

DCP Midstream, Environmental Events



Midstream oil and gas producer part of Phillips66

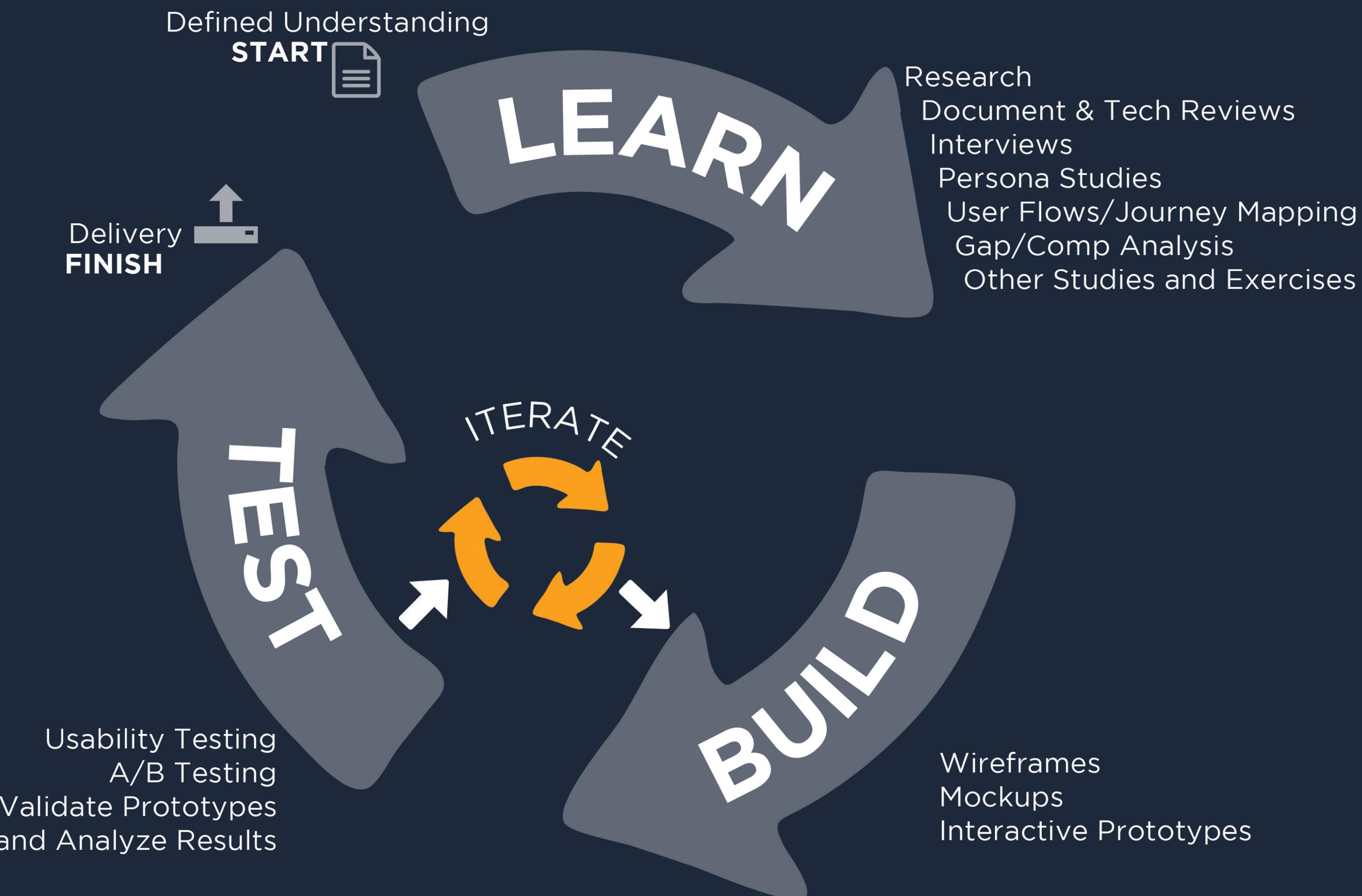
Lead UX Designer in EnergyLab

Joel Heaton

Presentation

2018-2020

Methodology



Goal of EVE Application

1. Capture event in timely manner
2. Pass event information to EHSS/Enablon to appropriately calculate:
 - Emission to atmosphere
 - Spill on the ground or water
3. Data entry must be simple, intuitive

Sidebar Notes

- **Goal of product**

To build a mobile app that captures environmental events and logs them into a system for compliance for state regulations.

We don't want to be a headline.

