REVOLUTIONIZING FOOD DELIVERY SERVICES WITH HOME-COOKED MEALS

(Technical Topic)

POTENTIAL FOOD REGULATION ISSUES FOR FOOD DELIVERY APPLICATIONS

(STS Topic)

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By
Isabel Kershner

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Technical Project Team Members
Habib Karaky
Steven Morrison
Guillermo Saavedra-Diaz
Shivani Saboo
Jack Short
Ankith Yennu

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

Signed: Isabel Kershner Date: 12/3/19

Approved: Catherine D Baritaud Date: Dec. 5 2019
Catherine D. Baritaud, STS Division, Department of Engineering and Society

Approved: Ahmed Ibrahim Date: 11/24/19
Ahmed Ibrahim, Department of Computer Science

Americans consume less home-cooked meals than they have in the past with "less than 60% of suppers served at home…[and] cooked at home last year [2014]" (Ferdman, 2015); Ferdman attributes this shift away from home-cooked meals to women's increasing presence in the workforce and decreasing presence in the kitchen. King, Kinsey, Phumpiu, and Senauer (1996) also confirm that dual income earners have less time for cooking meals; families and especially working people value time and convenience over extra costs, such as paying extra for pre-sliced vegetables (p. 5). In addition to laborers, disabled and elderly people might not be capable of cooking for themselves (Cairns, 1996, p. 170). As Americans increasingly continue to value convenience, they have abandoned their kitchens for greasy fast food and prepackaged meals, contributing to rising obesity rates as noted in Alkerwi, Crichton, and Hébert's (2014) study on dietary intake (Discussion section, para. 1).

With the health of the American population at stake, the return to home-cooked meals while meeting consumers' desires for convenience is crucial. Under the guidance of Professor Ibrahim in the Computer Science Department, the year-long, technical project seeks to deliver a platform for customers to order convenient, home-cooked meals, primarily targeting those who lack the time or ability. The goal is to create a web application, called HomeEats, to allow at-home cooks to post their own menu, so that customers can order meals to be delivered directly to their homes. The STS topic uses Actor Network Theory (ANT), developed by Bijker and Pinch (1984), to investigate necessary regulations for home-based food businesses and the repercussions that could occur if such regulations are not followed. Actor Network Theory is the best framework for analyzing and determining the actors' social impact on technology. The STS topic is tightly coupled with the technical topic in order to fully investigate the pitfalls and dangers of unregulated food service applications, such as the HomeEats web application being

developed as part of the technical project. Using Actor Network Theory could show the necessary actors, engineers, product owner, government regulations, cooks, and customers, that are involved and that approve the HomeEats application's safety for customer use.

REVOLUTIONIZING FOOD DELIVERY SERVICES WITH HOME-COOKED MEALS

INTRODUCTION

For our Capstone project, we are not working for a pre-existing organization but rather for our Professor who is acting as our client while we work on the HomeEats initiative. The HomeEats initiative is the default project pre-approved for our class.

SYSTEM DESIGN

Our team will be developing a web application called HomeEats, which will serve as a food delivery service, similar to UberEats and Grubhub, but tailor made for home-cooked meals. HomeEats will allow consumers to finally have the ability to access fresh, home-cooked meals without having to go buy ingredients or prepare the dish themselves. Unlike other food delivery platforms, this convenience does not come at a sacrifice of food quality or fresh ingredients. To use the platform, consumers create an account on the site, enter their location and instantly view a large selection of dishes being cooked by amateur cooks in the area. They can view all the ingredients in the dish, the type of cuisine it originates from, estimated preparation time, and background on the chef, including reviews from previous customers. Once they select the dish they want, customers purchase the dish directly online, at which point the chef will be notified that an order has been placed and begin cooking. Home chefs will be able to specify when they are online and available to cook, how many orders they can take at a time, and in the case of a bulk order being placed in advance, they will have a few hours to choose whether or not to accept the order.

This application will be built using primarily Django, which is a popular framework based in the Python programming language often used for web applications of this scale. Our application will also connect to a PostgreSQL Database which will store all the information on the site from cooks and customer user accounts to dishes, reviews, and purchases. In order for our team to simultaneously contribute to the project, all of our code will be hosted in Github, an online software development platform. The project will be completed over the course of the Fall and Spring semesters of the 2019-2020 school year through our CS Practicum class and our client is Ahmed Ibrahim, the course professor. This is not a project for an external company, it is an internal project not meant for profit.

