

Project Description [1 pt]

Our project focuses on improving the digital water service experience for residents of Davao City, specifically those under the Davao City Water District (DCWD). Many users currently experience frustration when accessing billing details, service alerts, and support through DCWD's existing web-based platform. Our goal is to redesign and enhance this system by introducing a mobile-friendly, user-centered interface called HydroLink. This redesigned system will support tasks such as viewing and paying bills, reporting outages, checking service interruptions by zone, and chatting with customer support through a bot or live agent. The intended users are everyday citizens, including seniors, working adults, and less tech-savvy individuals who require a system that is responsive, accessible, and intuitive.

Requirements Summary [4 pts]

The key usability and functionality requirements gathered in Part 1 and updated during this phase are as follows:

- The system must be mobile-responsive and accessible across various devices.
- Users must be able to view current balance, billing history, and payment due dates in a clear, real-time format.
- A reliable **push notification system** must notify users of water outages, scheduled maintenance, or billing reminders.
- The interface should include **interactive zone-based maps** to help users determine if their area is affected.
- A **live chat or chatbot** must be available for real-time support or FAQs.
- Users must be able to report service issues quickly and receive confirmation.
- The platform must have a clean and consistent UI that prioritizes ease of navigation and accessibility.
- Optional features include a PDF download of bills, account personalization, and secure payment history.
- A fast and accessible way to report service issues.

Design Space [15 pts]

In this phase, we explored a wide range of interface ideas and interaction models that respond to the different tasks and user needs identified in Part 1. Our goal was to imagine different ways users could complete essential tasks like paying a bill or reporting an outage more efficiently and confidently.

- ***What requirements may be difficult to realize?***

Some features we envisioned, such as real-time service interruption status or live chatbot integration, may be difficult to realize technically due to dependency on backend infrastructure or resource limitations. For instance, showing a dynamic outage map would require DCWD to continuously update data, which may not currently exist. Additionally, a 24/7 live chat with an agent would require staffing, which may be outside of DCWD's current operational model. As interface designers, we created these features to demonstrate ideal usability, knowing that their implementation may depend on future infrastructure improvements.

- ***What are some tradeoffs we explored?***

One tradeoff we considered was between simplicity and feature richness. We wanted to ensure the interface could support a wide range of tasks (payments, alerts, chat support, zone lookups), but not at the cost of overwhelming the user. This led us to group related tasks in clean sections, use visual icons, and design a homepage/dashboard that acts as a summary, while deeper tasks are one or two taps away.

We also debated between using a chatbot vs. offering static FAQs. A chatbot offers a dynamic, interactive experience, but could confuse users if poorly designed. Static FAQs are easy to access but less engaging. In the final designs, we included both — with the chatbot taking care of common, simple concerns and redirecting more complex issues to an agent.

- ***Which tasks will be easiest and hardest to support?***

Easiest tasks to support include:

- Viewing current billing details and payment history
- Sending reminders for due dates and scheduled outages
- Letting users update personal or account settings

Hardest tasks include:

- Real-time outage reporting and resolution tracking
- Building a chatbot with intelligent, human-like responses
- Personalizing notifications based on zones, preferences, and billing behavior

These challenges arise mainly due to system limitations on the DCWD side, but from a user interface perspective, we can still design these features as part of the interface vision.

Design Space [15 pts]

As a team, we brainstormed multiple directions that tackled the core issues of missed notifications, payment delays, inaccessible support, and a confusing zone-based system. After rounds of sketching and feedback discussions, we refined three key design alternatives that approach the same problem from different angles.

- ***Design paths we explored but did not pursue:***
 - A minimalist SMS-based system: This focused purely on SMS reminders for users with no smartphones, but it lacked interactivity and could not support modern UI needs.
 - A voice-based support feature: We discussed integrating voice input, but considering our audience includes older users or those with limited devices, this was not a practical path.
 - A separate site just for zone-based service interruptions: We dropped this idea to avoid fragmenting the user experience — instead, we opted to integrate it as a module within the main dashboard.
- ***Justifications for the final three designs:***

We chose three interface approaches that reflect different user priorities:

- **Dashboard-first design** — for users who want everything visible at a glance.
- **Map and notification-centered design** — for users concerned with outages and updates.
- **Support and chatbot-first design** — for users who need help fast and often.

The Designs [60 pts]

In this section, we present the three design alternatives we developed as a group. Each design offers a unique way to address the key problems identified in Part 1: missed billing notifications, lack of real-time support, inaccessible outage information, and an outdated user interface.

For each design, we include:

- A brief overview of the design idea
- UI sketches and mockups
- A user scenario or storyboard from a user's perspective
- Our assessment of the design's strengths, weaknesses, and alignment with user needs

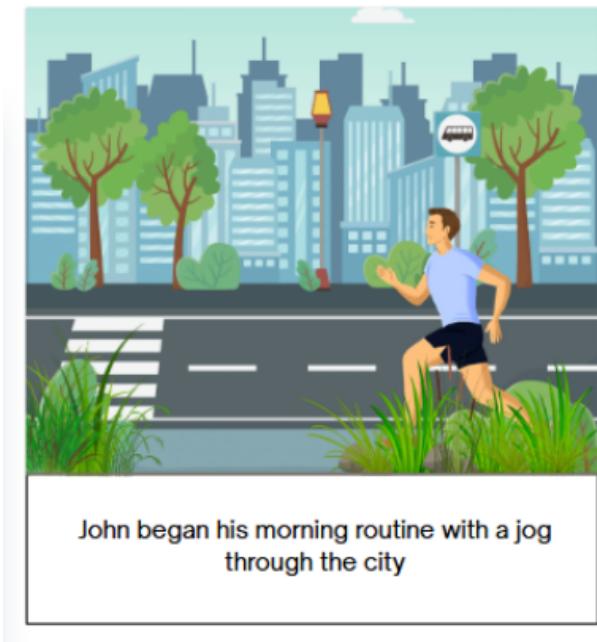
DESIGN 1

The HydroLink user interface is a streamlined and functional design divided into three main sections: a opening page on the left featuring the HydroLink logo and name, a login page area with fields for username and password along with login and signup options, and a right-hand dashboard that includes buttons for "BILLING" and "REPORT," a "Water Interruption" section, and a color-coded map likely indicating service zones or disruptions. This layout supports intuitive navigation and quick access to essential features, making it suitable for users managing or monitoring water utility services.

