

# DCP Midstream, Environmental Events



Midstream oil and gas producer part of Phillips66

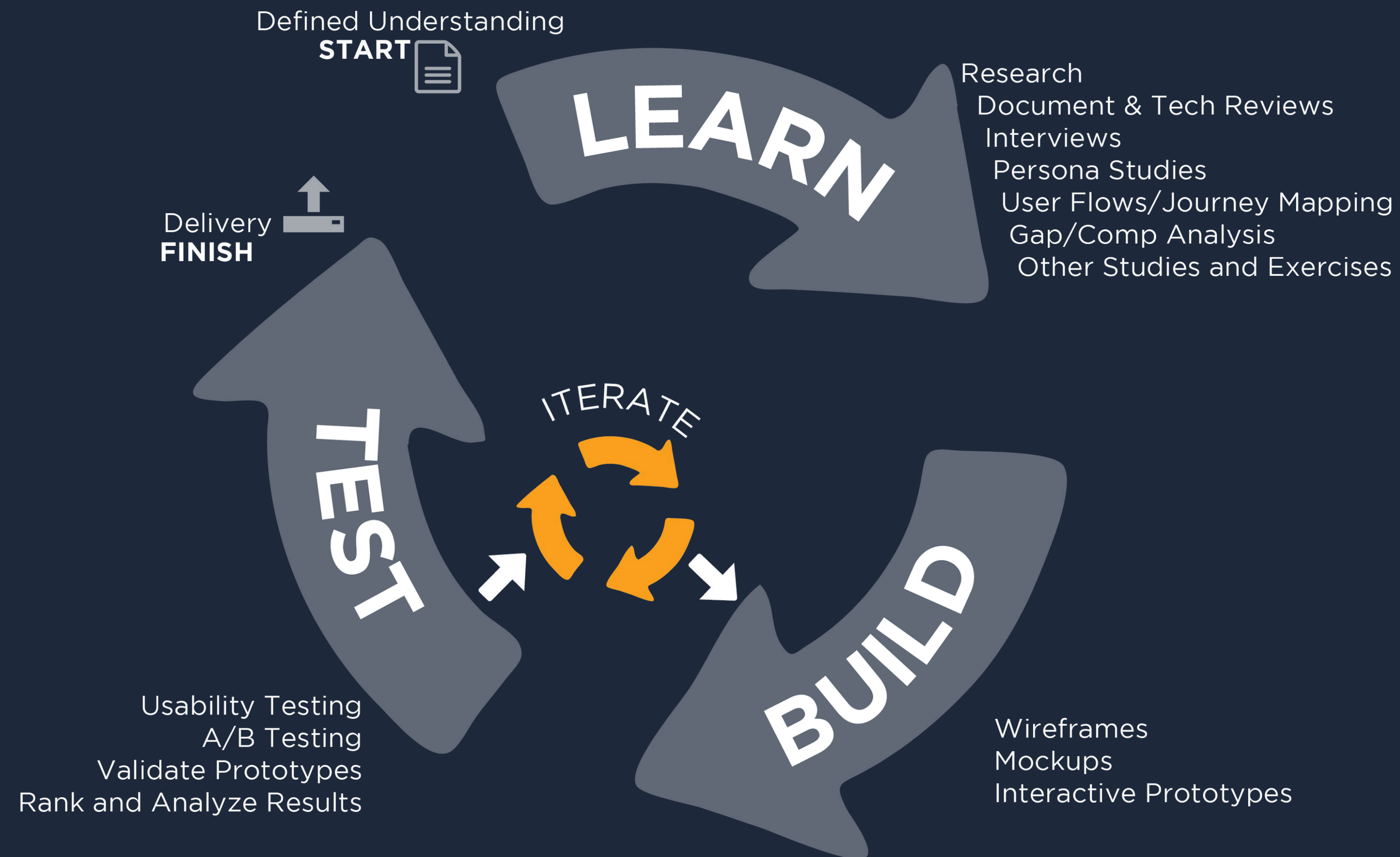
Lead UX Designer in EnergyLab

Joel Heaton

Presentation

2018-2020

# Methodology



## Goal of EVE Application

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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."

