

Process Book

GridControl: A new WindStax Service

IXD2 A3 SPRING 2022

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Project Overview

Mobile Service Design

Our project was centered around designing a mobile service for the company WindStax.

Our main objective was to prototype a native mobile app that creates value for both WindStax and its customers, while also applying design techniques learned in class.

WindStax® Energy



INITIAL RESEARCH

What is WindStax?

Initial Research: Company & Industry

Windstax and Renewable Energy

To understand our problem space and the field of renewable energy, we looked into the mission and history of the Windstax company through a variety of sources such as their website, social media outlets, as well as customer reviews.

We also researched into Windstax's competitors to better grasp the value of the Windstax service as well as the state and target audience of the energy production market.

By compiling our research we identified **4 main goals of Windstax:**

1. Make energy be seen as an opportunity rather than a commodity
2. Utilize novel techniques to devise energy solutions
3. Create products that are inexpensive to own and operate
4. Lead the field of large, vertical wind turbines

Initial Research: Stakeholders

Who's Involved

After building a stronger understanding of the problem space, we discussed and performed further research to identify as many stakeholders in the Windstax service as we could.

To make our jobs easier, we first divided stakeholders into two groups: **internal and external stakeholders**. We then chose 6 key stakeholders from these groups (listed below) to dive deeper into and identify their **goals, needs, preferences, and jobs to be done**.

Stakeholders

1. Board of Directors
2. Research and Development Team
3. Sales Team
4. Clients
5. Energy Consumers
6. Government and Lawmakers

