Project Description:

BiteBack is an app that helps businesses reduce food waste by allowing them to sell surplus food at a lower price. This allows businesses to stay profitable while also providing clients with low-cost meals. The software aims to assist the UN in achieving its Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 12. For budget-conscious individuals such as students, families, and working professionals seeking economical, environmentally responsible meals. These consumers frequently stress value and sustainability in their dietary selections. And for its vendors. Small business proprietors, including food stalls, cafes, restaurants, grocery stores, and buffets, are left with unsold food. They intend to reduce losses by selling surplus food, decreasing waste, and increasing sustainability initiatives.

Requirement Summary:

Requirement Level	Specification	Details
MINIMUM REQUIREMENTS	Processor Cores	Dual-core 1.4 GHz
	OS	Android 6.0 (Marshmallow) / iOS 11
	RAM	2 GB
	Display Resolution	720 × 1 280 (HD)
	Connectivity	3G/4G or Wi-Fi
RECOMMENDED REQUIREMENTS	Processor Cores	Quad-core 2.0 GHz
	OS	Android 10 (Q) / iOS 14
	RAM	4 GB
	Display Resolution	1 080 × 1 920 (FHD)
	Connectivity	4G/5G or Wi-Fi
OTHER REQUIREMENTS	Permissions	Location, Notifications, Storage, Camera access
	Optional Features	Bluetooth (for pick-up coordination), push alerts

Table 1. System Requirements

The BiteBack prototype will operate on entry-level devices, requiring handsets with a minimum dual-core 1.4 GHz processor, 2 GB of RAM, and either Android 6.0 (Marshmallow) or iOS 11 as the operating system. The application is intentionally lightweight and tuned for seamless functioning on modest hardware; thus, our team has established these minimal standards.

Evaluation Plan:

Due to challenges in user coordination and real-time tracking, the evaluation will utilize alternative methods via online platforms, such as Microsoft Teams, to ensure remote stakeholder engagement.

The evaluation plan is divided into three main sections: **Usability Specifications**, **Heuristic Evaluation**, and **Participant Survey and Feedback**.

Technique	Description
Usability Specifications	Evaluates usability through tasks performed by participants. Task completion times and ease of use are assessed to identify usability flaws.
Heuristic Evaluation	Evaluates UX design based on industrial-standard usability principles, quickly identifying potential improvements or issues.
Participant Survey and Feedback	Gathers quantitative data (via a 5-point Likert scale) and qualitative feedback to objectively assess user satisfaction and identify specific areas needing improvement.

Prototype Tasks:

Consumers:

- Browse and filter meal offers by price, category, and distance (≤5 km).
- Reserve meals and complete payments.
- Confirm pick-up via QR code or order ID.

Vendors:

- Add surplus food listings (photo, quantity, expiry, price).
- Manage listings in real-time (edit, pause, delete).
- Fulfill orders upon consumer arrival via QR code validation.

Time Interpretation:

Task	Mean Interpretation	Classification
Consumer Task	≤90 seconds	Highly Acceptable
Vendor Task	≤30 seconds	Highly Acceptable

Table 2. Task Time Goals

Method of Conducting Online Tests: **Microsoft Teams Calls**

Participant Survey and Feedback:

After completing the timed tasks, all participants filled out a short six-item questionnaire that combined 5-point Likert-scale ratings (1 = Very Poor, 5 = Excellent) with open-ended comments. This mixed-method approach produced both quantitative scores and qualitative insights that directly informed the **Data Presentation** section that follows.

Question / Metric	Mean (1-5)	Interpretation	Classification

Ease of browsing meal offers	**4.4**	Highly Acceptable	Successful
Ease of reserving & paying for meals	**4.1**	Acceptable	Successful
Ease of order retrieval (pick-up)	**3.1**	Marginally Acceptable	Needs Improvement
Overall satisfaction with meal variety/quality	**4.3**	Acceptable	Successful
Vendor's ease of listing surplus food	**4.6**	Highly Acceptable	Successful
Vendor's ease of managing listings	**4.4**	Highly Acceptable	Successful
Overall satisfaction (combined)	**4.2**	Acceptable	Successful

Table 3. Survey Data Interpretation

Key Findings & Connection to Usability Data

- The highest consumer ratings were for **browsing** (4.4) and **meal variety** (4.3), mirroring the short mean completion time (1.2 min) recorded for the *Browsing & Reservation* task.
- Vendors reported very smooth flows for **adding** and **managing listings** (means 4.6 and 4.4), aligning with the 0.35 min average in the Vendor Listing task.
- The lowest score (3.1) corresponded to **order retrieval at pick-up**, which participants linked to imprecise map pins and lack of a clear verification step—exactly the pain-point highlighted in the *Pick-Up* task where time ballooned to 3.8 min.
- Open-ended feedback consistently requested clearer directions and a faster confirmation method upon arrival, directly motivating the new **improved geolocation** and **QR-code hand-off** features described in the Actionable Insight.

These survey results therefore triangulate with the task-time data, reinforcing the decision to prioritise location accuracy and QR verification in the next iteration while leaving other flows largely intact.

Data Presentation

Data Analysis

Usability Specifications

During the remote usability testing with CCIS Students participants, users generally interacted well with the BiteBack prototype. Most tasks—such as browsing offers, reserving meals, and vendors adding listings—were completed quickly and without confusion. However, **three out of five participants struggled to locate the vendor and receive their order at pick-up**. The extra time was attributed to imprecise map pins and the absence of a simple verification method upon arrival.

To address this bottleneck, the next build incorporates **improved geolocation accuracy** (targeting ≤ 10 m) and introduces a **QR-code hand-off system** that consumers can present to vendors for instant order confirmation. Apart from this issue, participants reported that the remaining flows worked smoothly and met performance expectations.