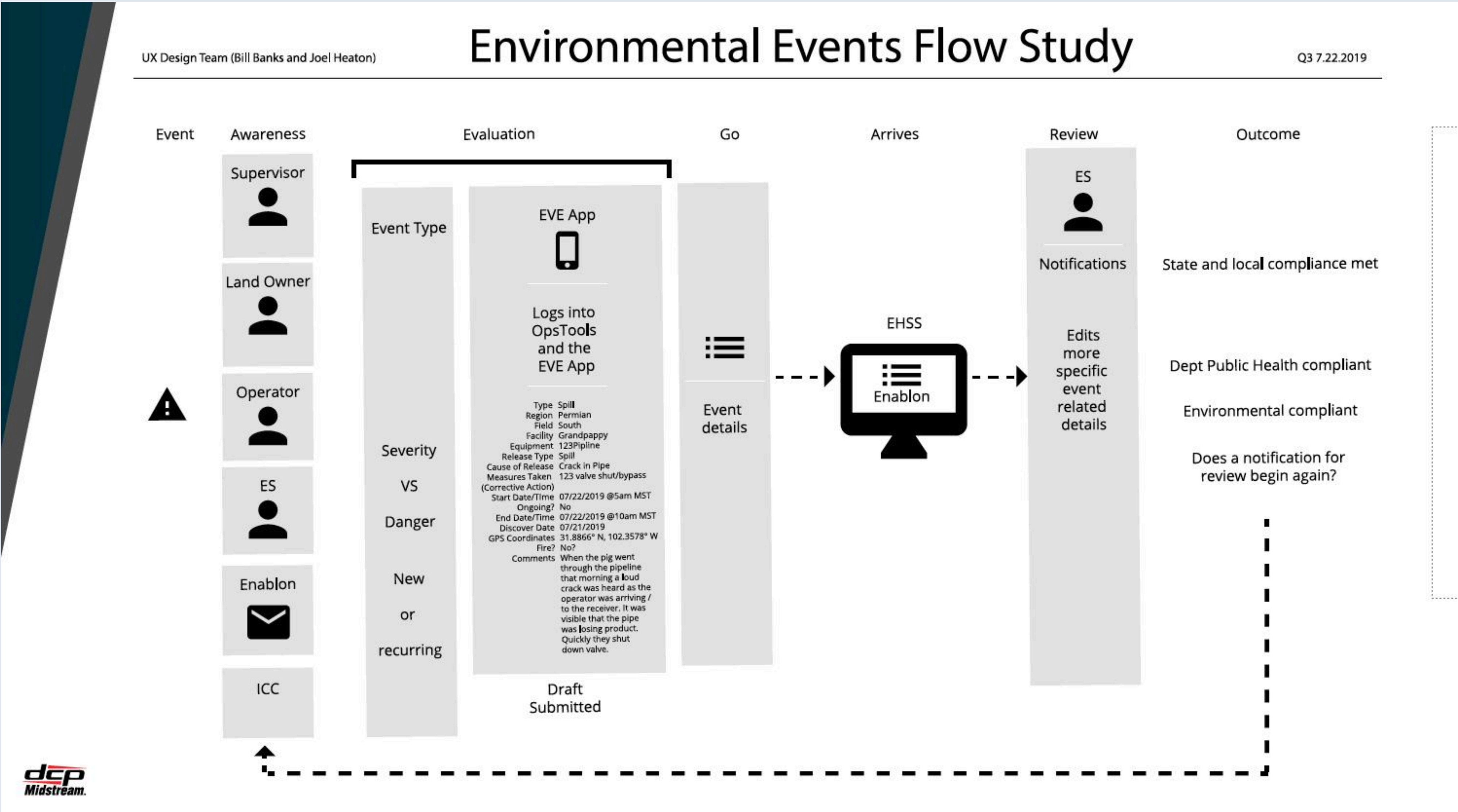
Sidebar Notes

- Reason example

Illustrates the urgency of this app.

Sidebar Notes

- Flow 1
- This was my theory on the flow early on.