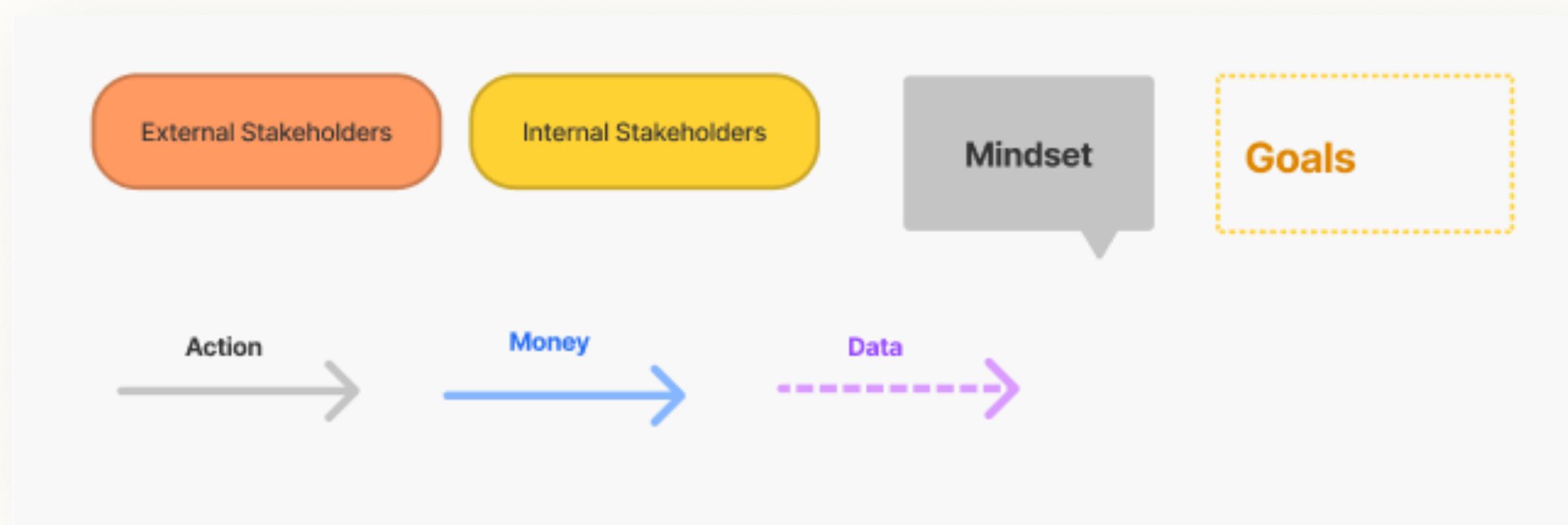
Stakeholder & Value Flow Map

Map Development

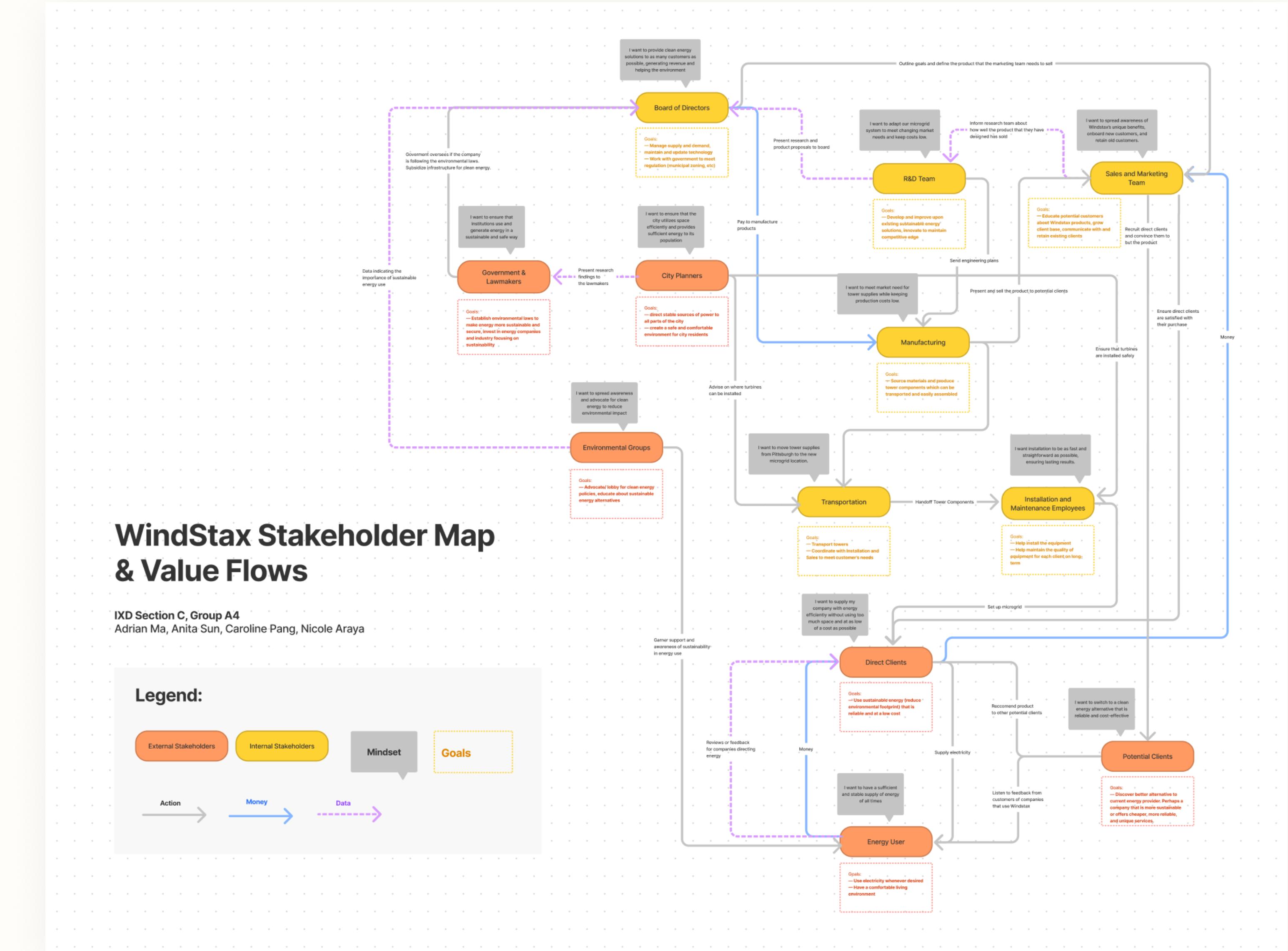
From the initial research, we worked together to develop the stakeholder and value flow map. We first generated a very broad list of stakeholders, and wrote down their mindsets and goals. We were able to categorize all the stakeholders into two groups:

- External stakeholders
- Internal stakeholders

We then started to draw out all the types of interactions (action, money, data) across all stakeholders.



Stakeholder & Value Flow Map



Tone & Voice

Developing the Brand

Before jumping into developing our Windstax solution, we needed to understand Windstax's relationship with their customers as well as what they want to communicate.

Building off of our preliminary research into the Windstax brand, we identified their tone and voice through analysis of a series of adjectives related to brand image.

Tone Dimensions								
	+3	+2	+1	0	+1	+2	+3	
Funny					👍			Serious
Formal						👍		Casual
Respectful		👍						Irreverent
Enthusiastic			👍					Matter of Fact

Tone Key Words — Describe the voice to be used for written brand content.			
Authoritative 🤖	Caring	Cheerful	Casual
Coarse	Conservative	Conversational ⭐	Dry 🤖
Edgy	Enthusiastic ⭐	Formal	Frank
Friendly	Fun 🤖	Funny	Humorous
Informative ⭐	Irreverent	Matter-of-fact	Nostalgic
Passionate	Playful	Professional	Provocative 🤖
Quirky	Respectful	Romantic 🤖	Sarcastic 🤖
Serious	Smart ⭐	Snarky	Sympathetic
Trendy	Trustworthy ⭐	Unapologetic	Upbeat
Witty			

WindStax Brand Voice Chart			
Trait	Description	Do	Don't
Informative	Our solutions are well-researched and proven but we adapt to your needs.	Provide data to support the efficiency and sustainability of our products	Make baseless claims or try to promote sustainability without backing them with information
Conversational	We love hearing questions about our work and are always ready to discuss energy use	Answer questions whenever possible and communicate in a friendly and respectful manner	Sound so "matter-of-fact" that we do not seem approachable or open to discussion
Enthusiastic	We are excited to bring our new, eco-friendly and low-cost energy solutions to your community.	Bring in numerical data to support our hopeful mission	Don't overwhelm them with blind optimism
Trustworthy	You can trust us to provide reliable energy service and prevent outages.	Reassure the client of the efficacy of our backup batteries	Don't ignore their concerns or leave questions unaddressed.

Design Brief

Converging on a Centralized Goal

Next, we needed to decide on our target audience to formulate the design brief. Two potential groups came to mind:

- Potential customers would want to estimate the clean energy potential of their region
- Current customers would be looking for more of a day to day tool to manage their energy needs.