Our team will meet with our client bi-weekly at the end of each sprint cycle. For our purpose, a sprint cycle is a two-week development period where each team member is tasked with a feature to implement or work on, which can be seen in Figure 1 below. The purpose of the

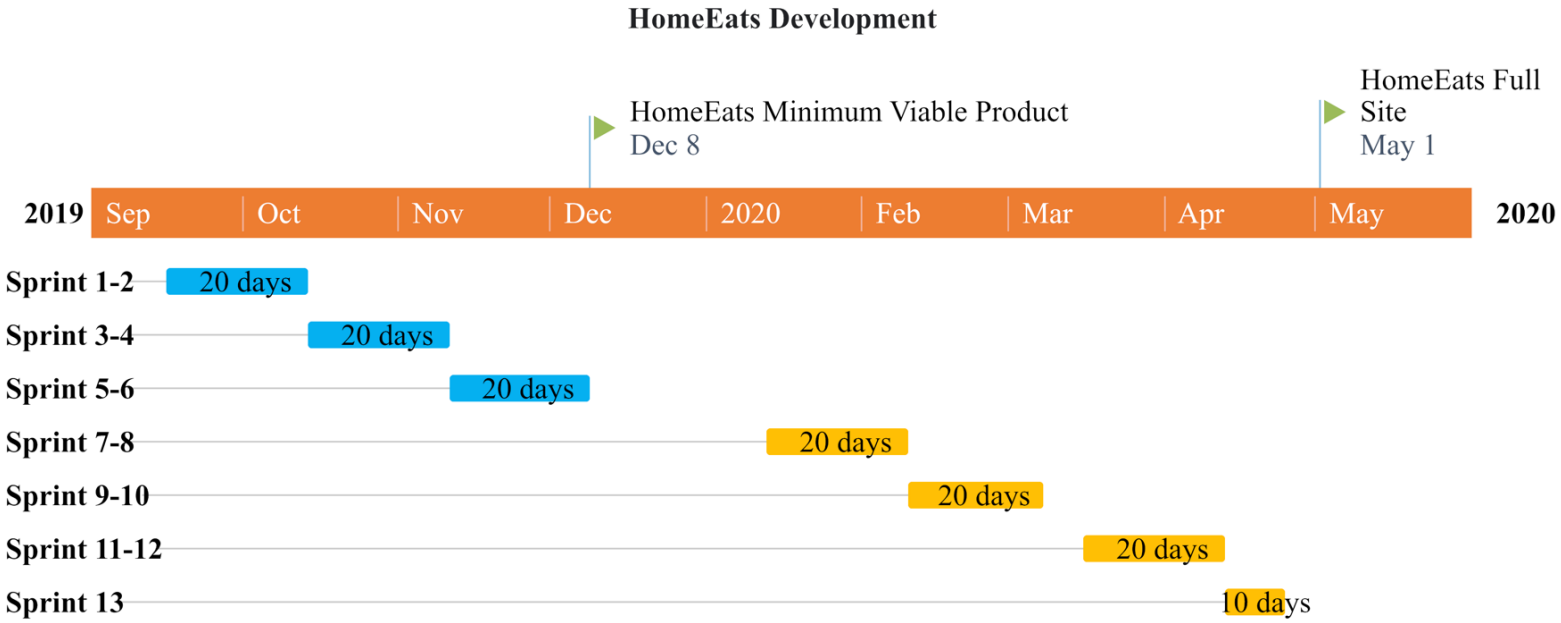

Figure 1: HomeEats Development Timeline (Created by Saboo, 2019)

sprint cycle is to allow for continuous planning, focused development, and short-term goals that the team can set and strive to reach. For example, a sample sprint goal may be implementing the customer landing page where they can browse through dishes. The following sprint goal may be adding filters to the dishes to allow for improved site navigation. These chronological short-term goals will lead up to the long-term goal of launching a fully functional site, allowing customers to order meals directly from cooks in their area, and give full administrative control to our client. HomeEats fits into the health and social dimensions of the food delivery app market by providing the same convenience and ease of use without sacrificing food quality.

SYSTEM REQUIREMENTS

Gathering system requirements are very important because it provides a solid foundation for the system and gives the project team a clear roadmap of the development cycle and how to prioritize tasks based on time and importance. For our application there are three main user categories: the cook, the admin, and the customer. Below are our requirements split up by category as well as necessity.