## Sequence

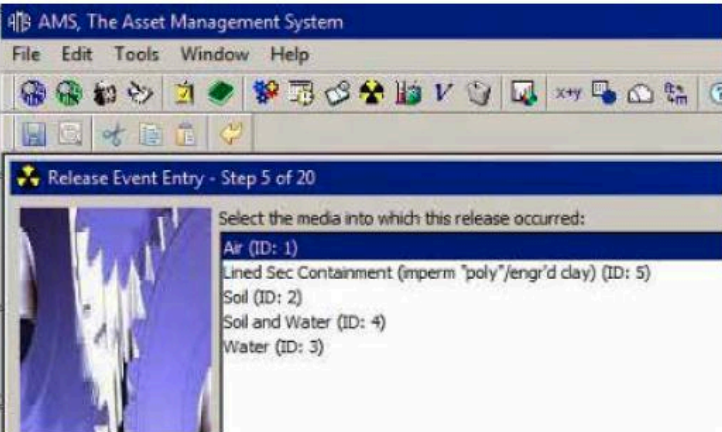
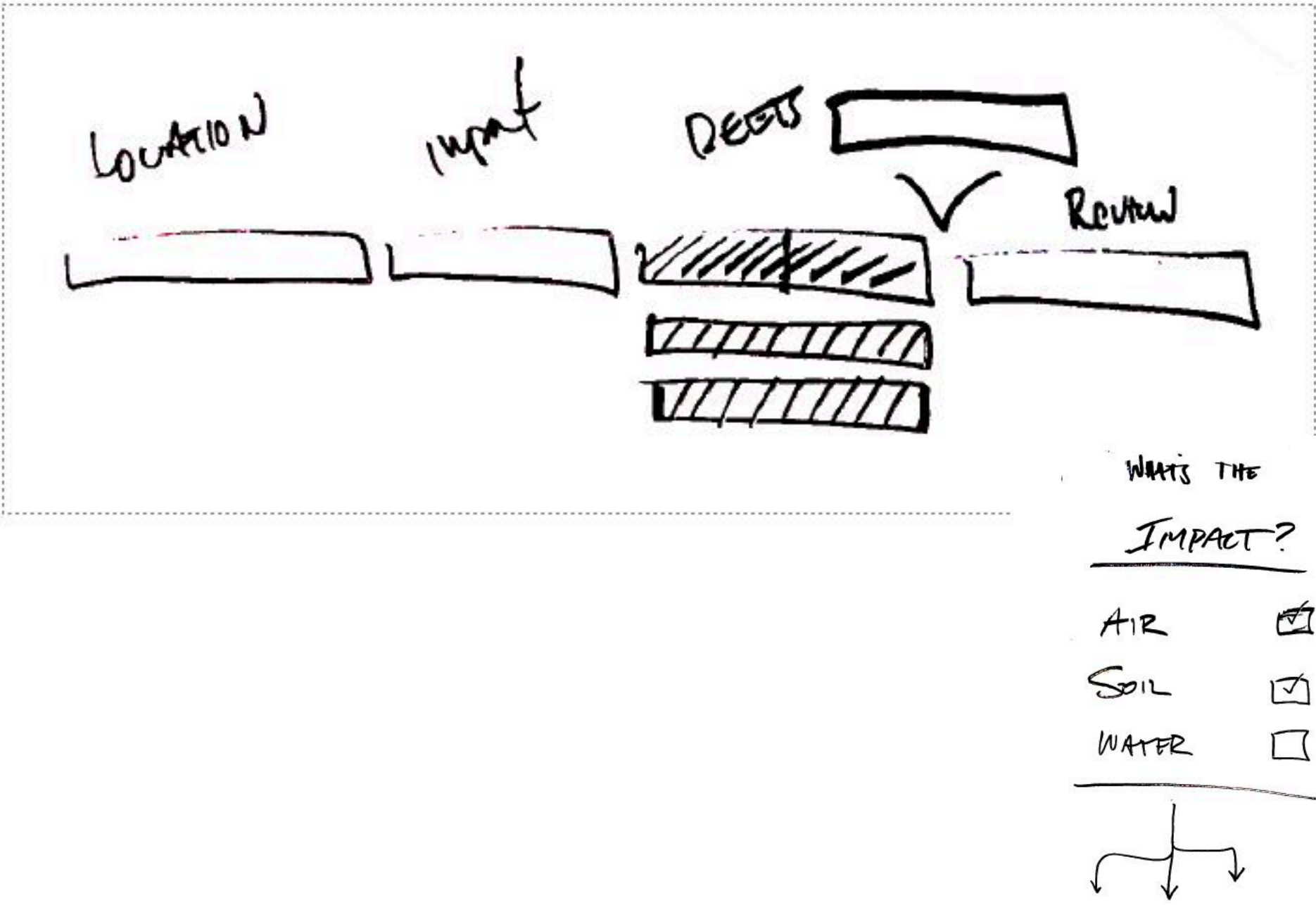
1. WHERE'S THE EVENT? (LOCATION)  
1.5
2. WHAT'S IMPACTED?  
2.5
3. DETAILS + COMMENTS
4. REVIEW  
4.1 SAFETY OBS →

### Sidebar Notes

- Flow

This was a very important step in the process.