U.S. NEWS

Leak in Keystone pipeline spills 9,000 barrels of oil in North Dakota

It's the second significant spill on the Keystone system since 2017, when around 4,700 barrels spilled in South Dakota.

380,000 Gallons

October 29, 2019



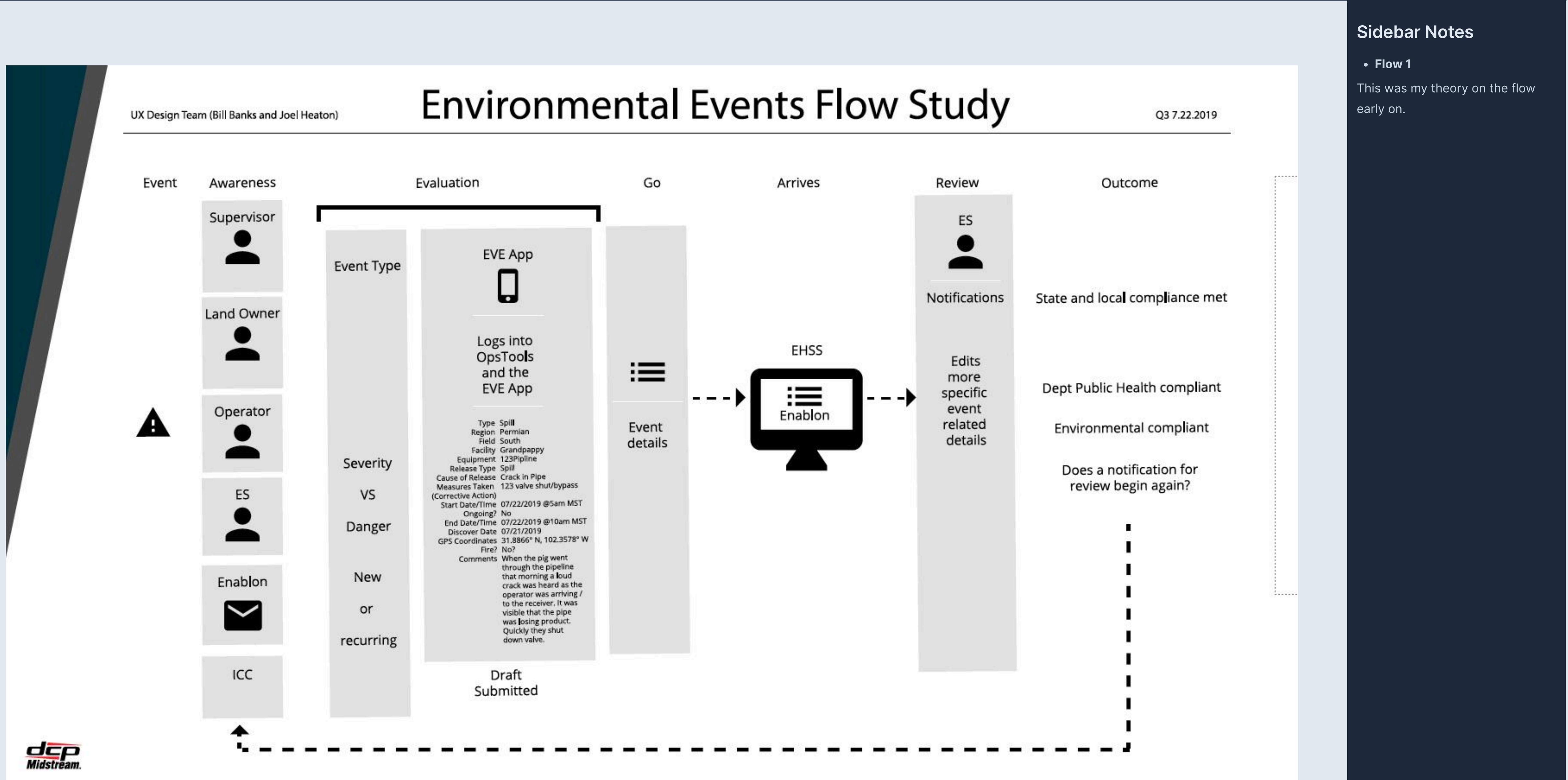
UA Pipefitters work on construction of the Keystone XL Pipeline, AP

- The second of two oil spills in two years along the Keystone pipeline resulted in half an Olympic-sized swimming pool's worth of crude oil **spilling onto** a North Dakota wetlands area.
- The **Associated Press** reports that the leak was discovered Tuesday night and that crews shut down the pipeline, which extends through 7 US states and into Canada.
- TC Energy, the company that owns the pipeline, estimates about 383,000 gallons – or more than 9,000 barrels of oil – were spilled, though North Dakota **regulators say** drinking water sources were not affected.
- Activists opposing the proposed Keystone XL pipeline extension were outraged by the spill, especially because **TransCanada claims** safety is a "top priority" and says spills are "unlikely."