Minimum Requirements

Admin Users.

- As an admin, I want to approve any cook account before it is created, so that I can guarantee the customers a reliable experience
- As an admin, I want to make sure any updates to a cook's personal account information are reviewed, to maintain their accuracy
- As an admin, I want to be able to review reports and reviews, and potentially ban users or cooks, to keep the site safe from bad actors

- As an admin, I want to be able to view the orders that a cook has received.
- As an admin, I want to be able to view all accepted orders with total amount paid including amount going to the cook and HomeEats.
- As an admin, I want to be able to view cooks' cancelled order history with reasons.
- As an admin, I want to be able to set which reasons a cook can give for cancelling an order.
- As a system administrator I want to ensure that a payment option is selected prior to an order being processed, so that I can ensure meals are paid for before a cook begins to prepare the dish.

  Cook Users.

- As a cook, I should be able to apply as a cook with my First Name, Last Name, Address, and Kitchen License
- As a cook, I should not be able to login to my account unless my application has been approved
- As a cook, I should be able to set what plates are available as soon as I log in, so that I can quickly get online and start receiving orders
- As a cook, I should be required to enter/edit my name, email, phone and address, so that I can be contacted in many ways
- As a cook, I should be able to add a new dish to my list of available dishes
- As a cook, I should be able to set a picture, ingredients, price, time to deliver, name, and type of food
- As a cook, I should be able to set which dishes I'm willing to make, so that I don't have to make dishes that I don't have their ingredients.

- As a cook, I should be able to report customers and their reviews, in order to protect my reputation from unfounded criticism and ban disrespectful or malicious customers
- As a cook, I should be able to make a separate account if I want to order through the site, so that I don't get confused between things I've ordered and things I have to cook
- As a cook, I should be able to set my own delivery range centered at my address, so that I am not pressured to deliver outside of my comfort zone
- As a cook, I should be able to tag food as vegan, allergy, etc. so that customers can choose foods which are suitable for them
- As a cook, I should be able to set a certain mileage I'm willing to travel so that I can have quick and efficient delivery service
- As a cook, I should be able to set a limit on how many meals I can make in a specified time frame, so that I don't get overbooked
- As a cook, I should be able to set when I am open and closed, so that customers can't attempt to order food from me when I am not available
- As a cook, I should be able to accept or reject meal orders so that I have control over what meals and how many meals I am making
- As a cook, I should be able to set an estimated cooking and delivery time, so that customers are aware of an approximate waiting time

Customer/Diner Users.

- As a customer, I should be able to see the ingredients in the dishes I plan to order
- As a customer, I should be able to see a picture of the dish I plan to order
- As a customer, I should be able to see the cost of the dish I plan to order

- As a customer, I should be able to see the estimated time of cooking for the dish I plan to order
- As a customer, I should be able to view the type of food I plan to order (e.g. Chinese, Thai, Indian, Mexican, etc.)
- As a customer I should be able to sort the dishes by price
- As a customer I should be able to sort the dishes by rating
- As a customer I should be able to only see dishes from cooks who can deliver to me
- As a customer I should be able to sort the dishes by the type of food I plan to order (e.g. Chinese, Thai, Indian, Mexican, etc.)
- As a customer I should be able to rate the food I purchase on a scale of 0-5 stars
- As a customer, I should be able to favorite a cook or a dish, so that I can easily find the cook or dish again
- As a customer, I should be able to review the dishes that I order, so that other customers are aware of the quality of that dish
- As a customer, I should be able to see a delivery status that indicates started cooking, on the way, and delivered so that I know when to expect my food
- As a customer, I should be able to set multiple addresses so that my food can be delivered to a location, even if I am not yet there
- As a customer, I should be able to see an average rating for each dish if the data is available
- As a customer, I should be able to cancel an order that has not started cooking yet so that I don’t waste food and money if I change my mind

- As a customer I want to be able to tip the chef preparing my dish so that I can reward and encourage my favorite chefs.

Desired Requirements

Admin Users.

- As an admin, I want to be able to view revenue reports that can be adjusted to a specific timeframe (week, month, quarter, semi-annual, annual, custom).
- As an admin, I want to be able to view cooks' online time and offline time per week.

Cook Users.

- As a cook, I should be able to set a limit on how many meals I can make in a specified time frame, so that I don't get overbooked

Customer/Diner Users.

- As a customer, I should be able to order at least 3 hours in advance

Optional Requirements

Customer/Diner Users.