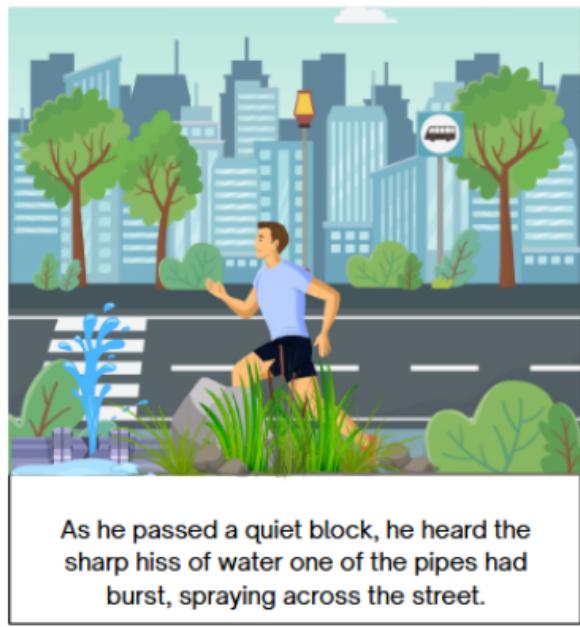
- **Storyboard: “Running Day”**

This 4-panel comic-style storyboard visually narrates a user story where a man jogging through the city discovers a burst water pipe spraying across the street. He tries to report the issue by calling the water company but is placed on hold, leading to frustration. The final panel introduces the idea of a better solution — an app where users can quickly report problems, attach photos, and help get issues resolved faster without the hassle of waiting on the phone.

Visual Reference: See attached image labeled "Running Day" for the full storyboard.



John began his morning routine with a jog through the city



As he passed a quiet block, he heard the sharp hiss of water one of the pipes had burst, spraying across the street.



He pulled out his phone to call the water company, but no one picked up—apparently, they only allowed a limited number of calls per line

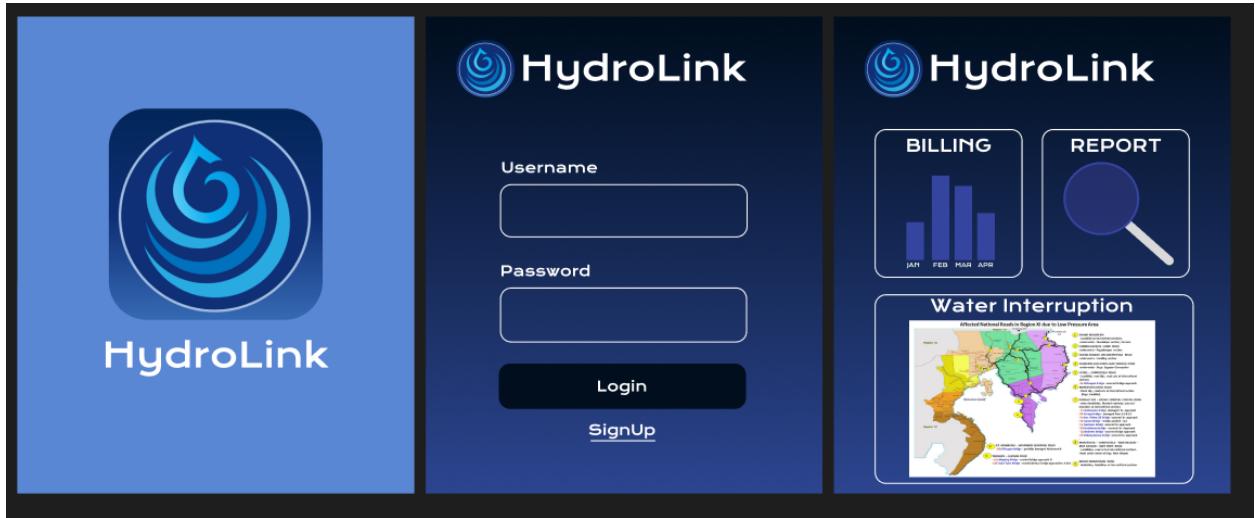
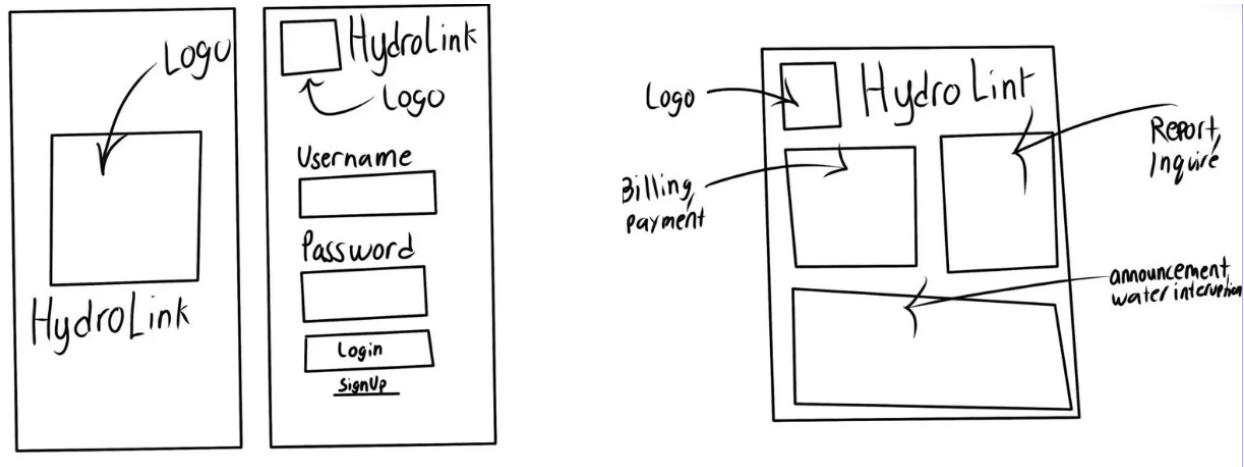


He sighed, thinking how much easier it would be if there were an app where he could report issues like this and include photos or details to help get it fixed faster.

User Scene

While jogging through the city, Carlos hears the sound of rushing water and spots a burst pipe flooding the street. He pulls out his phone to report it but ends up stuck on hold with the water company. Frustrated, he imagines a better way. With the new system, HydroLink, he opens the app, taps “Report Issue,” uploads a photo of the leak, and submits it in seconds. He receives confirmation instantly and continues his jog, relieved that the problem is already being handled.