We realized potential customers could just use a survey or website, so we proceeded with current customers:

"As a current WindStax customer, I want to use energy sustainably, but it is hard to optimize my energy usage. Help me make decisions about how much energy to store and use so I can be as efficient as possible."

DESIGN BRIEF

How might we help the
prosumers to use energy in a
more efficient way?

DESIGN PROTOTYPE

Explore and iterate on solution

Choose a persona

“Prosumer”

Windstax invented the idea of a “prosumer”, who are customers who both generate and consumer their own energy. We wanted to choose this personas because they are most relevant to Windstax’s long-term business goals, and also they could greatly benefit from the use of automated data.

Goals:

- Always have power to use
- Monitor energy level in real-time
- Use energy in an efficient and sustainable way

Frustrations:

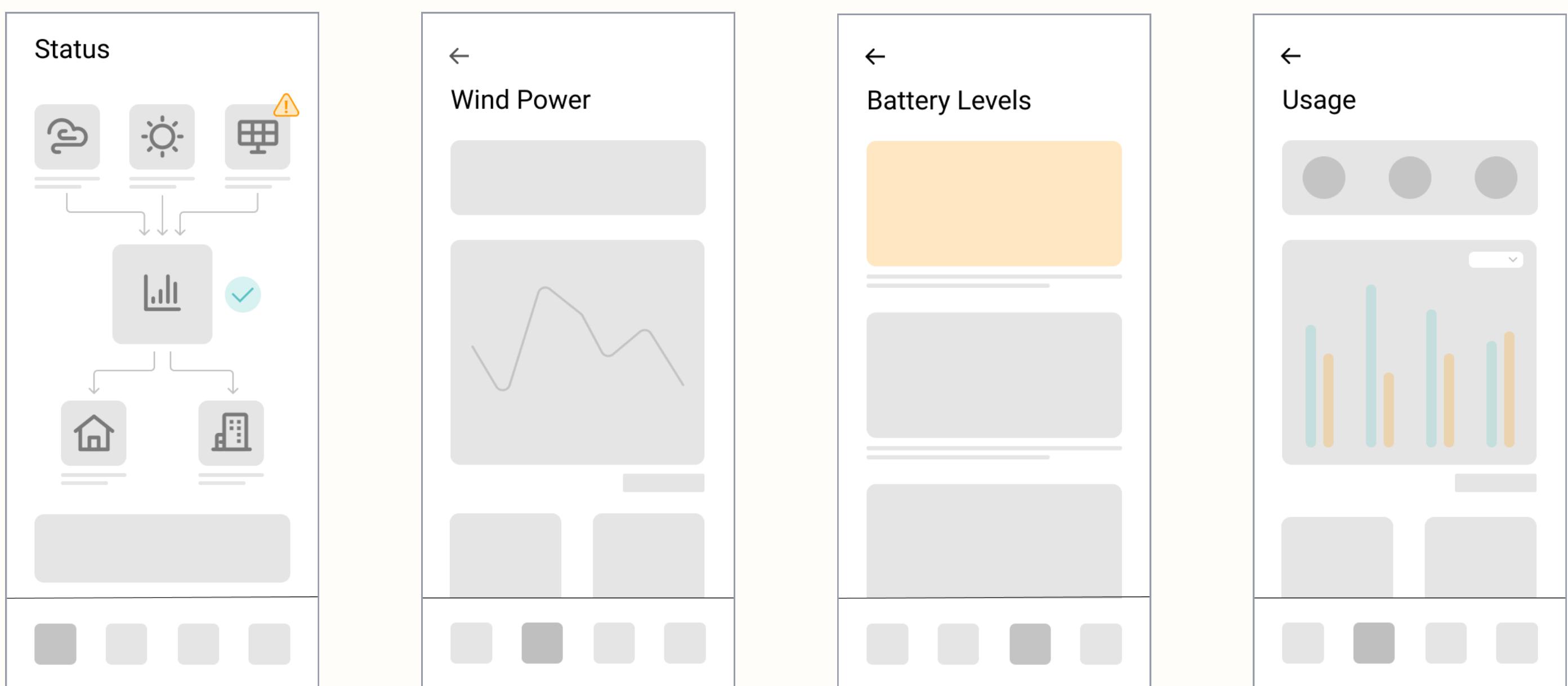
- Cannot track energy usage
- Cannot identify problems with equipments



Low Fidelity

Core Features

After defining the persona's goal of being efficient, we listed out the core jobs to be done including: addressing any maintenance issues, seeing the status of grid usage, monitoring unit performance, and seeing environmental impact. We then roughly organized these into tabs of status, usage, and battery.



Mid-Fidelity

Refining User Flow and Content

One main flaw in our low-fi prototype was the inaccessibility of the complex opening status page. To combat this problem, we added a home page which provides summary statistics as well as actionable alerts and recommendations. We also further developed each of our pages by determining what information to display on each page and how to display it.

