in the pantry for students.

S.M. - 18-25-year-old computer science grad student at Stanford recruited because he often seeks out free food available at the Gates Computer Science Building. We observed his tactics of pursuing free food, and in this process, he provided insight into how different departments and groups on campus use different distribution channels to deliver excess food and spoke to the potential effectiveness of our app to unify and

centralize these channels. He would serve as a valuable target consumer for the app by using it to discover free food all around campus. For our master-apprentice model, we went with him to go to an info session where free food was provided. An image we took of the info session with free food can be seen in Figure 3. As he got free food, we asked him about how he usually found free food, what sorts of things he would look for in a food-finding app, and what convenient places he would usually look to for finding free food. We watched him collect the free food, and take the food back to a place where he would eat it, and we asked him further questions about why he chose to go to that particular event and what benefits certain events have over others for free food. Then, we watched as he searched his email for more free food later in the week and asked him questions about how he usually comes across free food information.

Figure 3: An info session in Gates 104 with Andreesen-Horowitz where free food is served

T.N. - 18-25-year-old medical student at Stanford recruited because she orders food for lunch seminars at the medical school. We observed her process for ordering food for these events, and in the process, she provided commentary about the difficulties and subtleties of the distribution of food. In particular, she spoke to the difficulties in managing excess food. For instance, often food is left without utensils or plates or left in places with restricted access, making it difficult to transport or pick up food. She also wished there was a way to indicate characteristics about the food (e.g., gluten-free or vegetarian) so that consumers will know if they can have the food. She would serve as a key target provider for the app by using its full functionality to advertise excess food.

Contextual Inquiry Results

We interviewed two groups of people during our contextual inquiry: providers, i.e., individuals who are responsible for coordinating events with free food, and consumers, i.e., individuals who mainly look for events that either serve free food or have leftovers that are up for grabs.

From our interviews with providers of food events, one commonality we found was that they will almost always order more food than they think they need. N.N. from SVSA always orders 10-20 more servings than she needs, B.D. always orders 25% more food than he thinks he needs, and T.N. finds that catering always leads to more food even if more people than expected show up. Therefore, estimates will always be on the high side, leading to the high potential for a lot of excess food. N.N. even mentioned that at a previous SVSA night market event, 400 extra servings were ordered in excess.

Another commonality we found is that providers often give away food by either trying to eat it themselves or putting the food in public places. N.N. says that SVSA deals with excess food by either distributing among core members or going from dorm to dorm and giving it away. B.D. leaves excess food from events in a pantry, and T.N. leaves excess food on the fourth floor of the medical school. However, T.N. notes that sometimes food is left in restricted areas. The pantry in Figure 4, for example, is where B.D leaves food, and it is an example of a place where the food has time restrictions and potentially limited access. When asked whether they would use the app, all interviewees expressed interest.

Figure 4: A pantry where excess food is often left for students to just take after an event.

Figure 5: Utensils being included with the free food at a Gates info session for students to eat

From our interviews of attendees to food events, we found commonalities in that students often look for food through specific mailing lists for their major or clubs. When asked about sites like FreeFoodStanford, many interviewees simply didn't use it because of the lack of a comprehensive list, targeting only a few pre-planned Computer Science specific info-sessions that only happen once or twice a day. Most students who actively look for free food get more information food events through their email alone. S.M. explained that he looks to Gates emails as his primary source of free food events, and at times would intercept them even once a day. N.N. mentions that many lesser-known places, like the International Relations department, hold food-events every day that are unknown to most non-PhD students, and B.D. mentions that he knows about food events for his Intro to Dance class solely because he is part of that mailing list. Lesser-known mailing lists are therefore demonstrated to be a treasure trove of many events that are the main access point for free food for students.

One distinct concern that was raised by S.M. was that utensils and plates are sometimes a worry for him when getting free food. As somebody who goes to get free food often, when utensils are not provided like they are in Figure 5, he foresees that people may have a hard time eating the free food. In addition, because S.M. is very busy (as are most Stanford students), he doesn't see himself utilizing a meet-up feature or a cost-splitting feature to get food with other people because socializing and finding other people often requires a lot of time spent, and he prefers to just get his food quickly.

Task Analysis Questions and Answers

1. Who is going to use the system?

Flavr is designed to be utilized as a connecting network between college students and those individuals and groups who provide foods for events and want to have a sustainable way to put their excess food to good use. This notion was met with a warm reception by consumers like S.M. as well as providers like N.N. and T.N. because they visibly see a disconnect when trying to procure/distribute free food. Initially, Flavr's customer base is expected to be mostly those who already actively seek out free food (like S.M.), but we hope and expect Flavr's reach to extend to those individuals who may not have even known of places where free food exists on campus. In a similar manner, the original providers of food for Flavr will most likely be a select few student groups and individuals, but as word spreads, we see Flavr becoming a new key player in the search for sustenance on campus.

2. What tasks do they now perform?

Currently consumers perform several tasks when searching for food. First, they may look around with others in their dorm to see if there is extra food available. Next, they may begin looking for free food at or left over from various events taking place on campus (as S.M. does in the Gates building in particular). Finally, if nothing else if found, they may decide to gather several others and group together to order a pizza or go for a ride to get food off campus.

For providers, currently free food is put in public places and emails are sent out (as done by T.N and B.D in our inquiry with the med school and the pantry). However, these emails are limited to specific limited groups and not the entire campus community. Also, if the quantity of food is small enough, providers currently often just share the food among themselves.