Wireframes and Sketches



DESIGN 2

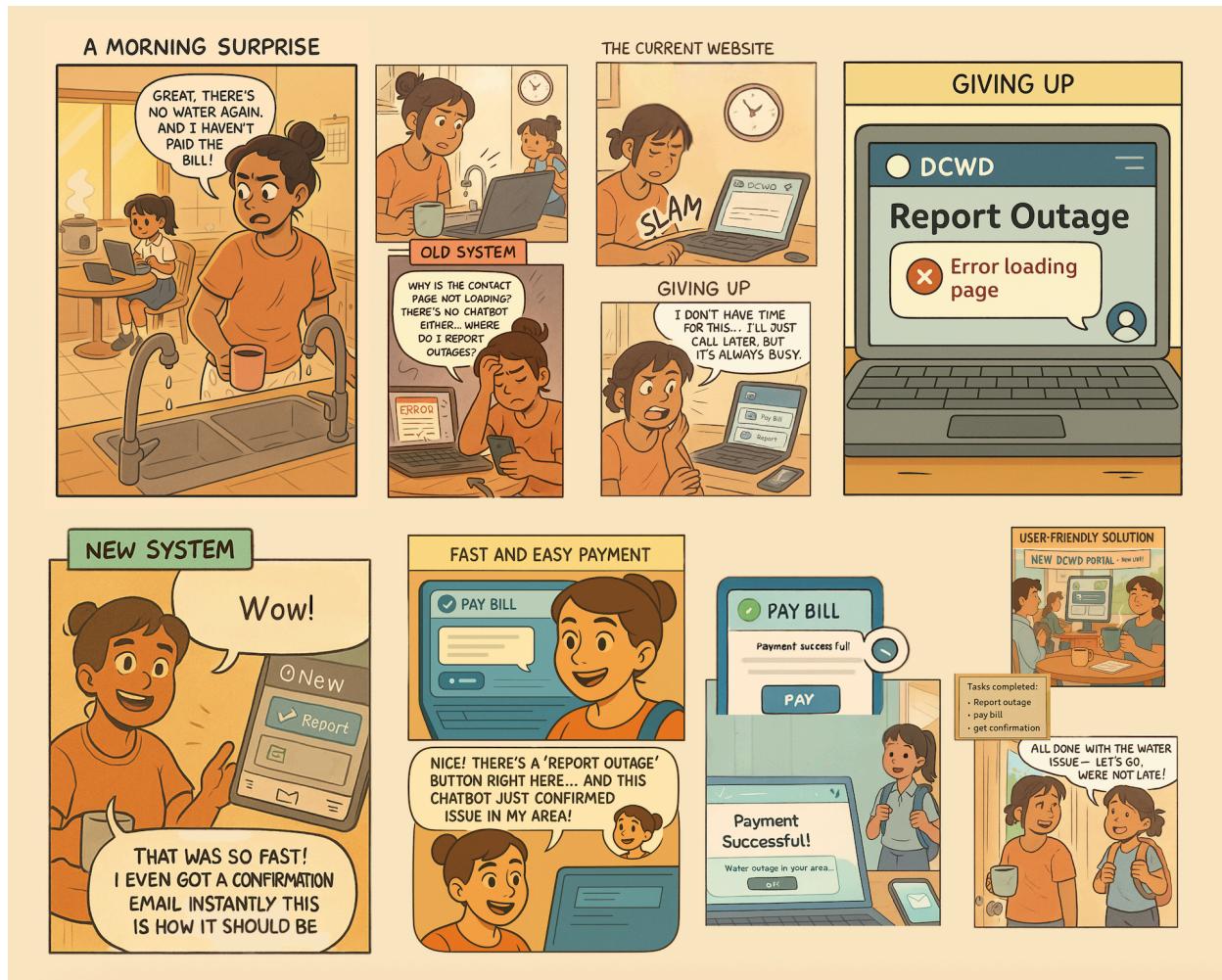
This design focuses on solving three primary user frustrations: late or missing billing reminders, inaccessible outage reports, and a lack of instant customer support. The concept introduces a comprehensive smart dashboard, where the user sees all essential information — bill status, payment actions, service alerts, and water usage at a glance. Additionally, the system includes push notifications, chatbot/live chat integration, and a clear path to reporting issues. We designed

this interface under the principle of "visibility of system status", aiming to make all critical actions immediately obvious without requiring users to navigate through multiple confusing menus.

- **Storyboard: "A Morning Surprise"**

This 12-panel comic-style storyboard visually narrates a user story where a woman wakes up to a surprise water outage. She tries to use the current DCWD website but encounters a broken page and gives up. The second half introduces HydroLink, where she's notified in advance, pays instantly, reports issues with a few taps, and receives confirmation — all without needing to call customer service.

Visual Reference: See attached image labeled "A Morning Surprise" for the full storyboard.