Sidebar Notes

- Reason example

Illustrates the urgency of this app.



Sidebar Notes

- **Flow**

This was a very important step in the process.

Sequence

1. WHERE IS THE EVENT? (location)
1.5
2. WHAT IS IMPACTED?
2.5
3. DETAILS + COMMENTS
4. REVIEW
4.1 SAFETY OBS →

A flow that works for all events

Location

Input

DEETS

Review

WHAT'S THE IMPACT?

AIR

SOIL

WATER

dcp Midstream.

Sidebar Notes

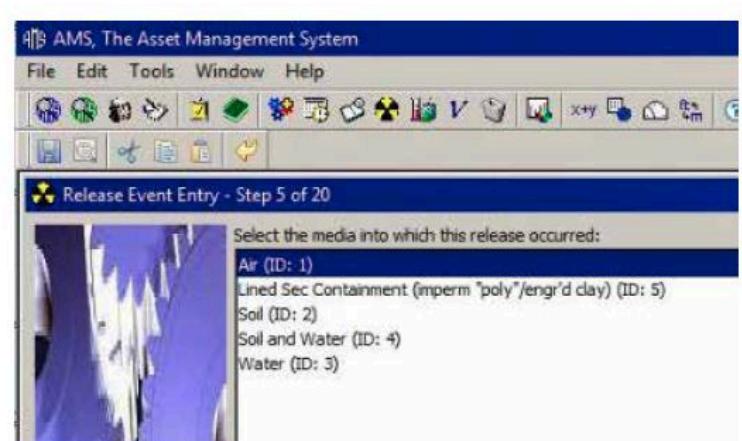
- A modular approach

Air

Soil

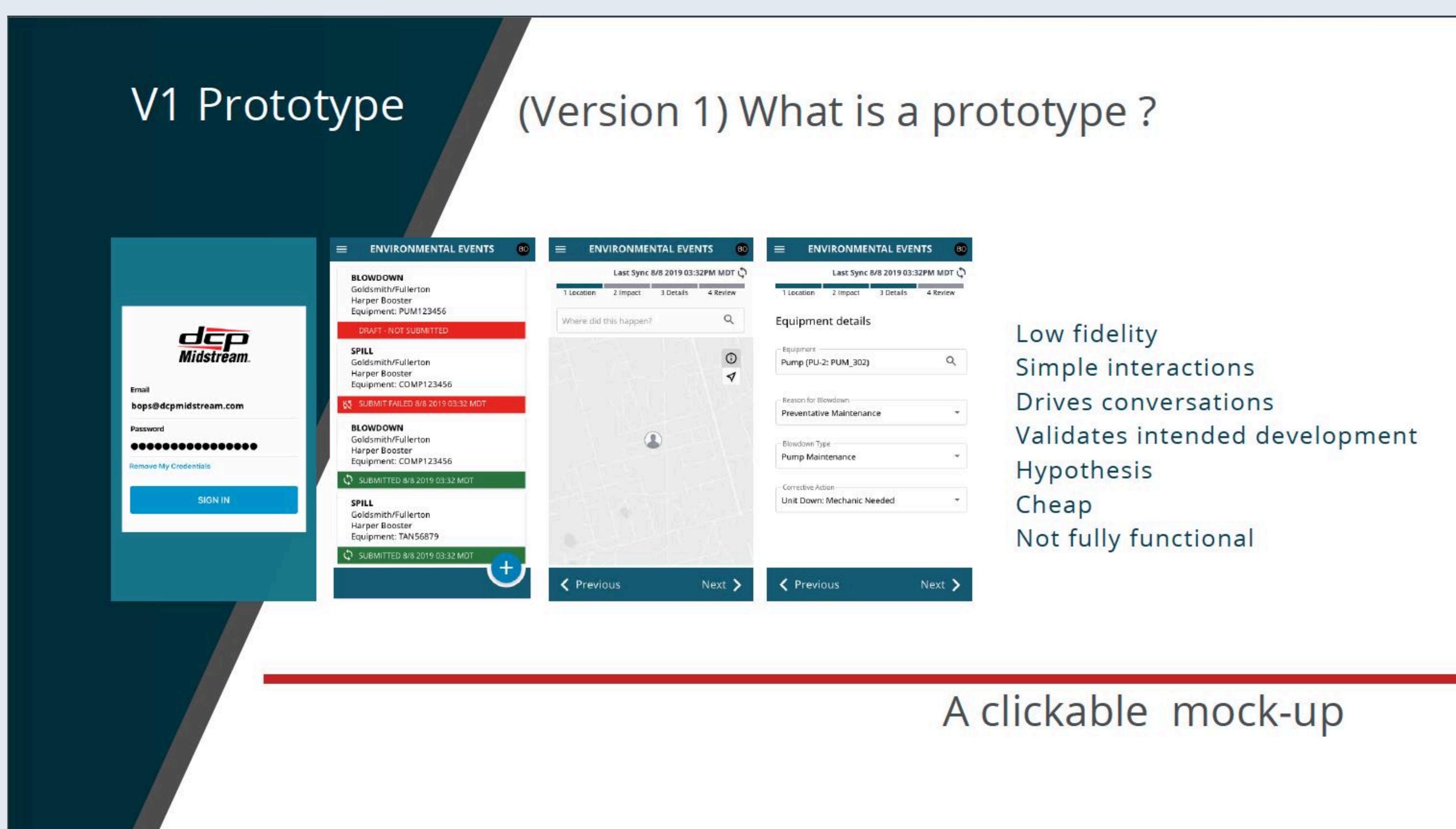
Water

When the flow started to come together the idea of a modular approach made sense. Giving the app interchangeable modules so that different event types for oil spills to ground, and/or water and differing releases to the air. The app could solve all these event types. Same user differing details.



V1 Prototype

(Version 1) What is a prototype ?



Low fidelity
Simple interactions
Drives conversations
Validates intended development
Hypothesis
Cheap
Not fully functional

A clickable mock-up

Sidebar Notes

- Prototype V1

Based on legacy app that was failing

- Blowdowns
- Leak reporting
- Safety Observation
- Task Lists for Operators

V2 Prototype

Environmental Events

History

Spill Jan 9, 2020

Location Giddings Gas Plant Equipment Texas Ben; Tank-3

Blowdown Jan 09, 2020

Location Giddings Gas Plant Equipment Twigg; Tank 29

Blowdown Jan 08, 2020

Location Giddings Gas Plant Equipment CASHFLOW; Tank 123456789

New Event

Please select a facility.

Search Facilities

Material Details

What type of material was spilled?

Material 1

Materials Spilled

Volume Released Bbls.

Volume Burned Gal.

Volume Recovered Bbls.

