



SiteManager

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Introduction

Value Proposition

“Right people. Right equipment. Right on time.”

Problem

Construction companies require a digital dashboard to track all projects, employees, and equipment in one centralized location, as current systems often lack real-time visibility, resulting in inefficiencies. Managers frequently have to rely on manual reports, calls, or spreadsheets to understand what resources are available or where progress is being delayed, which slows down operations and leads to scheduling conflicts.

Solution

Our solution is to create a live map that links to projects and shows exactly which employees, equipment, and materials are needed at each location. By combining this information into one dashboard, SiteManager helps construction managers make faster, data-driven decisions, reduce downtime, and improve communication between teams on different sites. The result is a smoother, more efficient workflow that keeps projects on track and on schedule.

Sketches

Home <hr/> Projects Map Equipment Employees Materials	 <p>Grinding Campsite</p> <ul style="list-style-type: none"> • 5 employees • 6 equipment <p>(Live Map Assigned)</p>										
Home <hr/> Projects Map Equipment Employees Materials	<p>Excavator</p>  <p>DV-100</p>  <p>R-90</p>  <p>DV-200</p> <p>Driving Tasks</p> <p>Maintenance Log</p> <p>AS-SI</p>										
Home <hr/> Projects Map Equipment Employees Materials	<p>Projects → Grinding Campsite</p> <table border="1"> <tr> <td>Equipment</td> <td>Employees</td> <td>Materials</td> </tr> <tr> <td>DV-100 AS-SI</td> <td>John Alex Tombs</td> <td>5 Loads Mud 2 Trucks Cement 3 Loads Gravel</td> </tr> <tr> <td>Planning</td> <td>Construction</td> <td>Logistics</td> </tr> </table> <p>52% Complete</p> <p>Progress Logs</p> <p>Sep 20 Delay</p>	Equipment	Employees	Materials	DV-100 AS-SI	John Alex Tombs	5 Loads Mud 2 Trucks Cement 3 Loads Gravel	Planning	Construction	Logistics	
Equipment	Employees	Materials									
DV-100 AS-SI	John Alex Tombs	5 Loads Mud 2 Trucks Cement 3 Loads Gravel									
Planning	Construction	Logistics									

Figure 1: Webpage

Figure 2: Webpage

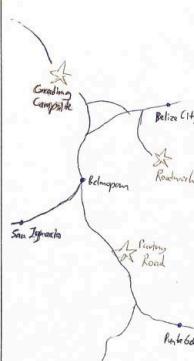
 <p>G</p> <p>Grading Composite 52 % </p> <p>Roadwork 38 % </p> <p>Employees  Juan Molt</p> <p>Equipment  BH 2 Pavers → Roadwork → Paving Road → Unassigned</p> <p> Finish</p> <p>V</p>
 <p>G</p>  <p>Grading Composite Belize City Roadwork Belmopan San Ignacio Paving Road Punta Gorda</p> <p>A</p>
 <p>G</p> <p>+ New</p> <p>White Mortl Gravel Crushed Stone Cement Cinder Blocks</p> <p>X</p> <p>-  </p>