The wireframe illustrates the refined user flow and content across four main pages:

- Home:** Displays a welcome message ("Welcome, Anita!"), a weather forecast, and a summary of energy usage and production. It includes sections for "Energy Status" (grid power being used) and "Alerts + Recommendations" (warning alerts followed by recommendations). A navigation bar at the bottom includes Home, Energy Flow, Usage, and Profile.
- Energy Flow:** Shows a bar chart comparing energy production and consumption over time periods: 1D, 1W, 3M, 6M, and YTD. A summary section below the chart displays kW.hr, % renewable, and % utility grid.
- Usage:** Displays a bar chart comparing energy usage across different categories or periods. A summary section below the chart displays kW.hr, % renewable, and % utility grid.
- Profile:** Shows a summary of environmental impact and sustainability.

Critique

Narrow the Focus

After two rounds of critique, the biggest feedback we received was to **narrow our focus to one goal** instead of pulling the user in multiple directions. We were asked to consider:

- What is the core functionality of the app?
- How can you use gamification to support the user's goals?
- What are the potential benefits to the user? Can you articulate this value in 2-3 core features?

From these points we decided to articulate the core value as:

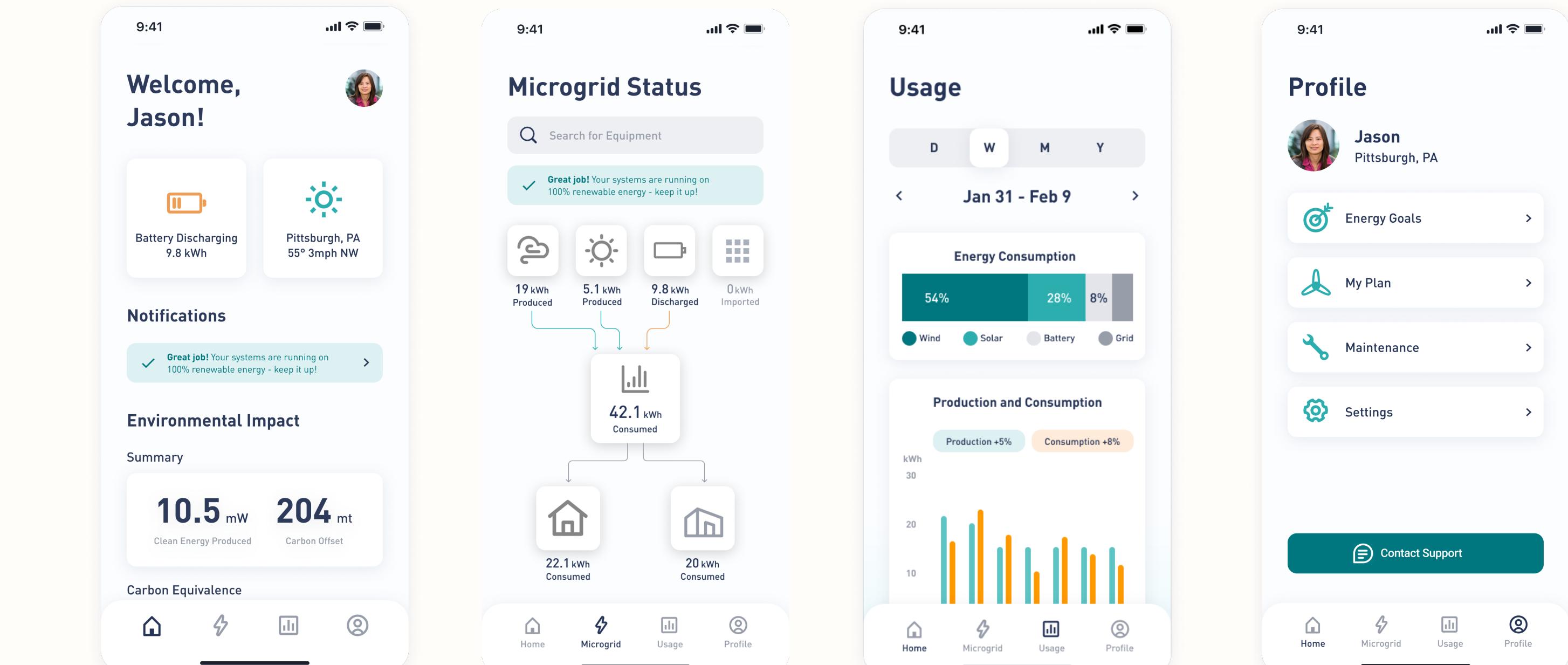
1. Allowing users to get **immediate notifications** about how to address time-pressing issues (for example if a machine is malfunctioning or if there is excessive wind)
2. Giving users **access to informative data** and personalized tips given their unique energy usage history

High-Fidelity

[LINK TO CLICKABLE
PROTOTYPE](#)

Final Prototype

Applying feedback received in critique, we settled on dividing the app into four main pages: **Home, Microgrid Status, Usage, and Profile**. This allowed us to effectively organize all of the core features of the app and refine the various user flows.



Home

Microgrid
Status

Usage

Profile

UI Kits

Design System

During our design process, we had two people to work particularly on developing the design system for GridControl, and two other people to apply the UI kits to the low-fidelity prototypes. This proved to be an effective way to split the work across our team, and the UI kits helped us to unify the visual branding and interaction flows across different pages and features.