+ Add Another Material

Continue

123 space Go

A clickable mock-up

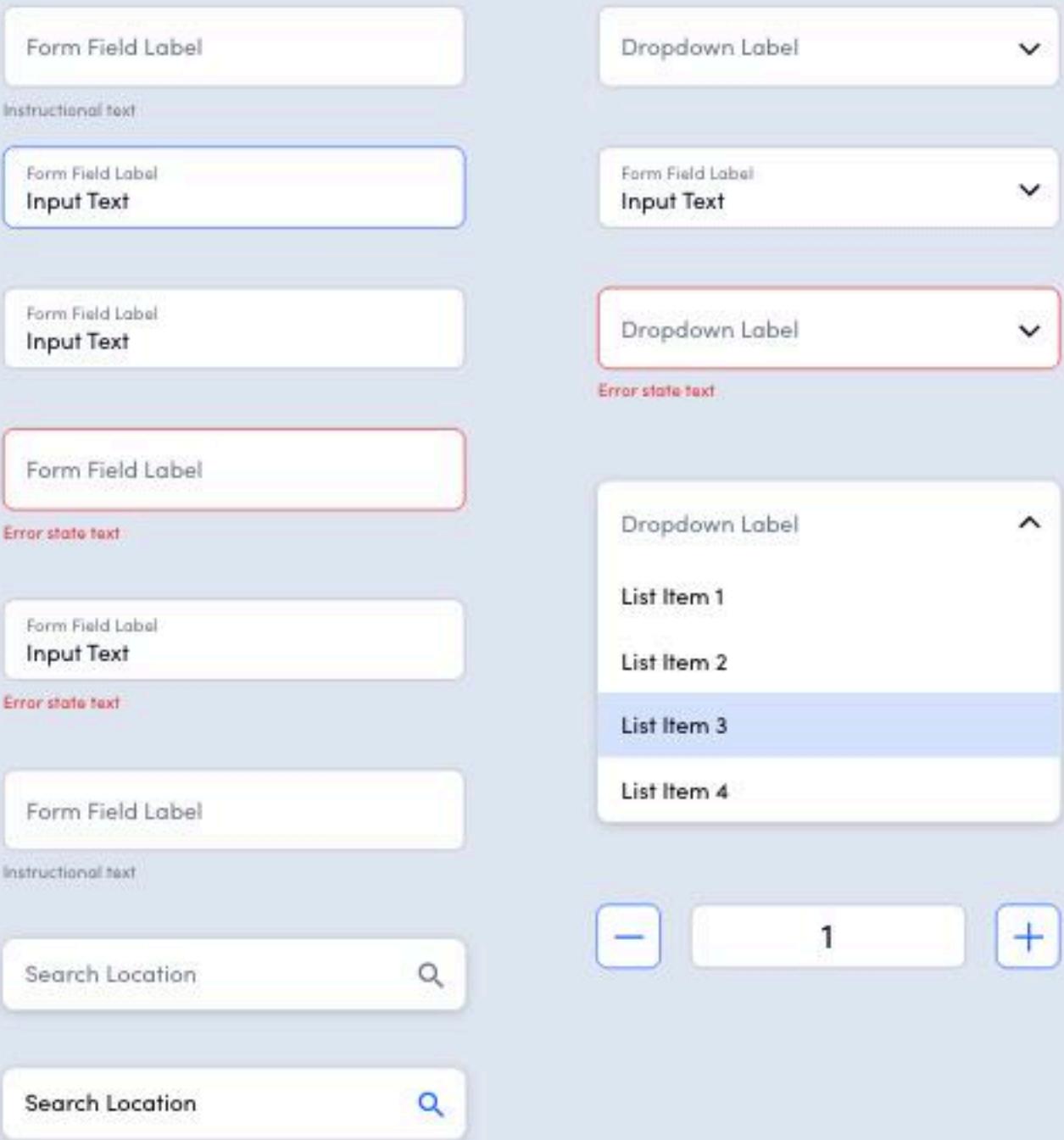