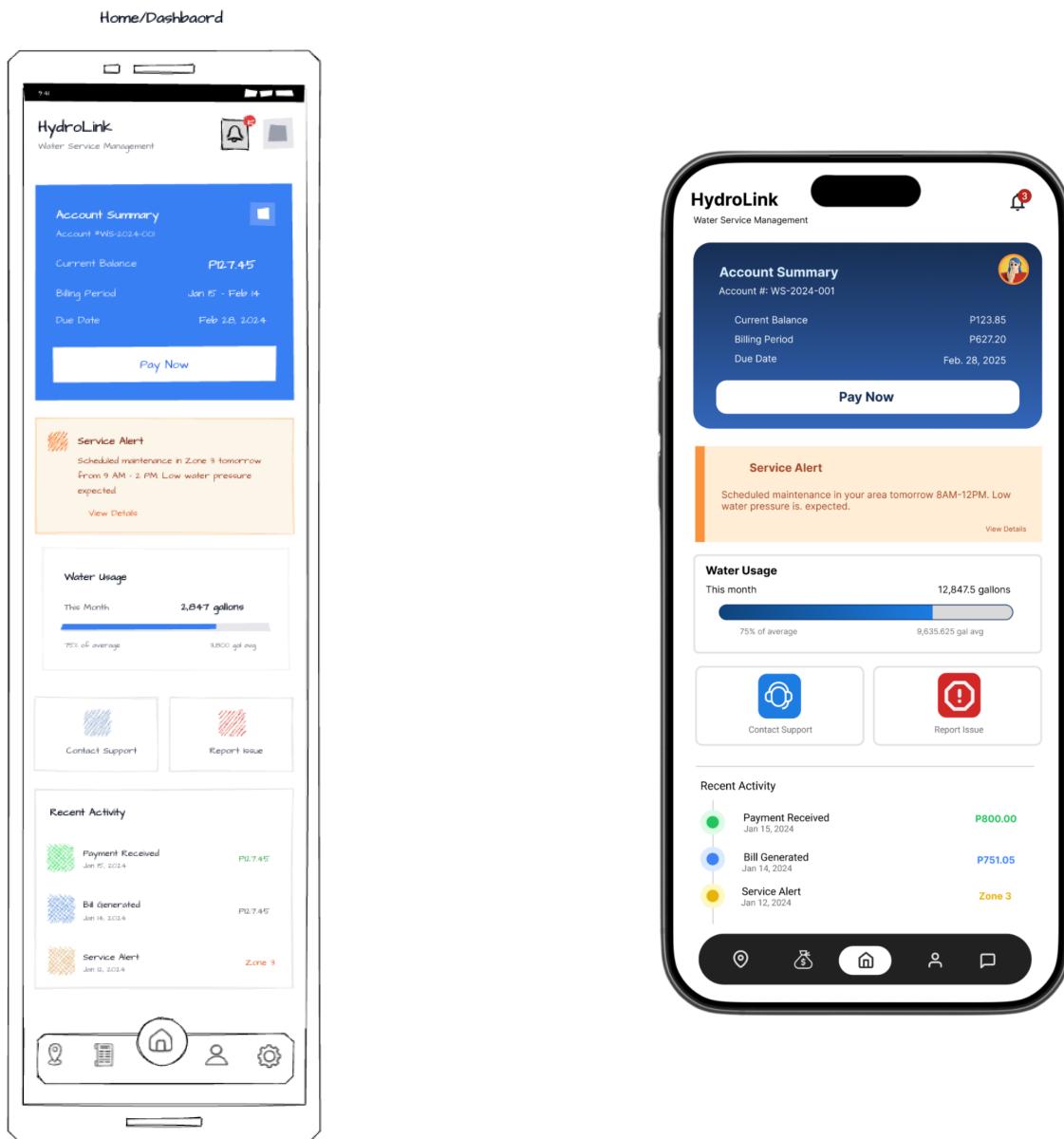
User Scene

Maria wakes up and realizes her water has been cut off — again. Frustrated, she checks her laptop but can't load the DCWD website's report page. She gives up. But in the new system, HydroLink, she receives a push notification a day before, alerting her that her bill is due and a

service interruption is scheduled. She opens the app, taps 'Pay Now,' reports a leak through the chatbot, and receives a confirmation email — all within minutes. With her water issue solved, she leaves home calmly with her daughter, on time.