Typeface

Numbers: DIN Pro Bold, 48

Headline 1: DIN Pro Bold, 36

Headline 2: DIN Pro Bold, 24

Headline 3: DIN Pro Bold, 18

Body 1: DIN Pro Medium, 18

Body 2: DIN Pro Medium, 16

Body 3: DIN Pro Bold, 13

Body 4: DIN Pro Medium, 13

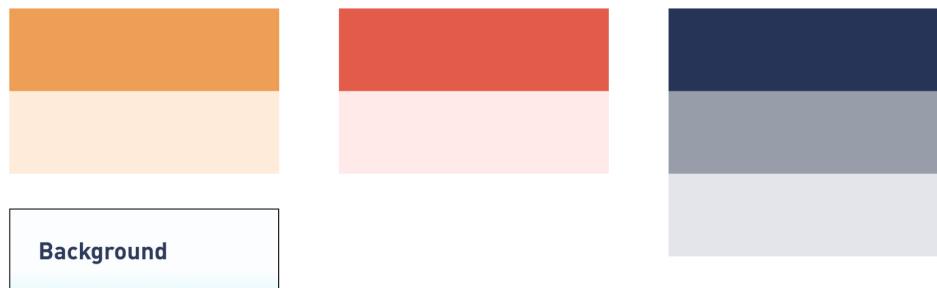
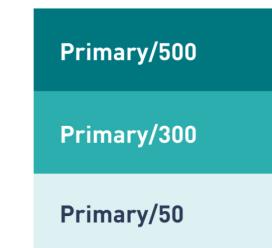
Paragraph:

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

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Colors

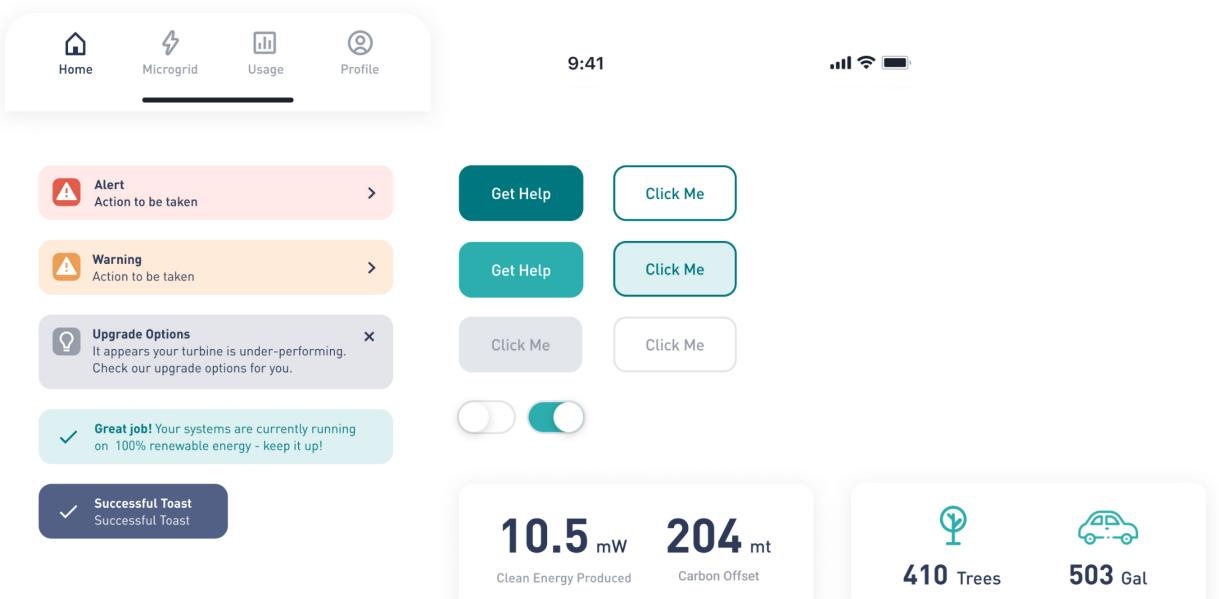


Background

Icons



Components



DESIGN PROTOTYPE

Final Pitch

[LINK TO CLICKABLE PROTOTYPE](#)

Value to User

The Three Ms

For the pitch, we organized the value that the app provides to users into **3 main categories**:

1. Maintaining thier systems
2. Monitoring their usage
3. Modifying thieir behavior

Each category corresponds to a **specific user goal** which we defined based on our persona of a WindStax prosumer.

Given the numerous different features within our prototype, we found these categories useful to link together all of the different pages and provide a framework for approaching the pitch. Many of our pages contain features which fall into more than one category.

