Dunder Mifflin IT Company

Final Report Draft

(Starship Food Delivery System)

Team Charter

Name	Role
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Executive Summary

Description:- Starship - Food Delivery system is a mobile application that enables users to order food & groceries from local restaurants and have it delivered directly to their doorstep by autonomous delivery robots. Starship at UW Madison serves campus area residents by offering delivery service from their seven partnership outlets. It solves major issues like: last mile delivery, and winter takeouts.

Problem Statement:- 'How Might We' make Starship robots' food deliveries faster so that customers receive their order fresh and in a timely manner?

According to contextual inquiries, customer subjects U and Wen faced '**long wait periods**' in receiving their food. '**Cold food**' turning up has been the **second greatest concern** of people based on application reviews. A vendor subject, Connie, remarked that there are **3 or lesser** Starship **orders** on an average **per evening** which clearly indicates a **dip in revenue and customer satisfaction.**

Solution:- After brainstorming ideas like '**human last-mile**', '**refunds**', and '**re-designing the insulation system**', we finalized on the **following three** as they are most <u>feasible</u> and <u>effective</u>,

- Scout and establish **more delivery locations** and **common pickup hubs** near UW campus for customers to conveniently plan pickups.
- Fit robot with new sound features to request pedestrians for clear passage for delivery.
- Introduce mobile app features like '**advanced booking**', '**personalized delivery status updates**', and '**immediate customer feedback**' to appease & improve user experience.

Outcomes/Measures of Success:-

- 20% or more **increase** in customer satisfaction. [Compare pre/post project surveys about service.]
- **Double** or more average daily order volume. [Get up to 6 orders atleast a day.]
- 10% or more **decrease** in average delivery times. [Save 3-4 minutes or more per order.]

Key Project Factors	
Cost	$36,000
Duration	3 months
Stakeholders	Vendors; Customers; Starship Product Team
Modes of Communication	Email (Outlook); Surveys (Google Forms); In-person meetings; Weekly / Monthly / Final Reports
Key Risks	Budget Overruns; Resource Availability; Transport Dept. Intervention

1. Starship - Food Delivery

Description: Starship is a mobile application that enables users to order food from local restaurants and have it delivered directly to their doorstep by autonomous delivery robots. Users can browse menus, customize their orders, and track their deliveries in real-time. Starship at UW Madison serves campus area residents to order from one of their seven partnership outlets. The area they cater to is highlighted in red in the image below.
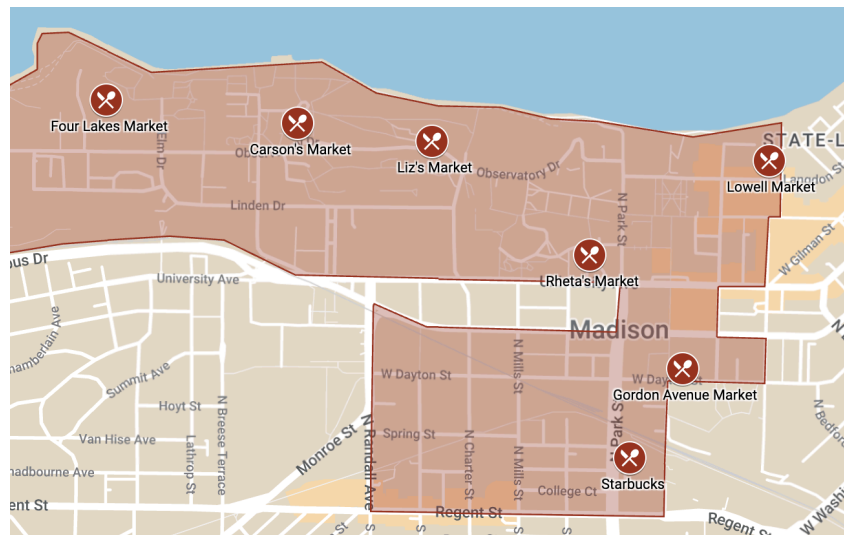

Fig. 1(a) Red cutlery icons are partnership dining markets that cater to customers.

User Activities: Listed below are Starship Food Delivery system's user activities observed:

    a) Customer user interaction: customers need to get information of delivery time and route.
    b) Vendor/Restaurant user interaction: vendors need to know how to use starship robots.

Selection Criteria:

    a) System serves UW Madison campus residents.
    b) System solves major issues like: last mile delivery; winter takeouts.
    c) System has limitations and glitches that need to be studied for better user experience.

2. Identified Problem Cases and Evidence from Contextual Inquiry

    a) **Inaccurate Delivery Locations**
        Users struggled with setting delivery pins for new or unmapped buildings, causing orders to be dropped off incorrectly.

        Evidence: Customer subject, U, could only set her delivery location to a nearby school, despite being within the delivery radius, forcing her to pick up the order from there.

    b) Slow Delivery
Deliveries often took 30–45 minutes, especially during peak hours, leading to cold food.