Figure 3: Mobile

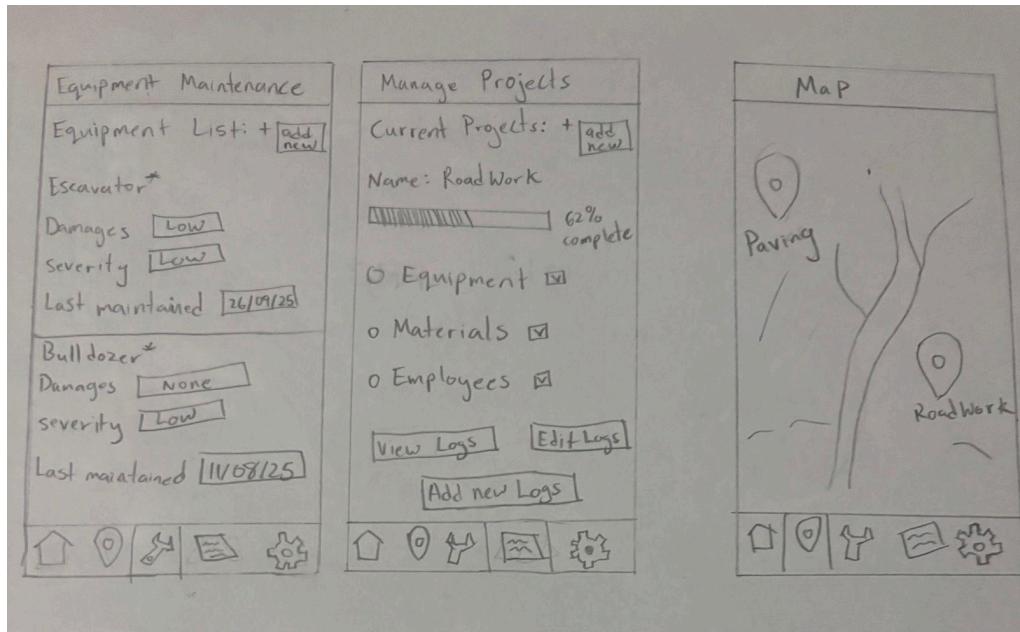


Figure 4: Mobile

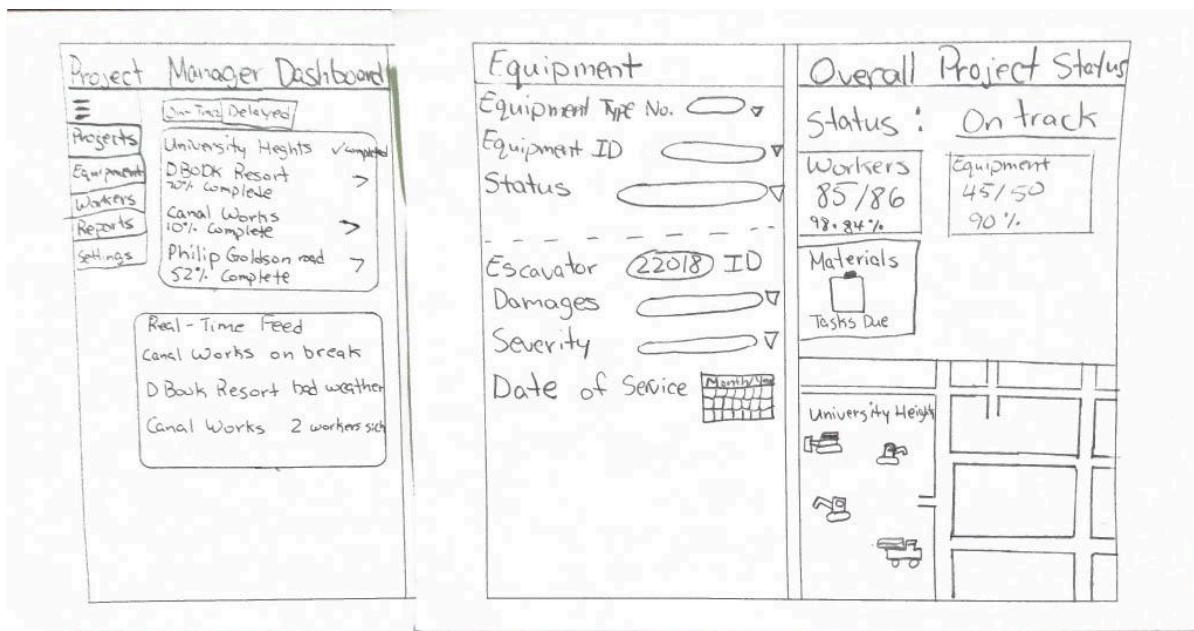


Figure 5: Tablet

Selected Interface