- As a customer, I want to be personal information to be anonymous when messaging the cook, so that my information is kept private
- As a customer I want to be able to message my cook to be able to customize the order to my liking.

POTENTIAL FOOD REGULATION ISSUES FOR FOOD DELIVERY APPLICATIONS

WHAT PROBLEMS CAN OCCUR WITHOUT REGULATIONS?

Federal, state, and local governments regulate commercial restaurants in order to protect the public's health. According to Yasuda (2010), The Food and Drug Administration (FDA) and the United States Department of Agriculture are responsible for "[inspecting] domestic and imported food products as well as food-processing plants…[while] restaurant inspection is usually carried out by local, county, or state health department personnel (p. 202). Figure 2 below shows the necessary progression of agents that HomeEats would need to go through before reaching the customer. This handoff model is a graphic representation of Actor Network Theory, a framework developed by Bijker and Pinch (1984). Actor Network Theory analyzes the human and nonhuman actors that relate to a technology in order to understand the actors' effect on that technology's success or usefulness. The STS topic is tightly coupled with the technical project, development of the HomeEats application. The actors involved in the HomeEats

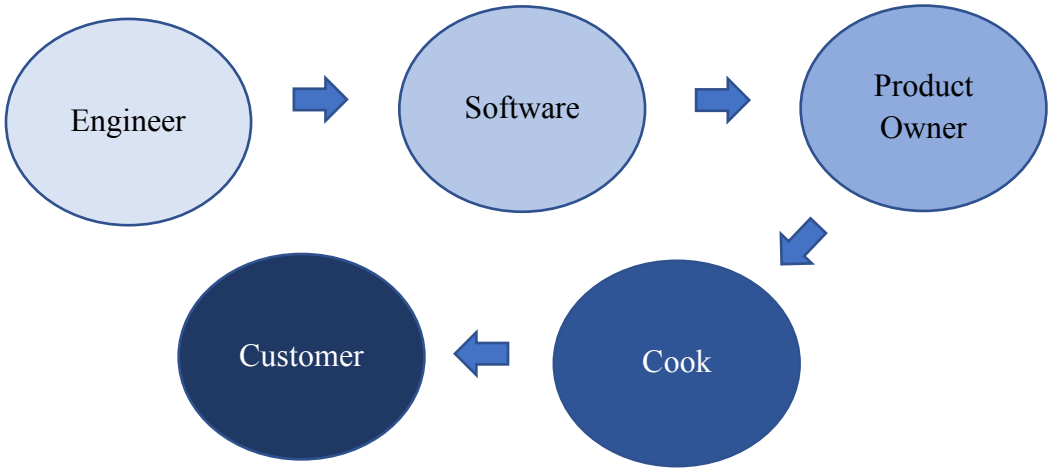

Figure 2: HomeEats handoff model without regulations: Shows the flow of people and deliverables that must exist or approve HomeEats before HomeEats can be used by users (Adapted by Isabel Kershner from B. Carlson 2013).

development are the engineers, software, product owner, cook, and customer. These actors equally affect the application, which can be understood by the uniform size of the graphics in Figure 2. The engineer starts the hand off model for the HomeEats application, illustrating that he or she is the initial software creator. The product owner funds and gives both functional and system requirements to the engineer for the development of the software. The product owner must approve the engineer's software product before the website can go live for at-home cooks to sign up. The web application needs cooks so that customers have meal options to order from. At this step in the process, the product could persuade at-home cooks to join by highlighting profitability. HomeEats would also give passionate chefs the opportunity to do what they love on a smaller scale. Once all of the agents have acted, the customer can use the product. This graphic purposefully does not include government regulations in order to highlight the safety problems and potential hazards that could arise in their absence. Actor Network Theory analysis shows that missing actors can lead catastrophic outcomes for other actors involved. The active presence of government regulations is important because these laws and agencies prevent foodborne illness breakouts and restaurants from misrepresenting themselves. For example, without sanitation checks, a restaurant could mislead customers by presenting a clean dining area while concealing their filthy kitchen (Holocombe & Holocombe, 1986, p. 688). Without government regulations as an actor, customers are susceptible to contaminated food and deadly illnesses that could lead to serious backlash for the product owner, engineers, and food service platform. Customers have the right to know what product they are buying and should have the assurance that such product is safe.

The tightly coupled STS topic explores the necessary health regulations for home-based food businesses and the repercussions that could occur if such regulations are not followed.