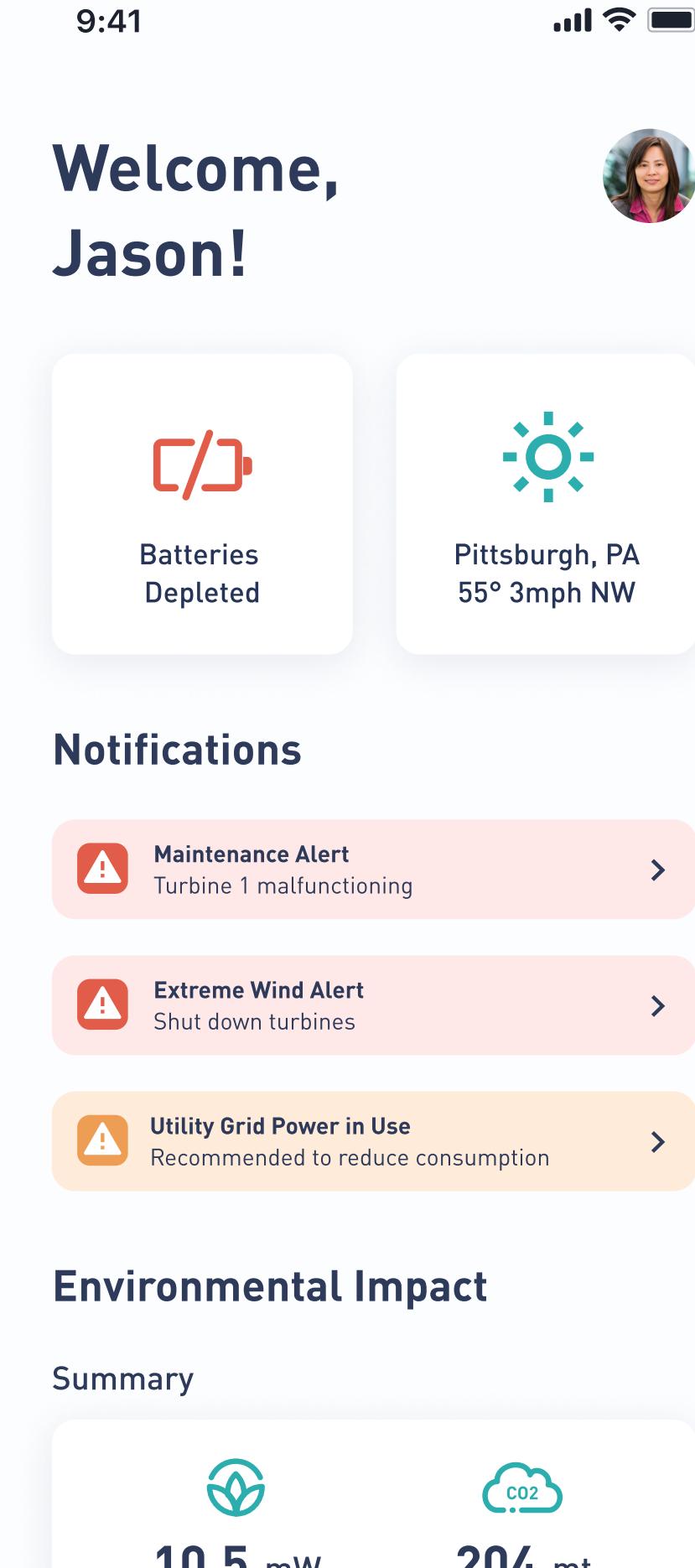
Value to User

Homepage - A Lightweight Overview

Given that GridControl is a mobile app, our main goal with the design of the homepage was to present users with a high-level overview of the status of their system and any actionable items.

For example, notifications about equipment failures are featured at the center of the page, as this is key to helping users maintain their systems. Clicking into the notifications leads users to a streamlined appointment scheduling flow with auto-filled details about the maintenance issue.

The battery status and weather icons help the user monitor the state of their system, and the environmental section helps the user visualize their positive impact by using WindStax systems.