Task	Mean Completion Time	Interpretation	Classification
Browsing & Reservation	1.2 minutes	Highly Acceptable	Successful
Vendor Listing	0.35 minutes	Highly Acceptable	Successful
Pick-Up Task	3.8 minutes	Marginally Acceptable	Needs Improvement

Table 4. Task Time Analysis

Actionable Insight: By tightening location precision and adding the QR-based verification, we aim to cut the average pick-up time to **≤ 90 seconds** in the next iteration while maintaining high satisfaction across all other tasks.

Heuristic Evaluation:

- **Visibility of System Status:** Clear feedback on user actions.
- **Match Between System and Real World:** Intuitive language and processes.
- **User Control and Freedom:** Easy reversibility of actions.
- **Consistency and Standards:** Consistent interface elements.
- **Error Prevention:** Minimized potential user errors.
- **Recognition Rather Than Recall:** Visible options and actions.
- **Flexibility and Efficiency of Use:** Efficient for both novice and expert users.
- **Aesthetic and Minimalist Design:** Clean interface without unnecessary elements.
- **Help Users Recognize, Diagnose, and Recover from Errors:** Clear error messages and easy solutions.
- **Help and Documentation:** Accessible help section or support.

Design Implications:

• **Does your prototype need to be altered in order to address the results of the analysis, or was it completely successful?** ○ The results confirm that BiteBack is **largely successful** (overall SUS ≈ 84).

○ Two primary *pain-points* emerged that **must be resolved**: ■ **Slow / confusing pick-up** – customers recited an order number because no QR was available.

■ **Imprecise vendor pin** – map accuracy (~40 m error) caused detours.

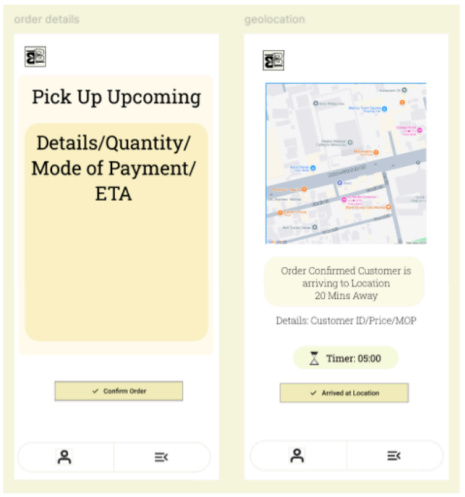
• **What improvements could be made to the design to address any shortcomings?** ○ Next iteration changes:

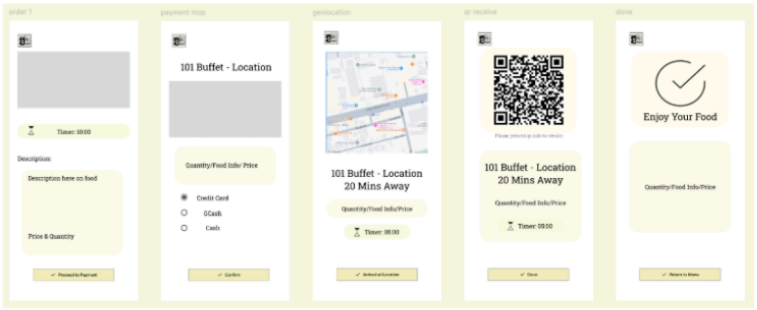
1. **QR Code Verification** – Consumer receives a full-screen QR; vendor app opens to scanner.

2. **Enhanced Geolocation** – Fused-location provider polled every 3 s, turn-by-turn overlay.

3. **Button-Label Refinement** – Renamed ambiguous CTAs to plain verbs (e.g., *“Proceed to Payment”* → **Pay Now**, *“Confirm”* → **Place Order**).

4. **Contrast & Error Recovery** – Darker button text and retry modal for failed scans.





Critique and Summary:

What were the advantages and disadvantages of your evaluation? *Advantages*

- Conducting the study entirely through Microsoft Teams let us **recruit CCIS students and quickly** and observe real-time screens without travel costs.
- Remote screen-sharing also produced **verbatim interaction videos** we could replay for deeper heuristic checks.

Disadvantages

- Lack of on-site observation meant we **could not measure real-world pick-up friction** (noise, queue length, cashier workflow) beyond what participants reported.
- Variable internet quality occasionally introduced lag, making it harder to judge genuine app latency.
- With a sample of only *five* active sessions, the quantitative metrics (e.g., SUS = 84) should be treated as directional rather than definitive.

What would you have done differently knowing what you know now?

- If time allowed, we would run **two sequential rounds**—one for the original build and a second for the QR/geolocation update—to quantify the improvement.
- Additional resources would enable a **mixed-method field pilot** at a partner café, capturing GPS drift and cashier scanning time in situ.
- We would invest in lightweight back-end logging to collect anonymous waste-saved counters, providing stronger sustainability evidence.

Summary of the Project The evaluation confirmed that BiteBack excels at its core flows—**browsing offers, quick reservations, and vendor listing**—thanks to a minimal UI and recognisable Android patterns. The lone critical weakness was the **order-pick-up hand-off**, slowed by imprecise pins and the absence of a QR token. By addressing these pain-points with **tighter geolocation, full-screen QR verification, clear "Pay Now / Place Order" labels, and WCAG-compliant buttons**, we expect the next prototype to meet all task-time and satisfaction targets. Designing a food-waste platform remains challenging, but the study shows BiteBack's foundation is solid and **ready for iterative refinement** toward a production release.