Sidebar Notes

- Prototype V2

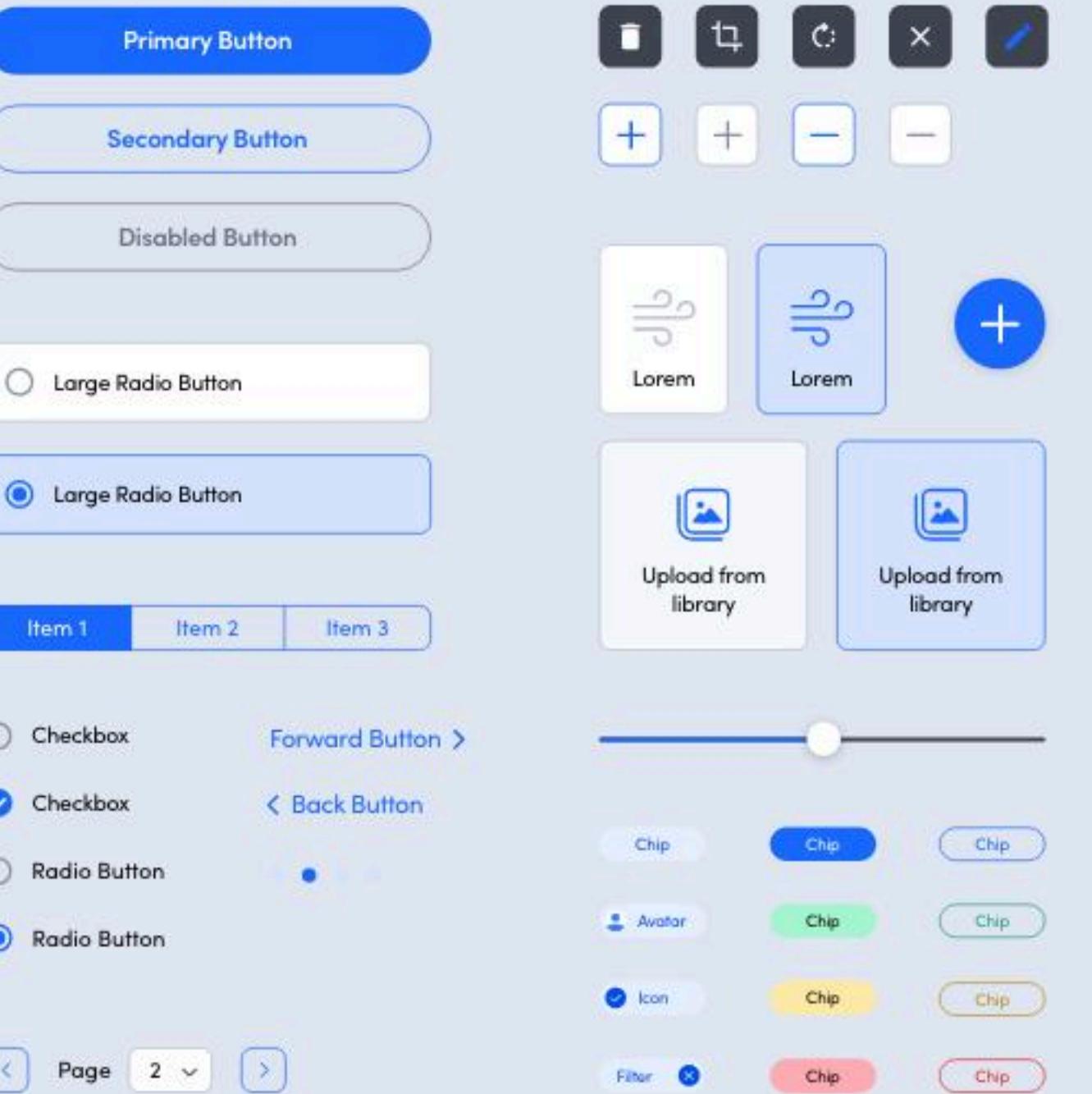
Ionic mobile
Material angular
Wrapped into platform