3. What tasks are desired?

Consumers desire an app that will combine the aforementioned sub-tasks of looking for food in your dorm, around campus, and beyond into one streamlined task of finding free food near you. Providers can tag or label with food with important descriptors (e.g., vegetarian, utensils available) so that students can see which food they can eat. T.N. mentioned that this functionality would be particularly useful.

A task that benefits both groups is where consumers respond on the app indicating that they are coming to pick up the free food. Not only does this gives a sense of activity to the provider of interest in the event, it introduces a social dynamic that affects the consumer. In particular, this encourages people to get food from an event with low attendance and stay away from events with high attendance (where the chance of getting food is much lower). S.M. has mentioned that this functionality will be greatly useful when determining the utility of commuting to a location to pick up food and will reduce the disappointment when food is not available upon arrival.

4. How are the tasks learned?
The first time the user starts the app, we will initiate an onboarding experience that will guide the user through the steps of how to post a free food event to the app, how to find free food nearby, and how to start and join a group to go get food off campus. This onboarding experience will be simple and happen only the first time a user uses the app. However, buttons and gestures will be intuitive so that the user can easily remember and figure out how to use the app.

5. Where are the tasks performed?
Free food is offered all around campus. Often there will be a set meeting place, such as Gates for B.D. or A3C for N.N., and there will also be a set location drop-off point for excess food, like a pantry. We must keep this in mind when designing the app, and make it available on a smartphone so it can be accessed anywhere.

6. What's the relationship between customer & data?
Through our interviews with S.M., T.N., and N.N., we found that there are two categories of free food: food that is sponsored by groups, and individual leftovers. Individual leftovers are mostly advertised through chat lists (for examples, "I just finished baking cookies, come and get them!"). However, with group events, information about food is often not common knowledge. Aside from events that major corporations through, such as info sessions, many events are only known of within certain circles.

7. What other tools does the customer have?
All of the customers we interviewed (S.M. in particular) seemed to operate in a very reactionary fashion. While they wouldn't actively seek out free food using websites like FreeFoodStanford, they would be attracted to events that were advertised via email or that they stumbled upon by chance. Furthermore, they will fall into patterns, and regularly show up to weekly meetings that have the promise of free food.

8. How do users communicate with each other?
Organizers such as B.D. will often use the mailing lists to alert their groups to upcoming events. A few of our customers mentioned word of mouth interactions, where they would invite someone to an interesting talk that also had free food. However, most of these interactions were minimal.

9. How often are the tasks performed?
Tasks are performed by food providers at varying rates depending on how often they host events with food or will be willing to provide food. This rate can range from monthly (B.D.) to, in the majority of cases, daily. Checking the app to see if any good free food choices are nearby is a simple task that will be performed by students often.

10. What are the time constraints on the tasks?
For the tasks, users have to be able to see the postings and then quickly get to the food within time limits set by the people who post the free food. Due to availability or the potential for the food spoiling, these time limits will vary, but speed is very crucial for users to actually get to the free food in time. For example, people start checking the pantry where B.D. leaves the food before the food is even set out. Getting to the food in under 10-15 minutes is optimal for the user.

11. What happens when things go wrong?
N.N. mentioned an event where 1000 people were estimated to come, but only 600 showed up. As a result, the students in the organization had to walk from dorm to dorm handing out food. In a more general case, if there isn't a connection between students and organizers, food can be wasted, organizations won't get the exposure they desire, and students may be hungry.

Flavr's Supported Tasks

1. **Finding food.** This is the core need that Flavr attempts to address and the one brought up in our interviews with students. Previously, many individuals indicated to us that they operated by word of mouth or in a reactionary manner. Flavr will attempt to centralize this task so that information is available to all, and individuals can proactively find locations and events that are or will be serving food.

2. **Attracting people to events.** SVSA uses food as a "bait" of sorts for events, and they're not alone. Free food is often offered as an advertisement for an event, but this advertisement is of no use if no one sees it. The current method of spreading

awareness is dominated by email lists or posters, whose success is often limited to certain "pockets" of the Stanford community. On the other hand, Flavr allows broader exposure by creating a common platform for events such as these.

3. **Distributing excess food.** Often times, at events where there is too much food, event organizers have a hard time either eating the food, or wasting it by throwing it away (in fact, organizers said that they always get more food than they think they'll need). In order to mitigate these food waste problems, Flavr will allow event organizers to post to the app when the food they have ordered is too much, so that hungry students can know that their location has food for the taking.

Best Application Ideas

After internal brainstorming within our team and conducting interviews, we found three interfaces would best satisfy the needs of customers:

1. An interface that broadcasts availability of food for both pre-planned events and impromptu occasions in real time will allow students to get from locations close to them while preventing the need for providers to waste food.
2. An app where students form impromptu groups to go get food on or off campus solves the need for obtaining food while adding a social component that enhances the experience.
3. A crowdsourcing platform for the process of getting food can improve access to food while being financially viable for participants. For example, someone might post asking to get a large pizza, and if three other people join, they can place an order and split the payment.

	Significance	Feasibility	Interest
Broadcast Food Availability	High	Medium	High
Help form groups	Medium	High	Low
Crowdsource food payment	Low	Medium	Medium

We decided to pursue the creation of an application that **broadcasts food availability**. Firstly, this met a need that our interviewees addressed: all interviewed organizers said that they bought more food than necessary, and all students interviewed had sought out free food. In addition, this was a project idea that we found personally interesting and fairly feasible. Interviewers in the inquiry were not personally interested in meeting other

people to go off campus or split the bill due to the high amount of time necessary for meeting other people while finding or paying for food. Speed is critical for users to get free food, so broadcasting food availability all over campus was the best use-case and had the most interest among the people we interviewed.

Sketches