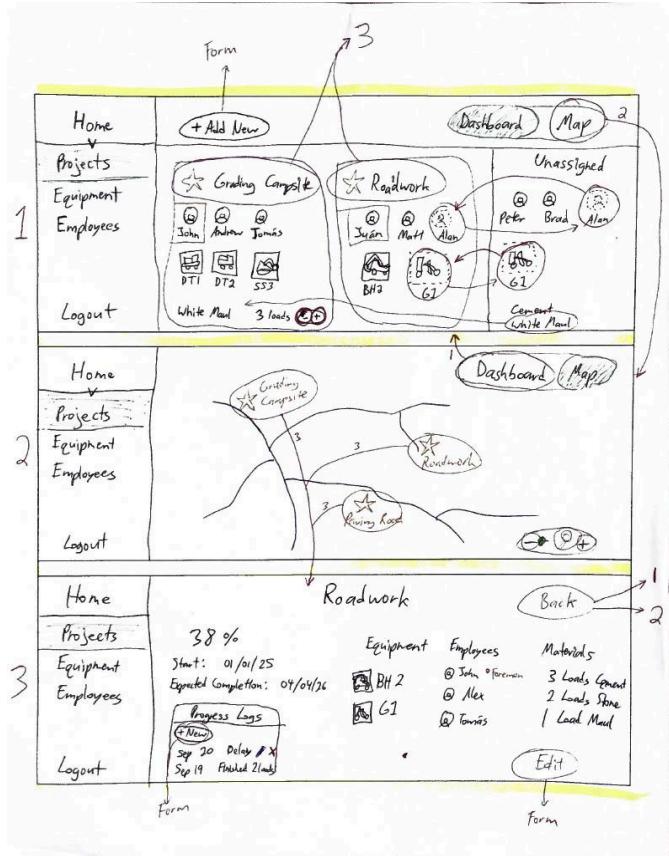


Figure 6: Webpage

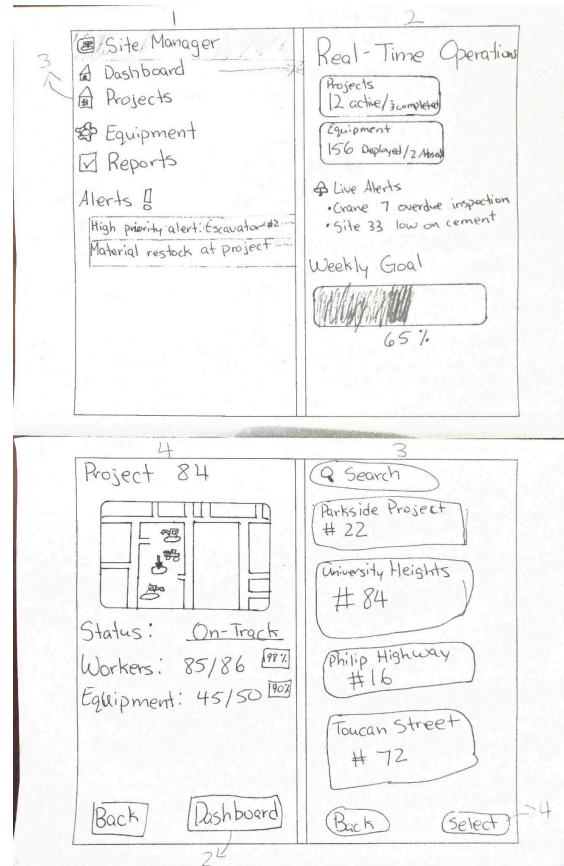
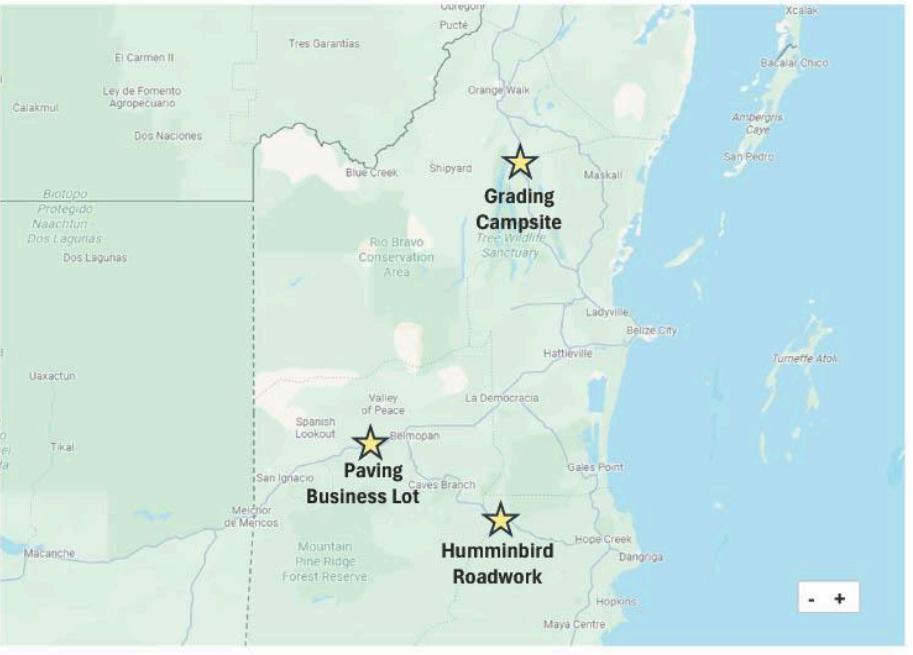