Light Mode UI Elements

Form Fields



Buttons & Selectors



Sidebar Notes

- Design System

Material Design Angular

V2 Usability Testing (Current)

8+ Operators

8+ Environmental Specialist

Other (Dry run Denver)

1 DCP Environmental Stakeholder

2 DCP former Operators familiar with BD app

1 Director of Design at DCP Midstream

REGIONS

- Midcon
- Permian
- North
- South Texas
- Energy Lab

Spill to Soil & Water
Blowdown

Sidebar Notes

- **Usability Testing**

I went to the 4 oil fields and conducted formal usability testing with 2 field operators and 2 environmental specialists in each region. I also made my presence known and formed some great relationships. I used Validately, recorded, transcribed and returned to Denver to synthesize the results.

Before, during and after I gave leadership and engineering teams presentations and we eventually entered into final build followed by UAT, launched the pilot, built the marketing and videos. I attended and helped with training in the field and the app was released successfully at DCP in all 4 regions. Word had it that a SAAS product was being requested by other midstream companies related to Phillips 66 , Exxon, Shell and others.

Context for V2 Prototype



Billy Ops
Plant Operator
SBU

EVENT 1

Spill to Soil & Water

As a field operator Billy Ops you are on location at the Giddings Gas Plant to report a spill to water and soil.

You arrive at the Giddings Gas Plant and see condensate flowing out of Tank 3A or what you guys call Bobby's Bayou. It has breached the secondary containment and it is flowing into a pond. You notify your supervisor and turn off the pump and you make note of this in the app.

You take a photo make some notes and review the event before you submit it to Enablon through the app.

EVENT 2

Blowdown

Now Billy, you are at the Wilcox Gas Plant. You are here to log a blowdown. Plant technicians repaired the engine by changing out the head that had the hot valve. Once the repair work was complete the engine was restarted and returned to normal operation.

Sidebar Notes

- Context

This is the story that went with the prototype. It worked flawlessly for the conversation and the usability testing that took place.

It was recorded on Validately
Transcribed



Environmental Events



Environmental Events

Email Address: Jane.doe@dcpmidstream.com

Password: 

Having Trouble? 

Sign In

New Event 

Location & Asset

Please select a facility.

Fac 

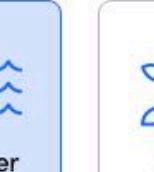
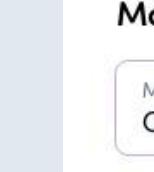
Facility One Facility Two Facility Three Facility Four

Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M 
123 space Go

New Event 

Impact

What is being impacted by this event?

 Air  Water  Soil

Continue

New Event 

Material Details

What type of material was spilled?

Material 1 

Material Spilled Condensate 

Released 283 Burned 283 Recovered 283

+ Add Another Material

Continue

Event Details

What measures were taken?

Notify

Supervisor Environmental specialist

Isolate Event

Shut down valve Shut down unit

Continue

Event Details

Please attach photos or videos of the event.

 Take a photo or video  Upload from library

Uploads  +2

Attach & Continue

Skip this step

Review

Please review your information.

You will not be able to edit this information once the event is submitted.