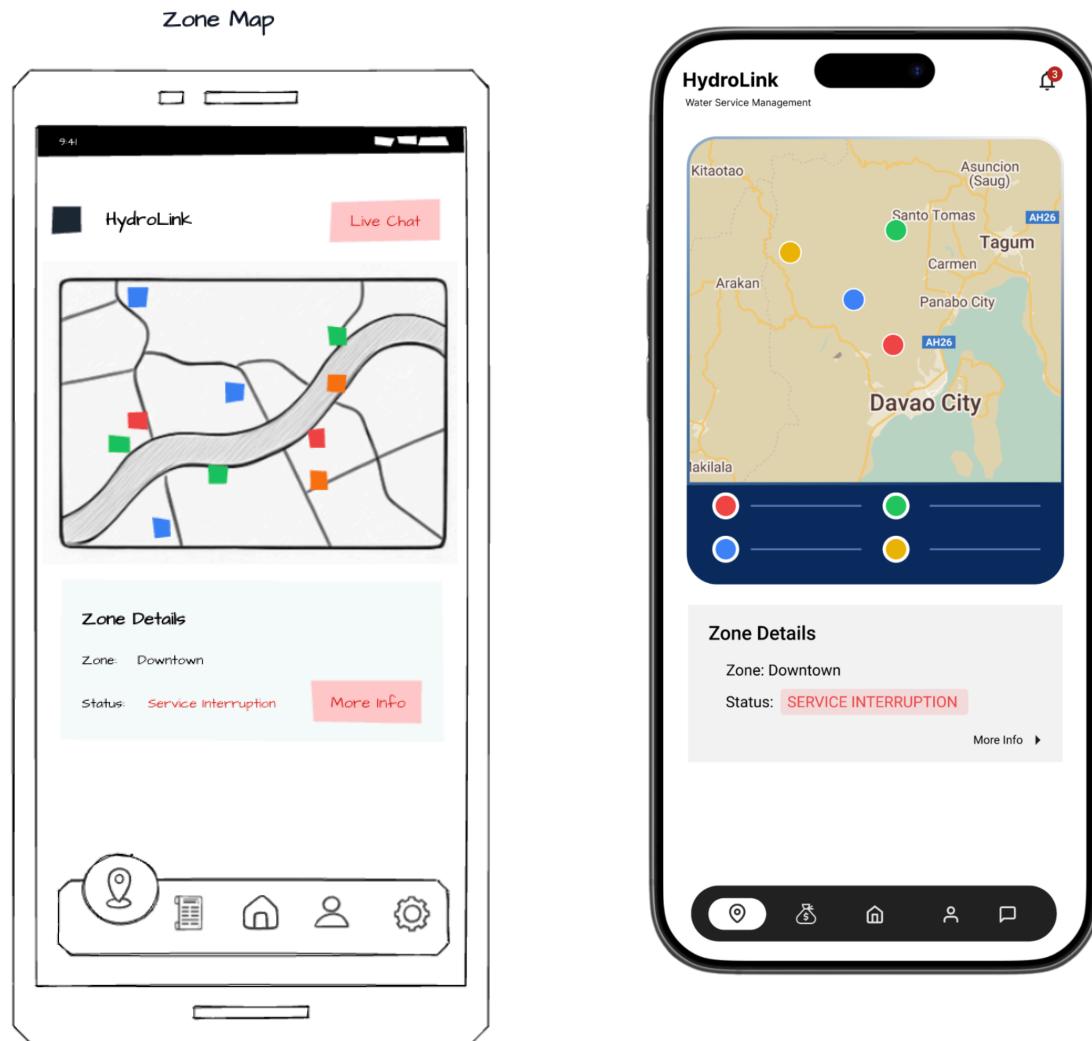
- Wireframes and Sketches

Dashboard/Home



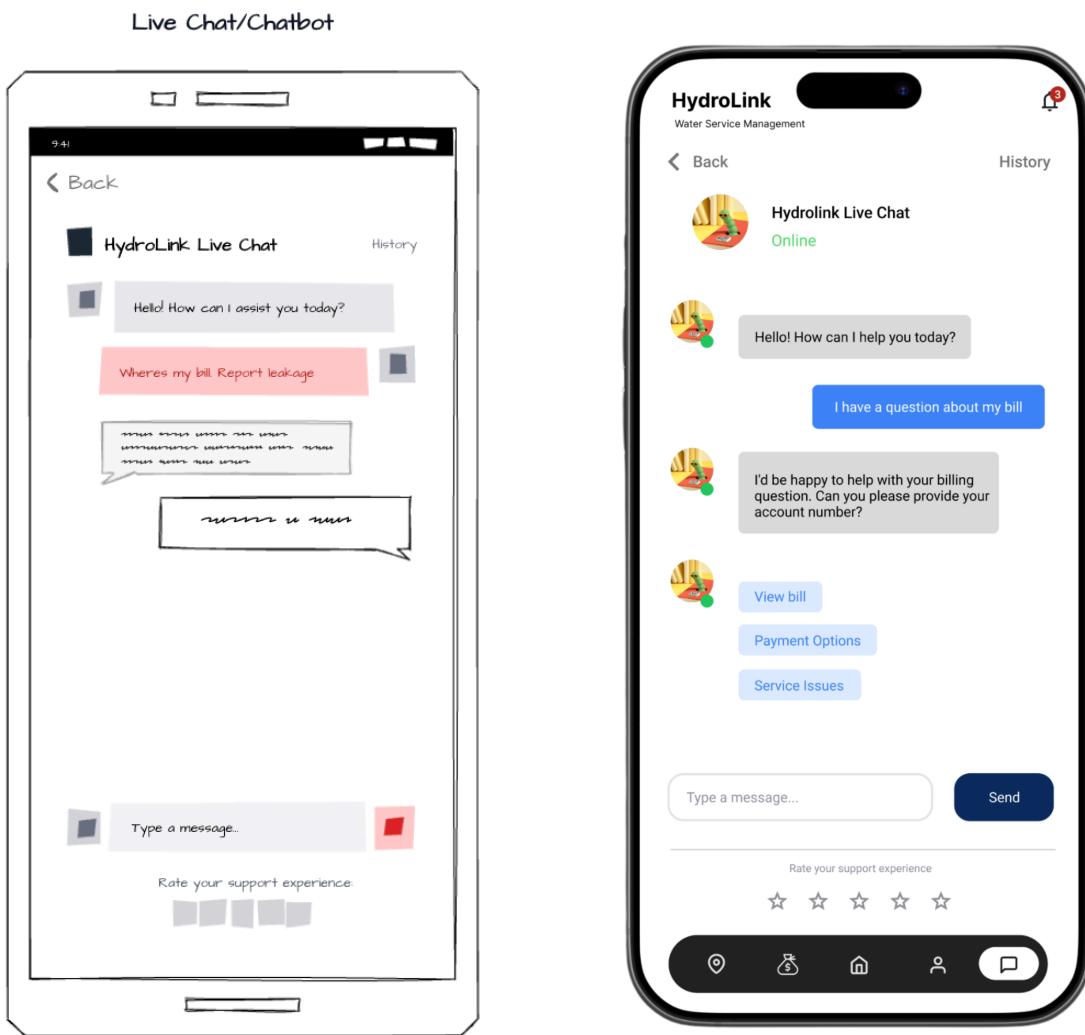
Shows account summary, due date, water usage, and active service alerts. We placed key actions like “Pay Now” and “Report Issue” at the top of the screen for maximum visibility. This minimizes the effort needed to resolve urgent matters.

Zone Map



Uses color-coded zones with status labels (e.g., “Service Interruption”) and a tap-to-expand map. This makes location-based outages understandable and accessible, especially for users confused by technical notices.

Live Chat / Chatbot



A conversational interface for common questions, with fallback options for live agent support. The chatbot supports actions like bill inquiries and reporting issues, helping reduce call center demand and saving user time.

Billing History

The image displays two side-by-side screenshots of the HydroLink mobile application interface, specifically the 'Billing History' section.

Left Screenshot (Tablet View):

- Header:** 'Billing History'
- Section:** 'Account Overview'
 - Account Number: [redacted]
 - Type: Regular Bill
 - Current Balance: P247.85
 - Last Payment: Jan 15, 2024
- Buttons:** 'DOWNLOAD PDF' and 'Filter By'
- Section:** 'Billing History'

BILLING PERIOD	AMOUNT	DUUE DATE
Dec 2023	P247.85	Jan 15, 2024
Nov 2023	P123.42	Dec 15, 2023
Oct 2023	P123.42	Nov 15, 2023
Sep 2023	P123.42	Oct 15, 2023
Aug 2023	P123.42	Sep 15, 2023
Jul 2023	P123.42	Aug 15, 2023

- Text:** 'Showing 1 to 6 of 14 results'
- Buttons:** 'Previous' and 'Next'
- Bottom Navigation:** Icons for location, wallet, home, user, and message.

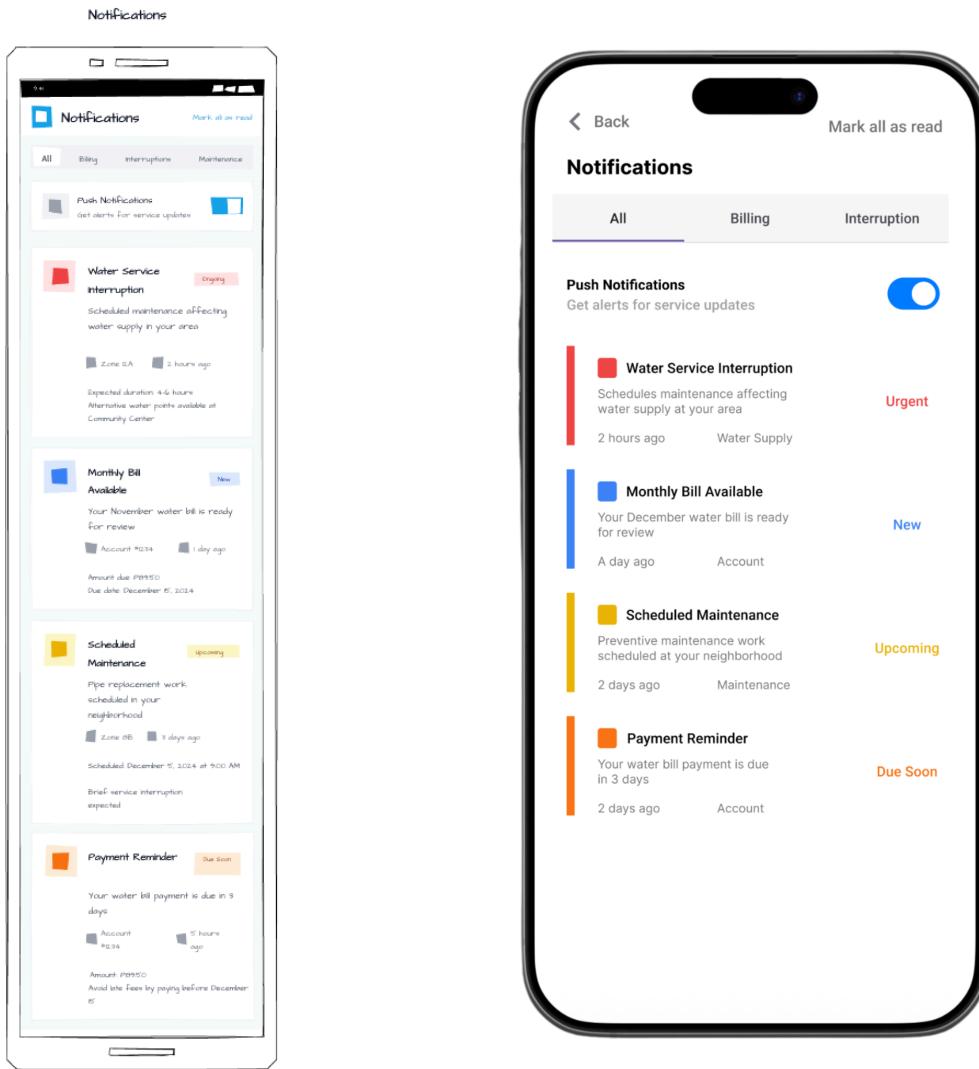
Right Screenshot (Phone View):