    Evidence: Both customer subjects, U and Wen, received late deliveries. Robots often stop for pedestrians to clear pathways while pedestrians are unaware of their presence.

    c) Food Freshness Compromised
The robots failed to keep food warm or beverages secure during delivery.

    Evidence: Vendor subject, Connie, reported frequent customer complaints about cold food and spills, with the latter being less frequent.

    Problem Statement:- 'How Might We' make Starship robots' food deliveries faster so that customers receive their order fresh and in a timely manner?

3. Brainstormed Solutions and Selected Final Solution

- Redesign the whole 'Insulation System' or install smarter packaging.
- Employ people for inaccessible last-mile delivery.
- Provide Refunds or Monetary compensation to customers.

The above brainstormed solutions cause a financial constraint due to R&D costs, as well as decreased profits due to the human last-mile and refund policy. A list of more feasible and cheaper solutions is listed below. The solutions listed below are more effective on a scaled customer base.

1. **More delivery locations** on the mobile app to save time and efforts from inaccurate delivery locations.
2. **Common pickup hubs** so customers can pick up orders on the go**.**
3. **Advanced booking** for customers to plan meals in advance and save time.
4. **Personalized** delivery **status updates** to appease customers.
5. **Immediate** customer **feedback** to create an ongoing dialgoue for improvement.
6. Design a new robot **sound to indicate** their passage and **clear pedestrians blocking pathways**.

4. Business Value of the Project

Objective	Description	Expected Benefit
Increase Customer Satisfaction	- Optimize delivery routes for faster deliveries so as to reduce complaints about delays and cold food.	Achieve a **20% increase** in customer satisfaction based on pre/post project surveys.
Boost Order Volume	- Enhance delivery speed and user experience, particularly during peak hours, so as to create more demand.	- **100% increase** in daily orders from 3 to 6 to boost overall revenue.

Reduce Operating Costs	- Improve delivery times by common pickup hubs and clearer pathways to make each delivery more efficient.	- **10% decrease** in average delivery times saving 3-4 minutes per delivery.

5. Key Stakeholders and Engagement Plan

Stakeholder Name	Expected Benefits	Concerns	Engagement Plan
Vendors	- Increased sales - More efficient order management	- Delivery delays - Missed orders	- Bi-monthly email updates. - Bi-monthly offline/Zoom meetings to gather feedback on orders.
Customers	- Faster delivery - Better food quality	- Long wait times - Cold/Soggy food	- Weekly in-app surveys and immediate feedbacks. - Pre/post project surveys to measure satisfaction.
Starship Food Delivery Product Team	- Increased orders - Reduced complaints	- Project failure - Low profitability - Increased complaints	- Weekly email updates. - Weekly Zoom meeting discussions on operations.

6. Project Risks and Management Strategies

Identified Risk	Description	Management Strategy
Budget Overruns	The project might exceed its allocated budget due to unexpected costs in research & development.	**Mitigate** by conducting weekly cost-benefit analyses, regularly reviewing budgets, and maintaining a contingency fund.
Resource Availability	Key personnel like app developers might be unavailable during critical project phases, leading to delays.	**Avoid** by creating a resource allocation plan, cross-training team members, and securing backup resources.
Transport Department Intervention	Madison city street division might disallow the new horn system in robots for alarming pedestrians.	**Accept** by not installing the new horn system since street laws have to be complied with.

7. Estimated Cost and Project Duration

Estimated Total Cost: $36,000

Category	Cost	Description
Personnel	$18,000	Includes team member salaries and consultant fees.
Research & Development	$10,000	For system improvements and mobile application development.
Marketing & Communication	$3,000	For promotional activities and communication with customers and vendors.
Miscellaneous Expenses	$5,000	For contingency expenses and unforeseen costs.

Project Duration: 3 months

Milestone	Target Date	Description	Expected Benefit
Project Start Date	Sep 19, 2024	Finalize and submit the project proposal.	Establish project objectives and expectations.
Milestone 1.1	Sep 30, 2024	Finalize requirements gathering for choosing new delivery locations and pickup hubs.	Ensure a clear understanding of infrastructure needs.
Milestone 1.2	Oct 30, 2024	Compile list of new delivery locations & pickup hubs, and complete site assessments.	Identify feasible locations & provide accurate data for infra planning.
Milestone 2.1	Nov 10, 2024	Complete wireframe designs for app functionality (advanced booking, notifications, feedback system).	Establish user interface and functionality blueprint.
Milestone 2.2	Nov 20, 2024	Finalize app functionality design and integrate key features after user testing.	Prepare the app for the next stage of development or deployment.
Milestone 3.1	Nov 30, 2024	Perform initial system testing, including infrastructure and app synchronization.	Identify and address any major integration issues.
Milestone 3.2	Dec 5, 2024	Conduct a dry run of the system in a controlled environment.	Verify system readiness for deployment.
Project End Date	Dec 15, 2024	Submit final deliverables (documentation, technical reports, and user guides) and conduct a project closure review.	Provide stakeholders with deliverables for project evaluation and feedback.