Figure 7: Tablet

#1 Pros / Cons	#2 Pros / Cons
Web based	Mobile based
Simple navigation	More alerts/feedback
More workable	More simplistic

Final Prototype

Home	Add New	Map	Dashboard
Projects Equipment Employees Material List Logout	<p>Grading Campsite</p>  <p>EX-2 DT-1</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>John</p> </div> <div style="text-align: center;">  <p>Andrew</p> </div> <div style="text-align: center;">  <p>Tomas</p> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Maul - 1 +</p> </div> <div style="text-align: center;">  <p>Cement - 2 +</p> </div> <div style="text-align: center;">  <p>Stone - 3 +</p> </div> </div> <p>Hummingbird Roadwork</p>  <p>CT-1 G-1</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Juan</p> </div> <div style="text-align: center;">  <p>Matt</p> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Bricks - 2 +</p> </div> <div style="text-align: center;">  <p>Cement - 2 +</p> </div> </div> <p>Paving Business Lot</p>  <p>DT-3 CT-2</p>	<p>Unassigned</p>  <p>EX-1 EX-3 DT-2</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Peter</p> </div> <div style="text-align: center;">  <p>Brad</p> </div> <div style="text-align: center;">  <p>Alan</p> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Maul</p> </div> <div style="text-align: center;">  <p>Stone</p> </div> <div style="text-align: center;">  <p>Cement</p> </div> </div> <div style="text-align: center;">  <p>Bricks</p> </div>	

Home	Map	Dashboard
Projects Equipment Employees Material List Logout	 <p>The map displays the location of three projects in Belize:</p> <ul style="list-style-type: none"> Grading Campsite: Located in the northern coastal area near Orange Walk. Paving Business Lot: Located in the southern coastal area near Belmopan. Hummingbird Roadwork: Located in the central-southern area near La Democracia. <p>Key geographical features shown include the Mopan River, the Belize River, and various towns like San Ignacio, Belmopan, and Belize City. The map also shows the Caribbean Sea to the east and various rivers and lakes.</p>	

Home	Name	Position	Action
Projects	John	Foreman	
Equipment	Andrew	Employee	
Employees	Tomas	Operator	
Material List	Juan	Manager	
	Matt	Employee	
	Peter	Employee	
	Brad	Foreman	
	Alan	Operator	
Logout			Add New

Selected Interface Design

After comparing the usability of all interface sketches, we selected the combined web and mobile design as our final low-fidelity prototype. This version prioritized simplicity, accessibility, and efficiency.

UI Storyboards

We created three storyboards to represent key user tasks managers would perform:

1. Easy Task – Add Maintenance Log: The user selects an excavator (EX-1), adds a new maintenance log for “Busted Hydraulic Hose,” updates its status to Being Repaired, marks another log as Fixed, and returns to the projects page.
2. Medium Task – Update Project Progress: The user adds a progress note to the Grading Campsite project, records completion on December 24, 2025, marks the project as Complete, and returns to the project list.
3. Hard Task – Manage Assignments and Materials: The user reassigns equipment and employees across multiple projects (e.g., assigning DT-2 and CT-2 to Hummingbird Roadwork, adding or removing loads of materials), and finally reviews the overall map view for confirmation.

Prototype Description

The low-fidelity prototype was created using simple digital mockups and paper-based layouts that represented real navigation and task flow. Each screen simulated interactions such as selecting equipment, updating project details, or switching between project maps.

