

BoilerTrack

Project Backlog - Group 19

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Problem Statement:

Currently, Purdue University lacks a centralized lost and found system, forcing students to visit individual help desks in multiple buildings to hopefully find their items, causing inefficiencies and delays in recovering lost items. Our web app will provide a unified platform where university staff can report items that were lost but have been found by other students, creating a real time database of lost items. In turn, students who have lost their precious items can just search the website to find where their lost items could be. Unlike the current physical approach, our solution will streamline the process by centralizing information, reducing the time and effort needed to retrieve lost belongings.

Background Information:

- **Audience**

Anyone at Purdue who has lost their items will be able to benefit from our web app, by searching the unclaimed items listing page. University desk staff will also be able to manage lost and found items more effectively.

- **Similar Platforms**

There are a few other university lost and found solutions such as -

- ileftmystuff.com
- Central Lost and Found
- Purdue Surplus Store

There are currently no student-friendly solutions that have been incorporated by Purdue to tackle this problem. As such, items would go from the front desks to a central lost and found and then to the surplus store to be sold off, within two months of it remaining unclaimed.

- **Limitations**

Unclaimed items found may be returned to any nearby building, which forces individuals to search multiple locations in hopes of recovering their belongings. Our solution

addresses this by centralizing all lost item information in one platform, eliminating the need to visit multiple help desks.

The website, 'ileftmystuff.com', is only applicable to the guests of the PMU hotel. On the other hand, in the traditional method, the central lost and found has no 'online' listing of lost items. Thus, you need to visit every front desk possible or email the central lost and found office in time, as failing to find your item ultimately causes it to be sent to the surplus store for sale. We solve this by having a real time database of lost item listings. The existing systems also lack proper tracking of claimed items, leaving room for theft. Our system automatically keeps a record of all claims and allows for dispute resolution.

Functional Requirements:

Student Side -

1. As a user, I want to have the option to create an account with my email.
2. As a user, I want my details (preferred name and pronouns) to be assigned to my account.
3. As a user, I want to have a reset password option.
4. As a user, I want to be able to deactivate my account.
5. As a user, I want to view a list of all lost items on the platform.
6. As a user, I want to search for a lost item by keywords.
7. As a user, I want to filter lost items by category.
8. As a user, I want to see detailed information about a lost item.
9. As a user, I want to see images of the found items uploaded by help desk staff.
10. As a user, I want to be able to filter items by location (where they were lost or found).
11. As a user, I want to be able to filter by the date the item was lost.
12. As a user, I want to flag an item that I believe to be mine for further verification.
13. As a user, I want to view the current status of my flagged items (claimed, in dispute, etc.).
14. As a user, I want to pre-input details like description, date, and location about my lost item to help match found items.
15. As a user, I want to receive a notification when an item matching my description of a lost item is found.
16. As a user, I want to be able to post a template of my lost item request on social media (if time allows).
17. As a user, I want to claim my item through a verification process (e.g., providing additional details or proof).
18. As a user, I want to report an item I have found.
19. As a user, I want to see a map of the nearby help desks to drop off the items I found.
20. As a user, I want to view the items I have reported as found.
21. As a user, I want to modify my claim on a lost item in case of error.

22. As a user, I want to get a map view of the locations where lost items were reported.
23. As a user, I want to see the top items being reported as lost (based on trends).
24. As a user, I want to be able to “register” a personal item: generate a unique identifier/QR code for a personal item that maps directly to my user account and item details.
25. As a user, I want to be able to save the QR as a printable sticker and be provided steps on printing at a designated location (WALC).
26. As a user, I want to be able to view all, add and delete my registered items.
27. As a user, I want to see a list of all previously claimed items.
28. As a user, I want to have my recently claimed items to be automatically registered in my account.
29. As a user, I want to start a claim dispute form on wrongly claimed items.
30. As a user, I want to be able to communicate with the help desk in case of disputes.
31. As a user, I want to leave a review or feedback on the lost and found service.
32. As a user, I want to be able to view a listing of items moved to the surplus store for sale (if time allows).
33. As a user, I want to be able to buy items online from the surplus store (if time allows).
34. As a developer I want to containerize the application