Facility & Asset 

Permian Goldsmith/Fullerton Harper Booster

Impact 

Environment Air  Equipment & Pipeline  Release  Blowdown 

Submit Event



Thank you!

Your event has been submitted. You may review these event details from the Home screen.

Go Home

Environmental Events

Event Submitted. 

Blowdown Nov 25, 2019

Location Lorem Ipsum Equipment 987654321

Leak Nov 25, 2019

Location Lorem Ipsum Equipment 987654321

Spill Nov 25, 2019

Location Lorem Ipsum Equipment 987654321

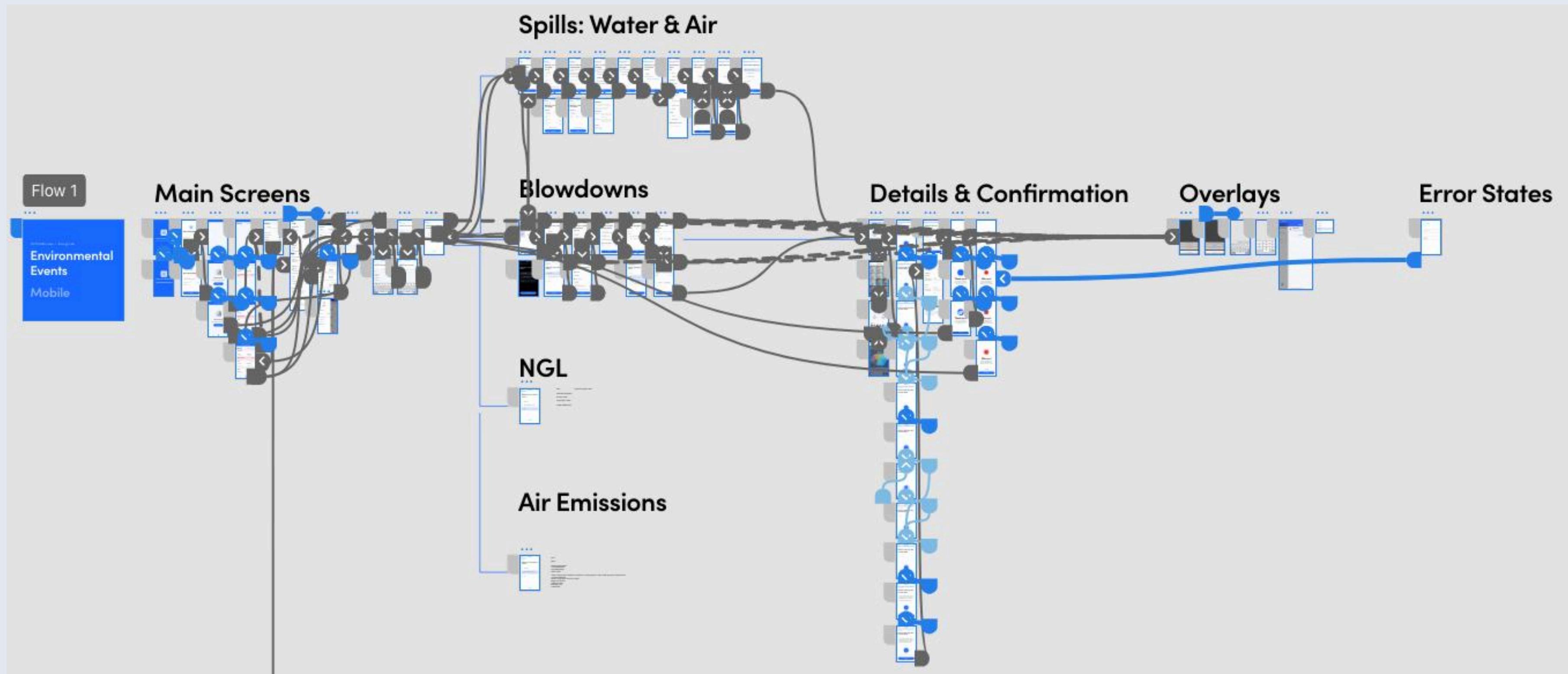
History **New Event** **Drafts**

Sidebar Notes

- Prototype

I took the design system and applied it to the my context of the user MVP. It was easily understood by my UX team, the field OPS the Environmental users and was a perfect story to refine the flaws and perfect for real life.

Validation.



Sidebar Notes

• Prototype

Flow diagram of screens.