- Header:** 'HydroLink' and 'Water Service Management' with a notification badge '3'.
- Section:** 'Account Overview'
 - Account Number: WS-2024-001
 - Type: Regular
 - Current Balance: P123.85
 - Last Payment: Jan 18, 2024
- Section:** 'Billing History' with a 'Filter by' dropdown.
- Table:** A list of payment transactions.

Date	Amount	Status
Jan 9, 2024	P725.98	Paid
Dec 9, 2024	P625.98	Paid
Nov 9, 2024	P987.00	Paid
Oct 9, 2024	P654.97	Paid
Sep 9, 2024	P725.98	Paid
Aug 9, 2024	P698.56	Paid
- Text:** 'Showing bills 1 of 24'
- Buttons:** 'Previous' and 'Next'
- Bottom Navigation:** Icons for location, wallet, home, user, and message.

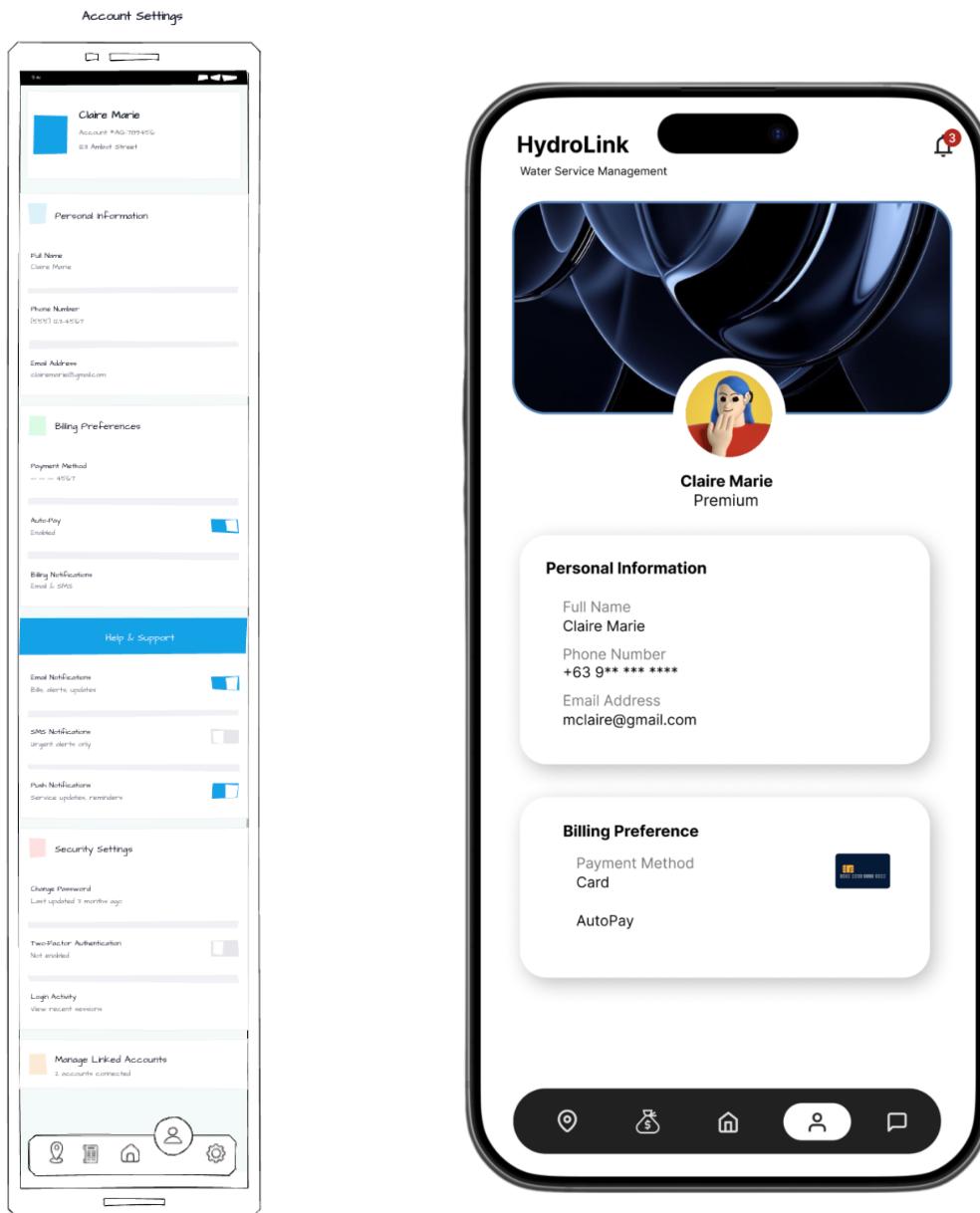
Organized by date and amount, with filtering and PDF download options. This supports users who want a record of payments and clear transaction details.