Front Desk/Staff Side -

1. As a staff member, I want to log in with a secure staff-only authentication.
2. As a staff member, I want to enter a new found item into the system with details (location, description).
3. As a staff member, I want to upload an image of a found item to the system.
4. As a staff member, I want to tag the item with specific characteristics (e.g., size, brand, color).
5. As a staff member, I would like to generate searchable keyword descriptions for listings using visual search AI.
6. As a staff member, I want to transfer an item to the central lost and found facility in the system.
7. As a staff member, I want to notify the system when an item has been claimed by its rightful owner.
8. As a staff member, I want to update the status of an item when it moves from one location to another.
9. As a staff member, I want to flag items for special attention (e.g., high-value items).
10. As a staff member, I want to log disputes between students over claimed items.
11. As a staff member, I want to see a list of all unclaimed items that have been in the system for more than 1 week.
12. As a staff member, I want to track the history of the movement of an item across help desks.

13. As a staff member, I want to archive items that have been claimed or moved to the surplus store for sale.
14. As a staff member, I want to manage listings on the online surplus store marketplace (if time allows).
15. As a staff member, I want to print a receipt for students when they claim a lost item.
16. As a staff member, I want to see reports on lost and found activity (number of items, most common locations).
17. As a staff member, I want to be able to scan pre registered items for easy verification of ownership.
18. As a staff member, I want to send alerts to students who have claimed items for pickup.
19. As a staff member, I want to verify students' identification before releasing an item.
20. As a staff member, I want to delete or edit incorrect entries in the system.
21. As a staff member, I want to categorize found items in bulk (for batch uploads).
22. As a staff member, I want to use filters to quickly find items that have been reported as lost by a specific student.
23. As a staff member, I want to see the real-time status of all items at my location.
24. As a staff member, I want to see which items have been flagged for review by students.
25. As a staff member, I want to receive automated reminders to transfer items to the central lost and found.
26. As a staff member, I want to view activity logs for each item to ensure accountability.
27. As a staff member, I want to post weekly unclaimed item listings to social media (if time allows).

Non-Functional Requirements:

- **Architecture and Performance**

Database: sqlite3

Frontend: React

Backend: Flask

AI: google vision api

BoilerTrack will use a modern web architecture with a React frontend and a Flask backend. We will use SQLite for data storage. The frontend built with React will provide a user-friendly interface for the reporting and claiming of lost items. The Flask backend, powered by Python, will handle the core application logic, manage data processing, API requests, and integrations with the database. The lightweight SQLite database will store all item-related data and user-account related data. RESTful APIs will ensure smooth communication between the front and back ends, handling tasks like user authentication

and claim management. This architecture will provide an efficient and scalable solution to centralize lost and found operations across Purdue University.

- **Security**

For BoilerTrack, we need to securely store user accounts. We plan on using Supabase for security of user account information. We will use OAuth with authentik. University Staff will have special permissions to add/update/delete items that regular users will not have.

- **Usability**

The UI should be minimalist, showing only essential information like search fields and item lists. We want the main page to load in 500 ms. Navigation must be easy, with users able to browse, search, and report items within a few clicks. Consistent design across all pages is key. Feedback should include clear success and error messages. Search should allow filtering by date, location, and item type, with fast, relevant results. A “Help” or FAQ section will address common questions. The app must stay under 1 GB by limiting image sizes and unnecessary code, ensuring no lag with efficient API calls and database management. We want to load 100 concurrent instances.

- **Hosting/Deployment**

We will be hosting in containers for easy reproducibility using docker-compose on a free Oracle vps. This will allow us to bring up all the services (like the container for authentik, and its supporting entourage) for the application in one command.