Prototype Features:

- Interactive dashboards for project summaries.
- Simulated buttons for adding logs or progress notes.
- Dropdown lists for assigning employees and resources.
- A map page linking all projects with quick access to details.

Method

Participants

Two volunteer participants were recruited from the university computer lab to test the prototype. They were not familiar with the app beforehand, which allowed them to provide unbiased feedback.

Environment

Testing was conducted in a quiet lab setting. Both participants performed tasks under observation, with the facilitator guiding them through the test objectives, while the observer logged down their comments and actions.

Tasks

Each participant was asked to perform the three UI task flows described earlier: Add a maintenance log for equipment, add a project progress note and mark the project as complete, and assign multiple resources across different projects.

Procedure

1. The facilitator introduced the purpose of the prototype and explained the basic navigation.
2. Participants were given printed task descriptions and asked to complete each task independently.
3. Observers noted any errors, hesitation, or confusion points.
4. After each session, participants shared feedback on what they found intuitive or unclear.

Team Member Roles



Facilitator & Computer: Joseph Koop



Observer & Notetaker: Enrique Garcia, Kelvin Gordon

The team collaboratively reviewed user feedback after testing to identify trends and possible improvements.

Results

Participant 1 Feedback:

- Vibe: Understandable and straightforward.
- Comments: "Once everything is color-coded, it's pretty easy to follow."
- Suggestions: Box related items together to make sections easier to follow.

Participant 2 Feedback:

- Vibe: Enjoyable and engaging.
- Comments: "This is kind of fun."
- Issues Found: Some icons did not directly link to their expected pages, Progress Notes link lacked visual emphasis, and drag-and-drop reassignment took extra time to figure out.

General Findings

Both participants initially visited incorrect sections but were able to backtrack and complete tasks independently. Color-coding and clearer icon labeling would significantly improve navigation. Users appreciated the map view but desired clearer feedback when assigning equipment or employees.

Discussion

The low-fidelity test provided valuable insights into how users might interact with SiteManager in real-world contexts.

What Worked Well:

- Users quickly grasped the main purpose and workflow.
- The app's structure felt logical, especially once visual cues were understood.
- Participants found the layout appealing and the map overview particularly useful.

Challenges Identified:

- Visual clarity: Without enough color distinction, users occasionally clicked the wrong icons.
- Grouping and spacing: Items needed better visual containment to reduce confusion.
- Feedback and responsiveness: Some interactive elements (e.g., drag features) were unclear without visible confirmation.
- Link visibility: Buttons such as “Progress Notes” required more obvious placement.

Proposed Improvements:

1. Introduce color-coded categories (Projects, Equipment, Employees).
2. Add visible borders and containers to group related sections.
3. Improve drag-and-drop functionality by providing hover indicators or click alternatives.
4. Enhance progress link visibility using underlined text or icon cues.
5. Implement drop-down arrows to expand or collapse detailed sections.

Conclusion

Testing showed that this prototype can help solve key problems faced by construction project managers due to keeping everything in one place. Users found the system easy to understand and useful for tracking people, equipment, and project progress.

The prototype successfully demonstrated how the app will work, though it needs clearer visuals and better navigation. With a few improvements, SiteManager can become a practical, easy-to-use tool that helps companies stay organized and finish projects on time.

Consent Form

The SiteManager application is being produced as part of the coursework for Information Technology course CMPS3141 – Human Computer Interaction at the University of Belize. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of SiteManager. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers Joseph Koop, Kelvin Gordon, Enrique Garcia or with Lecturer Manuel Medina Jr., the instructor of CMPS3141:

Manuel A. Medina Jr.
MPIT Department
University of Belize
822-1000 ext.305
mmedina@ub.edu.bz

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their lecturer.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behaviour and opinions in relation to the SiteManager experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name Raven Navano

Participant Number 638-9177

Date 16 October 2025

Signature [Signature]

Witness name Enrique Garcia

Witness signature Enrique Garcia

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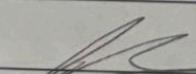
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Name Jerome Bauman

Participant Number 1

Date 16/10/25

Signature 

Witness name Joseph Koop

Witness signature 