Notifications Panel



Categorized alerts (Billing, Interruption, Maintenance) with time labels and toggle for push notifications. This ensures timely updates, empowering users to act before problems occur.

Account Settings



Includes personal details, billing preferences, and auto-pay setup. We made these sections easy to find and manage, reducing friction for users setting up their profile.

- **Design Assessment**

Advantages

- All important tasks — billing, notifications, service alerts, and support — are integrated in a single, user-friendly view.
- Reduces the number of clicks needed to perform frequent actions (e.g., pay bill, report problem).
- Improves system visibility and prevents disconnection surprises by notifying users before bills are due or outages occur.
- Live chat/chatbot eliminates the need to call hotlines or wait in queues, offering immediate help even outside office hours.

Disadvantages

- Might be slightly overwhelming for first-time users if not guided
- Real-time functionality like outage tracking depends on accurate backend data from DCWD

Alignment with Requirements

This design effectively meets key usability and functionality goals: clear access to billing, real-time alerts, support chat, and a user-friendly layout. It strongly emphasizes visibility, efficiency, and accessibility.

User Feedback

We showed this design to five classmates who also use DCWD services. They appreciated the idea of being proactively notified of bills and outages. One commented: *“I hate logging in just to find out why there’s no water — this is so much faster.”* Another noted that the “Report Issue” button was easy to spot and would help reduce stress. However, one user pointed out that older users might need a clearer visual hierarchy or an onboarding tutorial.

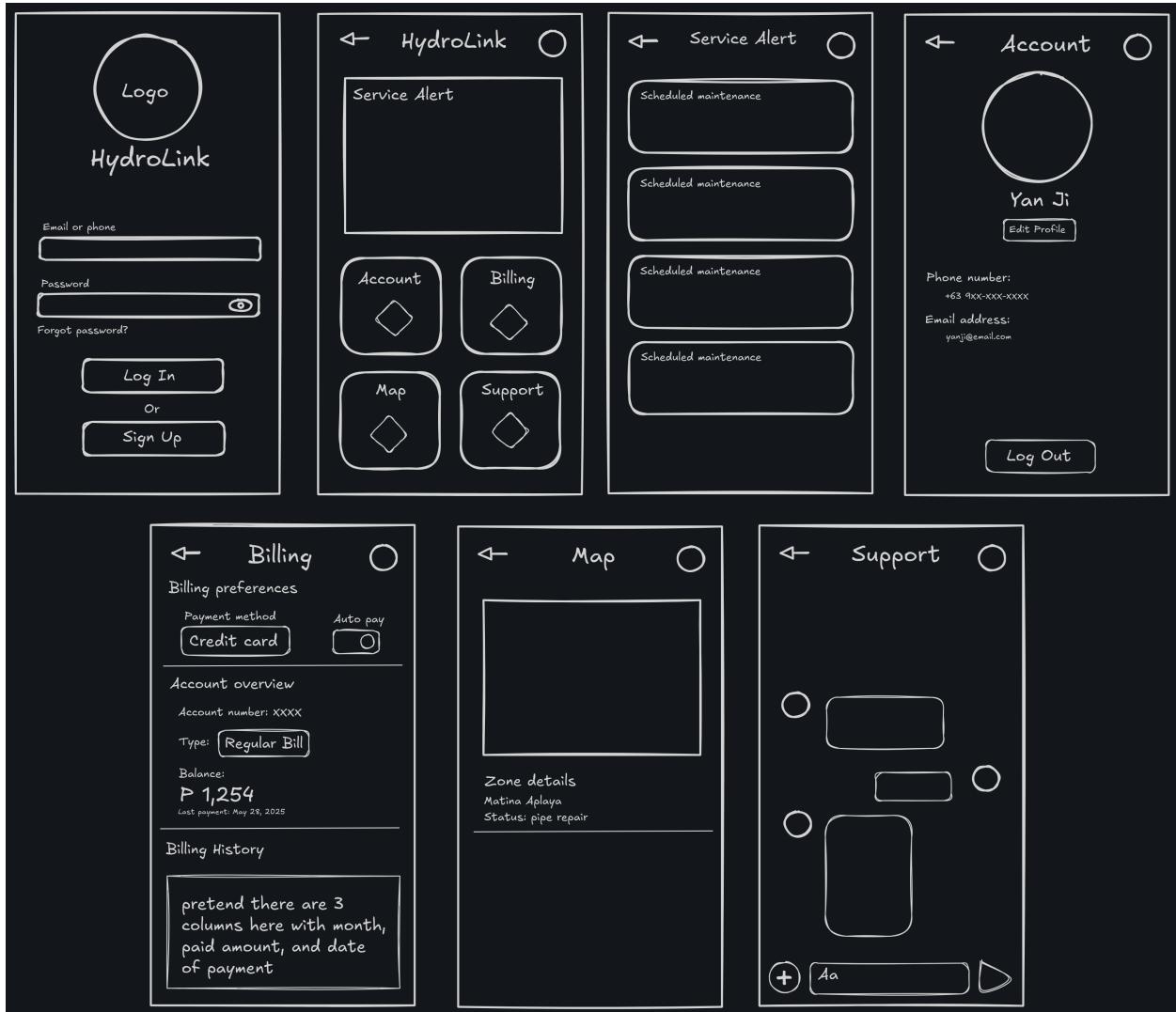
How Feedback Was Collected:

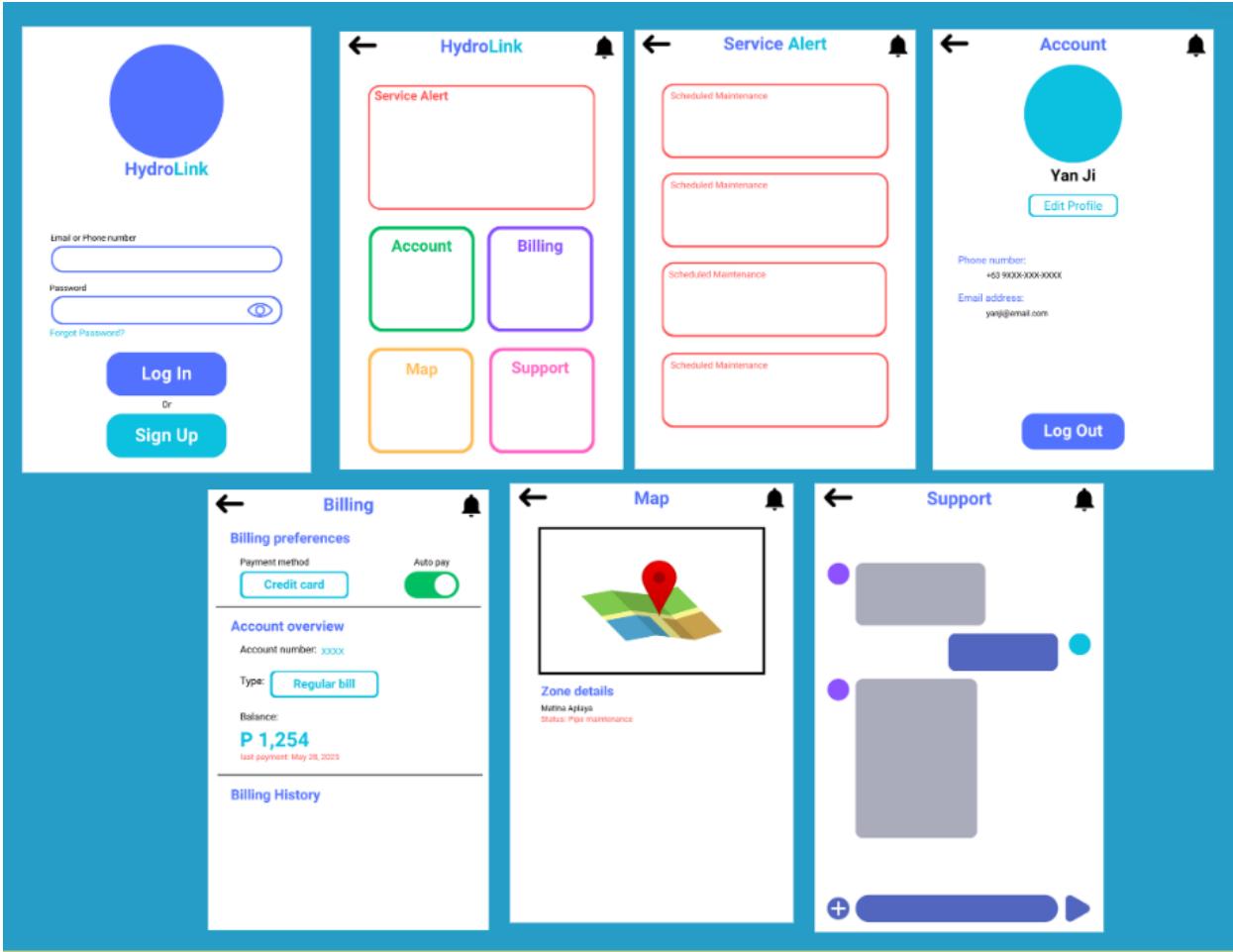
- We presented the storyboard and UI mockups via a shared whiteboard.
- Asked open-ended questions like: “What would you click first?”, “Does anything confuse you?”, and “Would you prefer this to the current website?”
- We noted usability reactions like hesitation, confusion, or excitement.

DESIGN 3

This design mainly focuses on clarity and usability. The design is able to do this by making elements easy to see and interact with, focusing on big shapes and contrasting colors instead of details. The design allows for intuitive interaction, especially for those who are less technologically inclined.

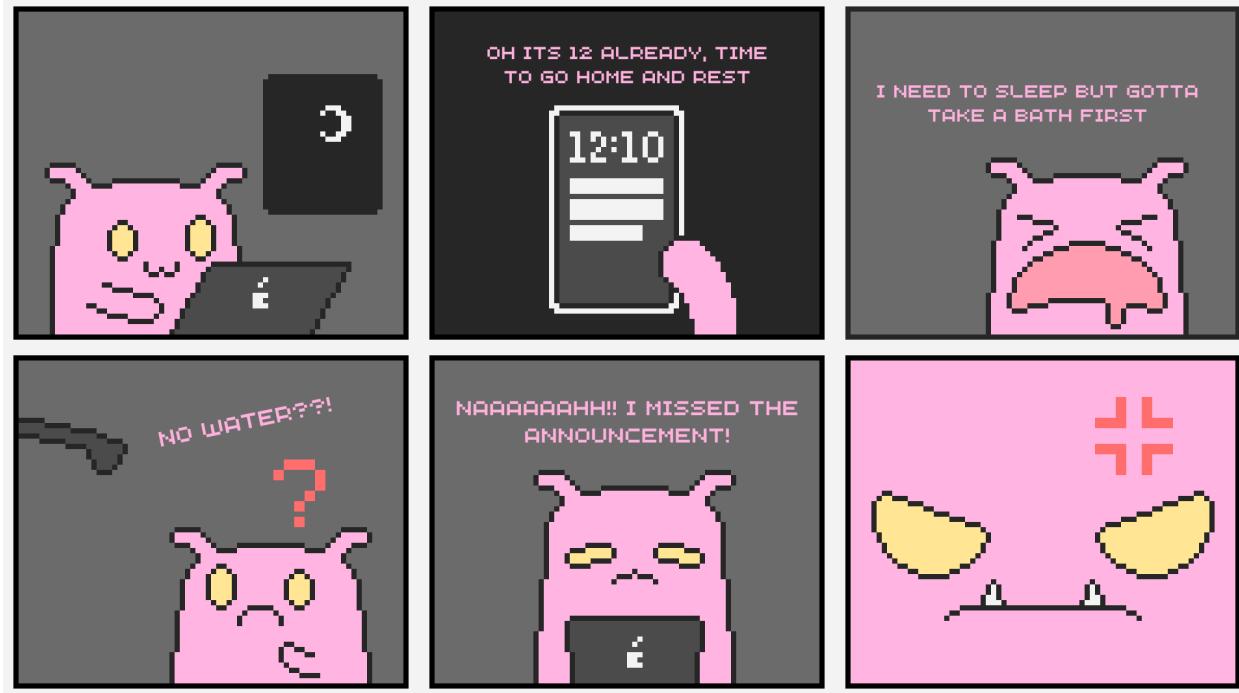
Provided are illustrations of the design including the sketches and the mockup:





As shown in the images provided, the shapes of the design are big and easy to see. The dashboard/home page isn't filled with details, only the important notifications and the buttons to see the other sections of the app.

Here is a scenario showing the character going home late at night wanting to take a bath before sleeping but she wasn't notified of the water interruption thus ruining her plans. As someone who also works late at night, this is relatable not just for me but for my fellow college students and other programmers.



For the design assessment, there were advantages and disadvantages found by the testers (my family and friends). One advantage they found was the simple design and large shapes, which allow for more visibility and clarity. But interestingly, they found the contrasting colors bad and suggested a “cooler” color scheme and only use other colors for very important highlights like in the dashboard.