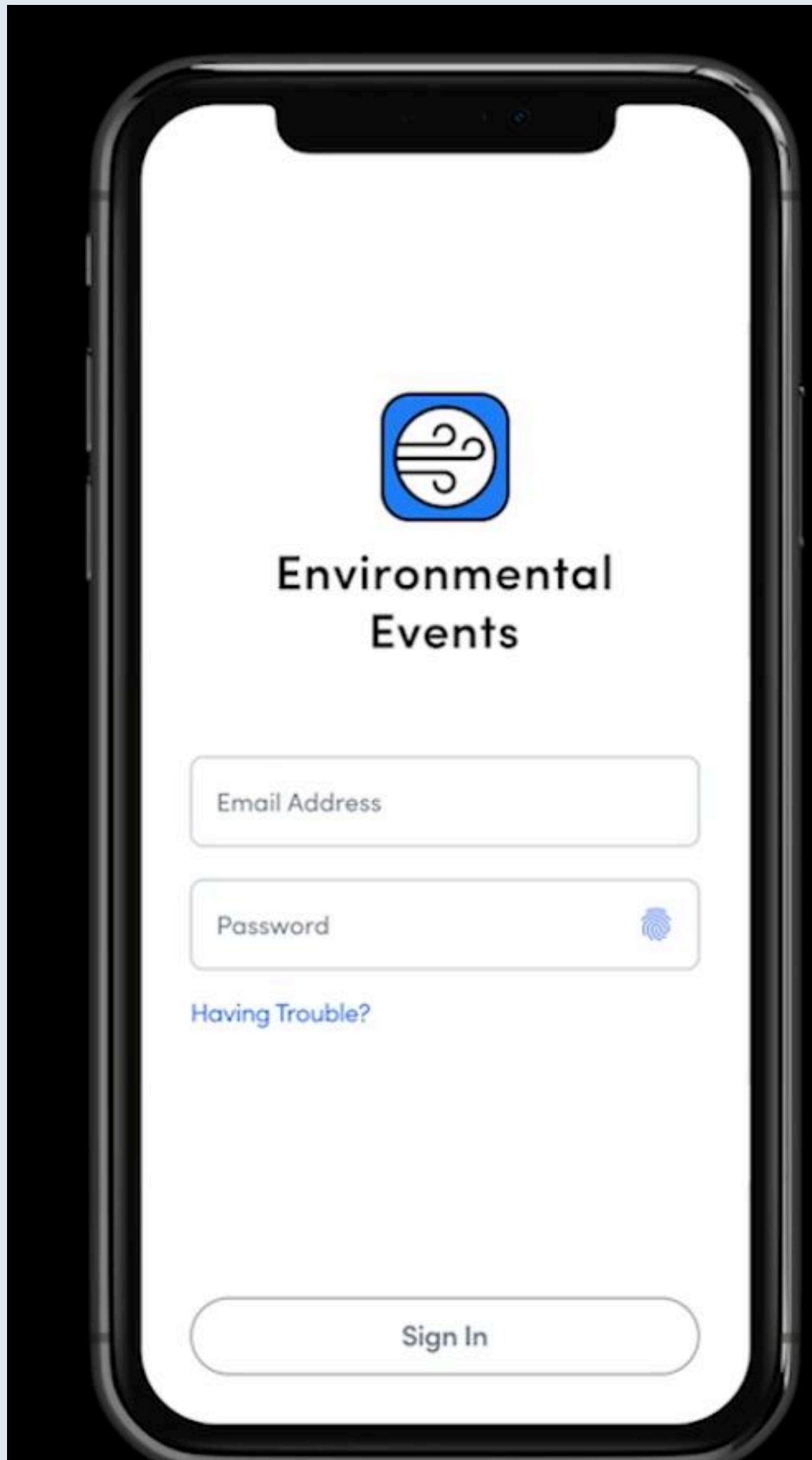
Sidebar Notes

- [Roadmap](#)

Product roadmap after

V2 Completed Discovery

- ✓ REWORKED UI (USER INTERFACE)
Rebuilt components and theming, discovered remote plant operator need EVE on desktop
- ✓ REBUILT APP FRAMEWORK
Rebuilt backend end framework
- ✓ REVISED MVP BASED ON V1
Facility list selector, rationalized state specific questions
- ✓ CONSOLIDATED ENVIRONMENTAL EVENTS TEMPLATES ENABLON
Minimized points of failure (cross team collaboration with Enablon and EL)
- ✓ BUILT MVP V2 PROTOTYPE
- ✓ USABILITY TESTING ON V2 PROTOTYPE



- **Quick Environmental Event Reporting from the field, with or without connectivity**
- **Standardized digital reporting**
- **Retire an old program with a cost-effective, easy to use, easy to maintain app**

Sidebar Notes

- Launch
Marketing material for the Pilot and launch