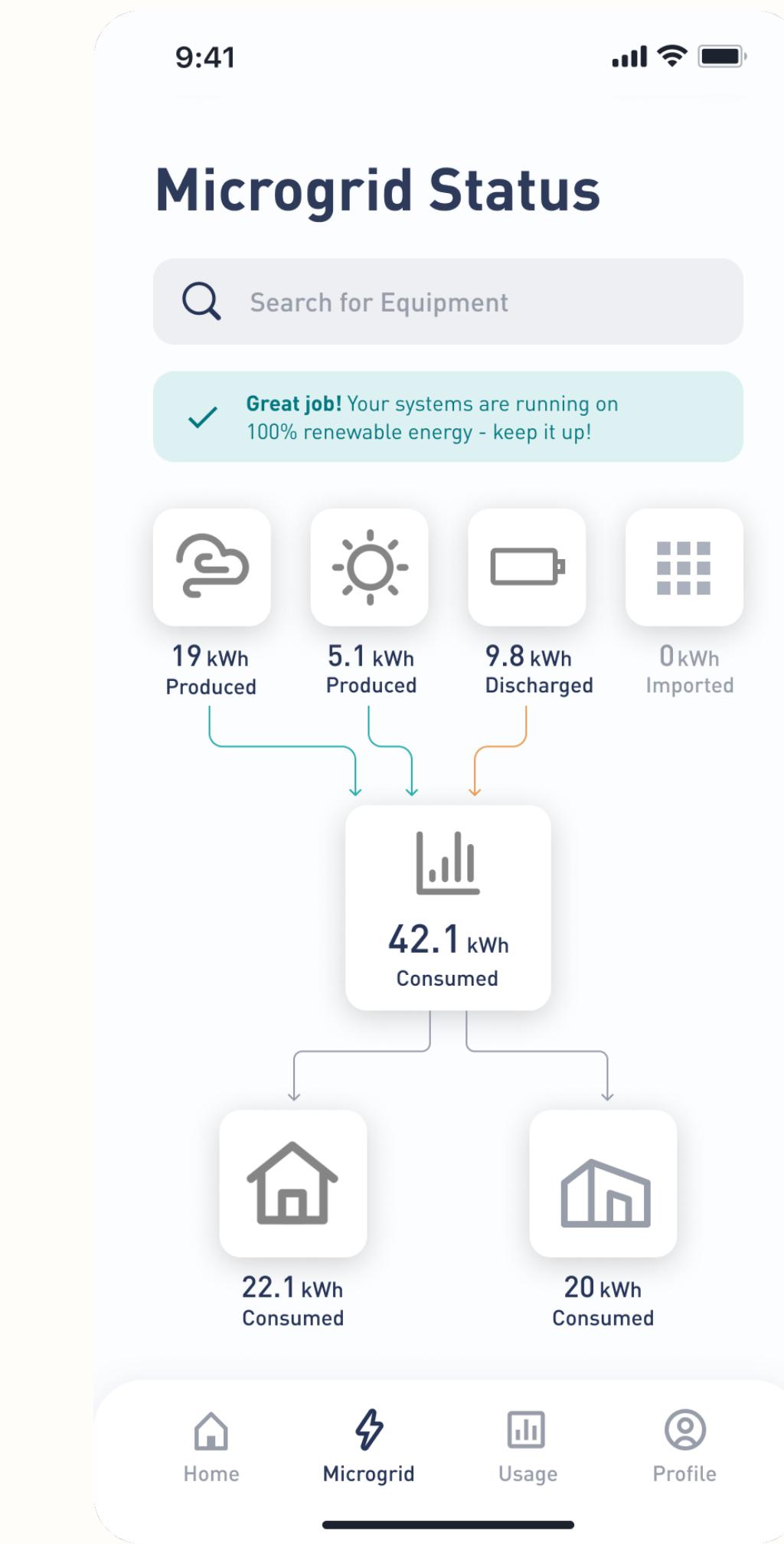
Value to User

Microgrid Status - A Closer Look

The microgrid status page allows users to monitor their equipment and output units in more detail.

In this section, we applied the concept of progressive disclosure to ensure that users can access the data they need without being overwhelmed by information.

The starting page is a simple diagram which breaks down the energy produced and consumed by each system at a high level. Then, if users would like to learn more about specific system, they can click into each button for more detailed statistics and data visualizations.



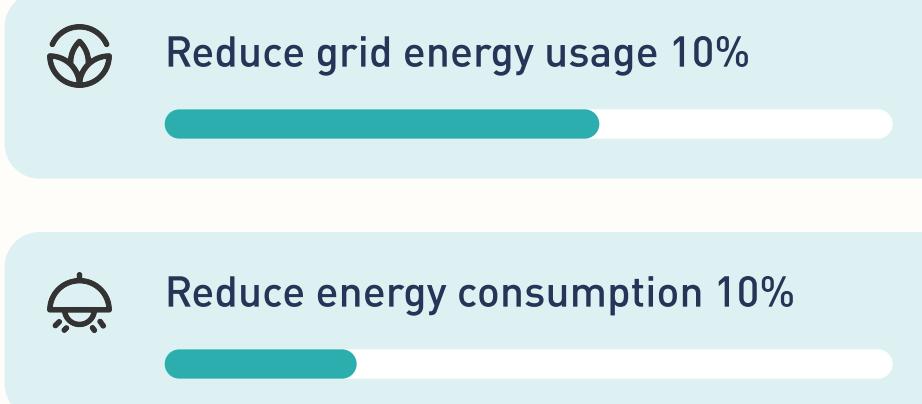
Value to User

Data Driven Recommendations

A large theme throughout this project was learning about how to use data responsibly and effectively to create value for users. We decided to focus on the idea of using data to provide actionable recommendations to help users reach their energy goals.

Figuring out the best way to reduce energy consumption is a complex issue which can depend on many different factors such as building type, location, and weather trends. GridControl can harness sensor data, usage data, and user-specified goals to create specific recommendations which users can apply to modify their behavior and optimize their energy usage.

Energy Goals



Recommendations

-
- Two light gray rounded rectangular cards, each containing an icon and a message. The top card has a lightbulb icon and the heading "Energy Saving Tips" followed by the text "Replace incandescent lights with compact fluorescent lights (CFLs) or light-emitting diodes (LEDs)". The bottom card has a lightbulb icon and the heading "Looks like your HVAC consumption is up 6% from last week." followed by the text "In the winter months, open blinds on south-facing windows during the day to allow sunlight to naturally heat your workspace. At night, close the blinds to reduce heat loss."

Pitch Critique

More accessible to the Audience

We received very constructive feedback for our final pitch. Some of the valuable points that our audience brought up included:

- Make sure that the content is easy to digest for the audience. This is particularly important while presenting a complicated case as what we have here. In our pitch we were trying to tackle so many different problems that it simply became overwhelming to the audience. We found Andrew's suggestion of "emphasizing the 3M" really helpful, and we tried to integrate that into our final pitch in order to leave a deeper impression on the audience. We also simplified the userflows to make the key problem stand out more.
- Highlight the part that you want to focus on. Since we have so many details on our final prototypes, it is really important to "zoom in" to a specific part in order to present the details more clearly to our users. We edited our final pitch slide to make it more accessible to the audience to look at.

Reflection

Service Design & Jobs to be Done

Augmenting WindStax's Service Offerings

We were unable to access WindStax's current data monitoring platforms, but assumed they had basic access to manual controls and viewing their monthly grid power usage bills.

Therefore, we widened our ideation scope to include **both holistic and granular jobs to be done**, from the high-level goal of being energy-efficient to the day to day tasks of making sure all systems are running smoothly. After listing out all these goals, we were **challenged to scope and prioritize** the features of the mobile service.