Currently, home-based food businesses must abide by the FDA regulations and their respective state and local health departments. If the meals prepared are not created with interstate goods and are not sold across state lines, the FDA exempts home-based food businesses from certain regulations ("How to Start a Food Business", 2018). Although home-based food businesses are exempt from certain regulations, Tarr (2011) states that the equipment used by home-based businesses must be licensed, and cooks must have a permit (p. 54). Having these regulations and licenses prevents foodborne illness breakouts or unsanitary conditions caused by a home-based chef's inability to meet health standards. This hazard is important because promoting unlicensed chefs and unregulated kitchens could hurt third-party delivery platforms, such as HomeEats. Food delivery service platforms need to ensure that all home-based businesses are meeting the standards of their respective local and state governments in order to protect the engineers' credibility and prevent financial loss.

HOW CAN HOMEEATS BE SUCCESSFULLY ADOPTED BY SOCIETY?

For a food delivery web application to be successful, the product must go through a through a series of people and agencies in order to be successfully used by society.

Figure 3 below contains Government Regulation as an actor in the hand-off model to show the importance of regulating a product before it reaches consumers. These government regulations

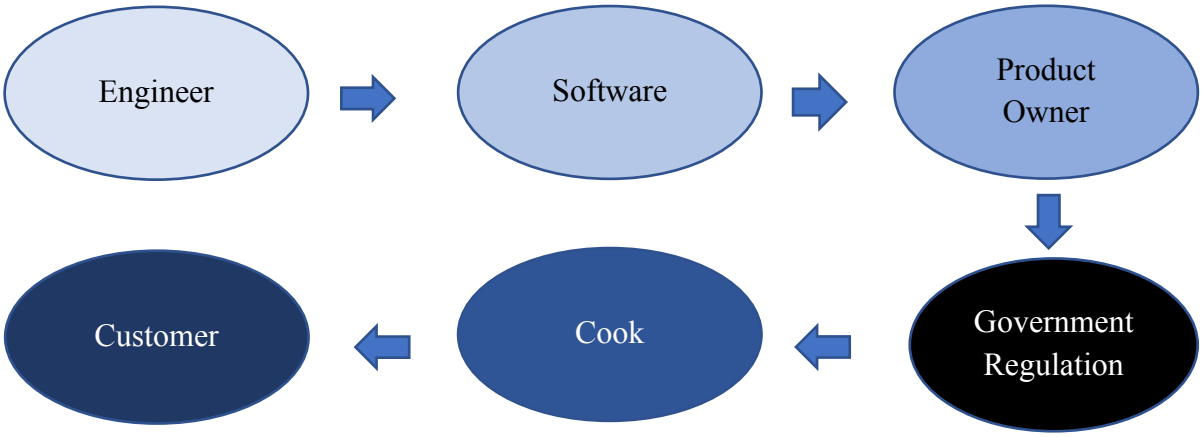

Figure 3: HomeEats hand-off model with regulations: Shows the chain of groups that HomeEats needs to go through in order to become a safe product for customers (Adapted by Isabel Kershner from B. Carlson 2013).

include licenses and inspections given by federal, state, and local agencies. To promote safety and sanitation, cooks must meet the required regulations set by government agencies. Ensuring that these regulations are met would protect the engineers and product owners from liability if safety problems arose. Product owners could additionally hire health inspectors and ensure that cooks have the required cooking and kitchen licenses when they make an account. Requiring government regulations for cooks could mitigate the main risks portrayed in the HomeEats hand-off model, depicted in Figure 3. By the time the product reaches the customer, enough groups would have approved the product's quality and safety for customers' use. The use of Actor Network theory helps to show the importance of the presence of all actors, both human and nonhuman. Missing any of the actors from the hand-off model could be detrimental to all actors involved.

The goal of the STS research is to find ways that current food business models are regulated and apply those measures to HomeEats to create a safe environment. Understanding

where an application can go wrong or be misused through the use of the Actor Network Theory framework is the first step in developing a solution. This research will help to protect all actors involved by using Actor Network Theory to determine which actors are missing and how that absence could impact the technology and social groups involved. Incorporating regulations into the process could protect the product owner, platform, and engineers from liability, potential financial loss, and damage to credibility. Mandatory licenses and inspections for cooks will ensure high quality of the food product for the customer. All of these added checks will make a safer platform for all parties involved.

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