Therefore, we organized the information architecture to frame the most important jobs to be done, making the most time pressing issues the **most visible and attention-demanding**, while also giving the user **flexibility and freedom** to monitor thier performance history and actually interpret the data with the assistance of qualitative ML-driven tips and summaries.

Data Driven Interface

Data Collection

Andrew's lectures on data collection made us realize the great potential of gathering personalized insights from data, thus creating more adaptive and personal user interfaces.

WindStax customer unique positionality as both producers and consumers presents **a control optimization problem**. In other words, customers must carefully balance between production and consumption in order to avoid paying for utility grid energy. Control optimization is a difficult technical problem for everyday users, so we saw great opportunity in aiding the users in navigating data and making decisions.

Instead of inundating the users with data and visualizations, we wanted to select the most important visuals for users to understand their performance and usage history, while being able to **take fast and easy action** with the assistance of the notifications which pop up throughout the application.

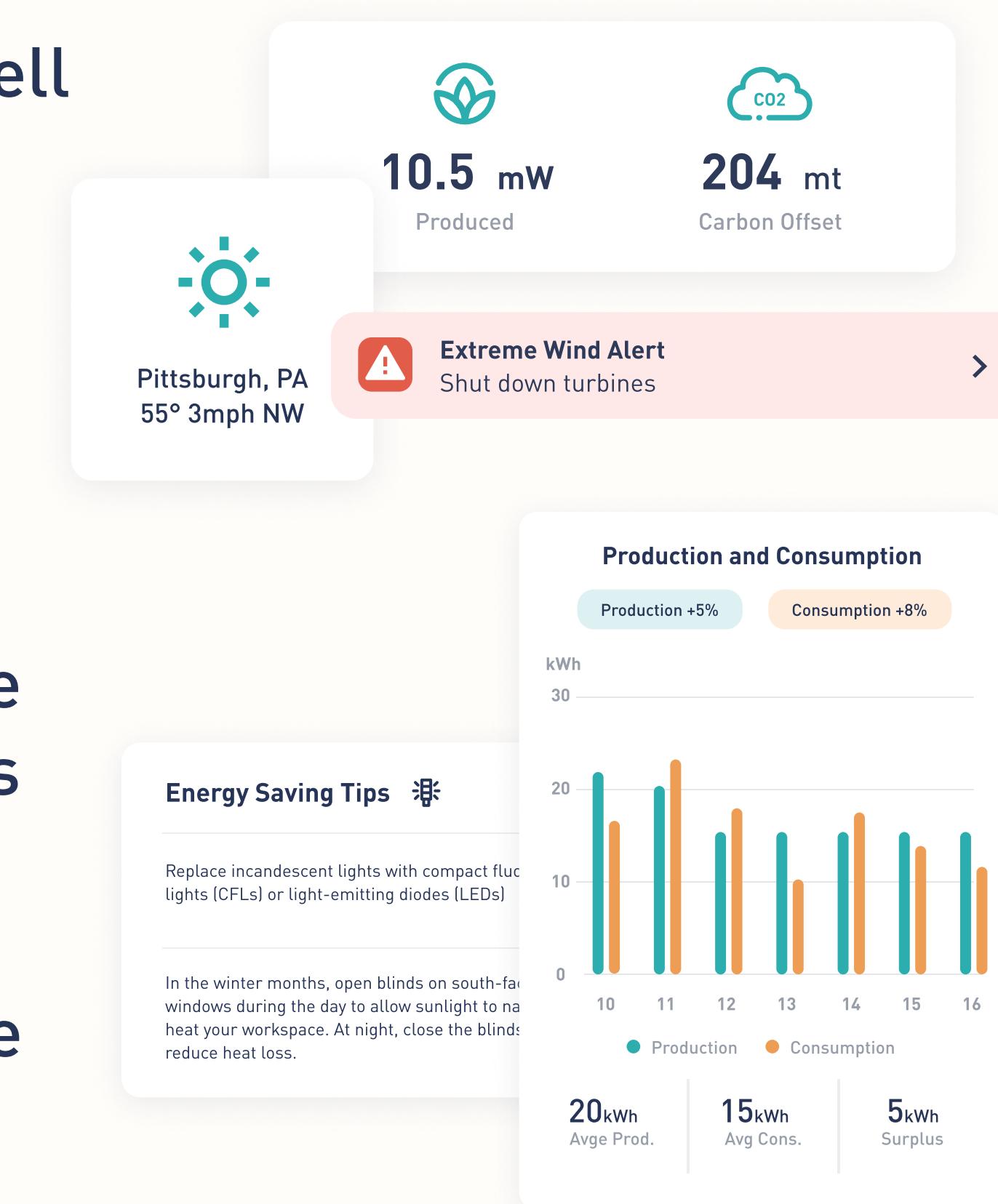
Data to be automatically collected

Fueling A Data Driven Interface

To fuel the various data visualizations in our solution, GridControl requires lots of data to be automatically collected.

Data relating to the weather, as well as the environmental impact of turbines needs to be collected to generate visualizations that allow users to **modify** their behavior.

Otherwise, data relating to users' energy consumption as well as the performance of different elements of the GridControl system is necessary for visualizations that allow users to **monitor** their usage that in turn generate actionable recommendations.



Thanks!

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