# A flow that works for all events



## Sidebar Notes

- A modular approach

Air

Soil

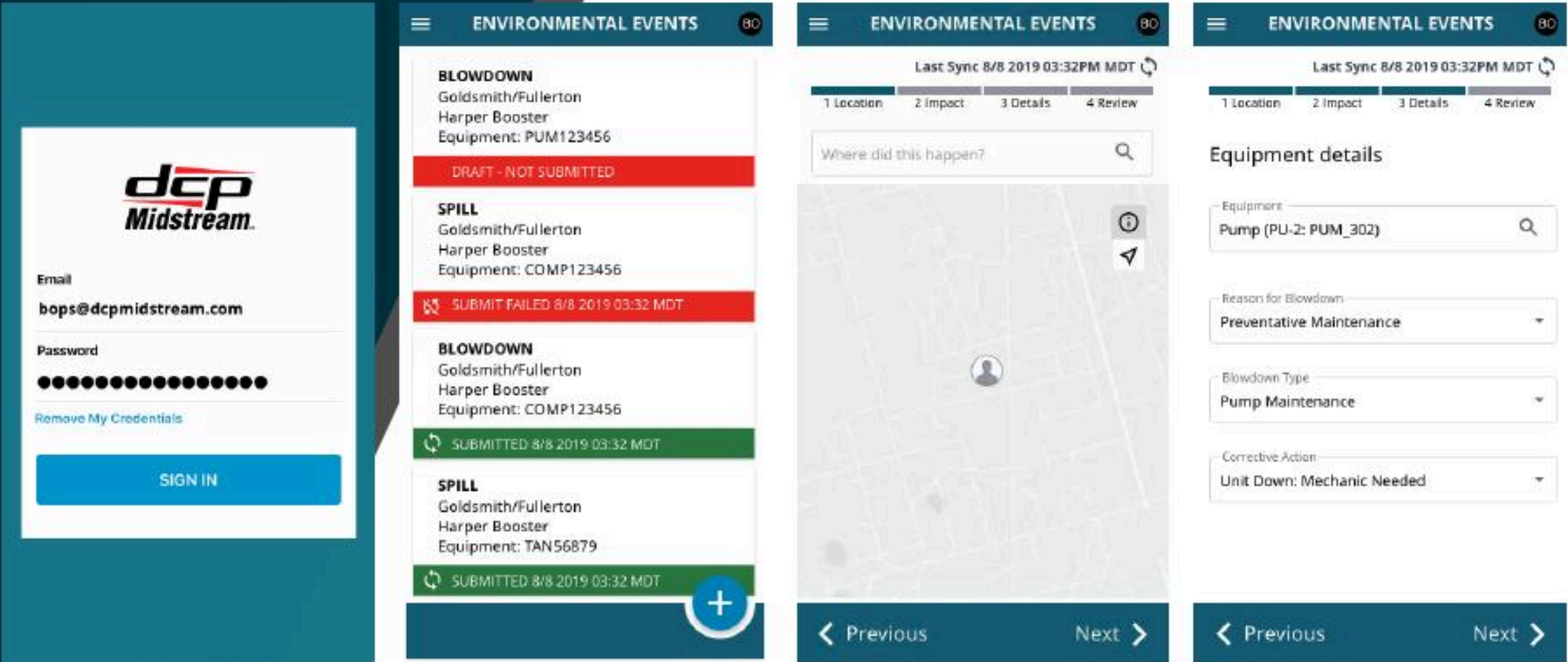
Water

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

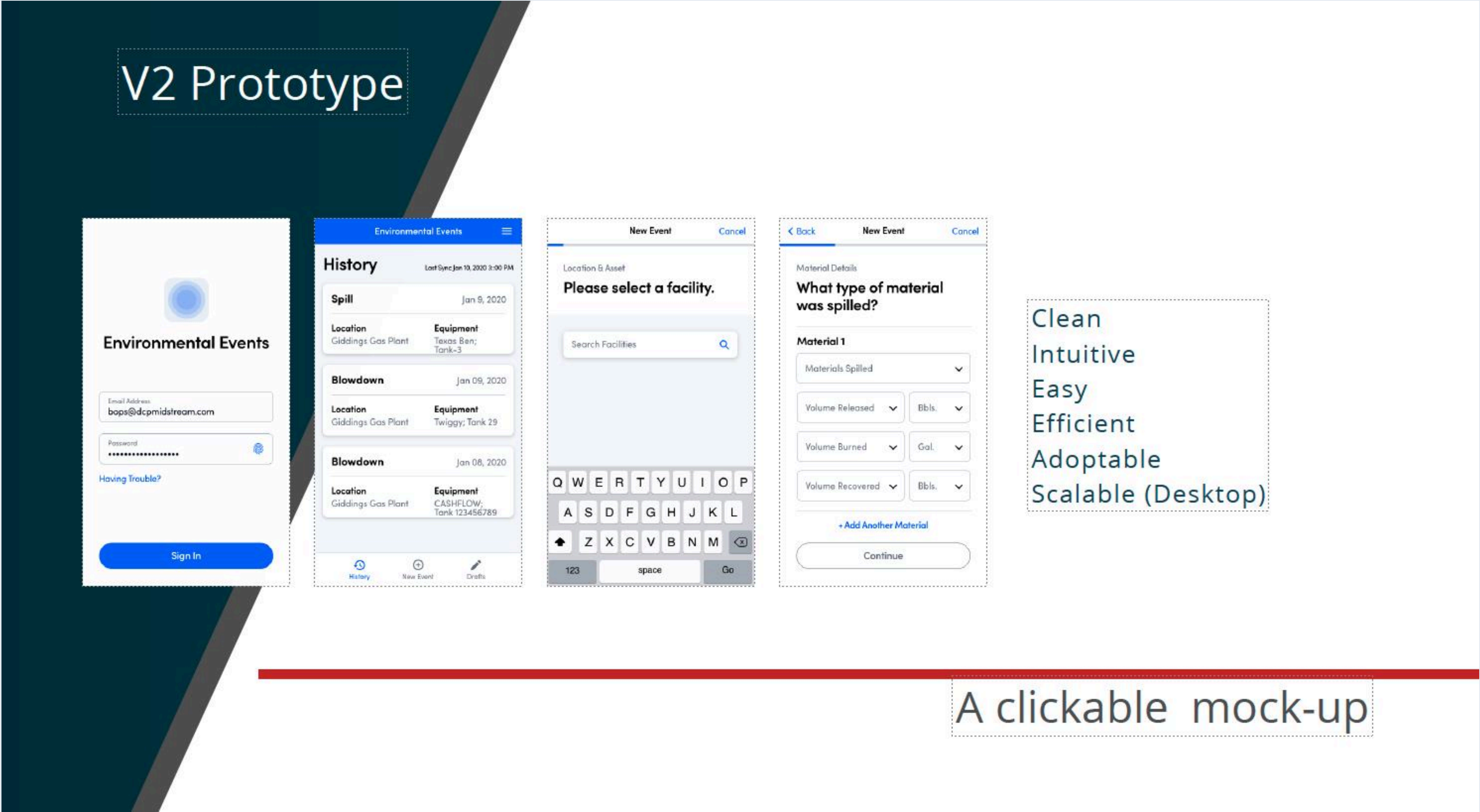
- Blowdowns
- Leak reporting
- Safety Observation
- Task Lists for Operators



Sidebar Notes

- **Prototype V2**

Ionic mobile  
Material angular  
Wrapped into platform



A clickable mock-up

# Light Mode UI Elements

## Form Fields

Form Field Label

Instructional text

Form Field Label  
Input Text

Form Field Label  
Input Text

Form Field Label  
Input Text

Form Field Label

Error state text

Form Field Label  
Input Text

Error state text

Form Field Label

Instructional text

Search Location

Search Location

Dropdown Label

Form Field Label  
Input Text

Dropdown Label

Error state text

Dropdown Label

List Item 1

List Item 2

List Item 3

List Item 4

-

1

+

## Buttons & Selectors

Primary Button

Secondary Button

Disabled Button

Large Radio Button

Large Radio Button

Item 1

Item 2

Item 3

Checkbox

Checkbox

Radio Button

Radio Button

Forward Button

Back Button

Page 2

Icon 1

Icon 2

Icon 3

Icon 4

Icon 5

+

+

-

-

Upload from library

Upload from library

Slider

Chip

Chip

Chip

Avatar

Chip

Chip

Icon

Chip

Chip

Filter

Chip

Chip

### 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.

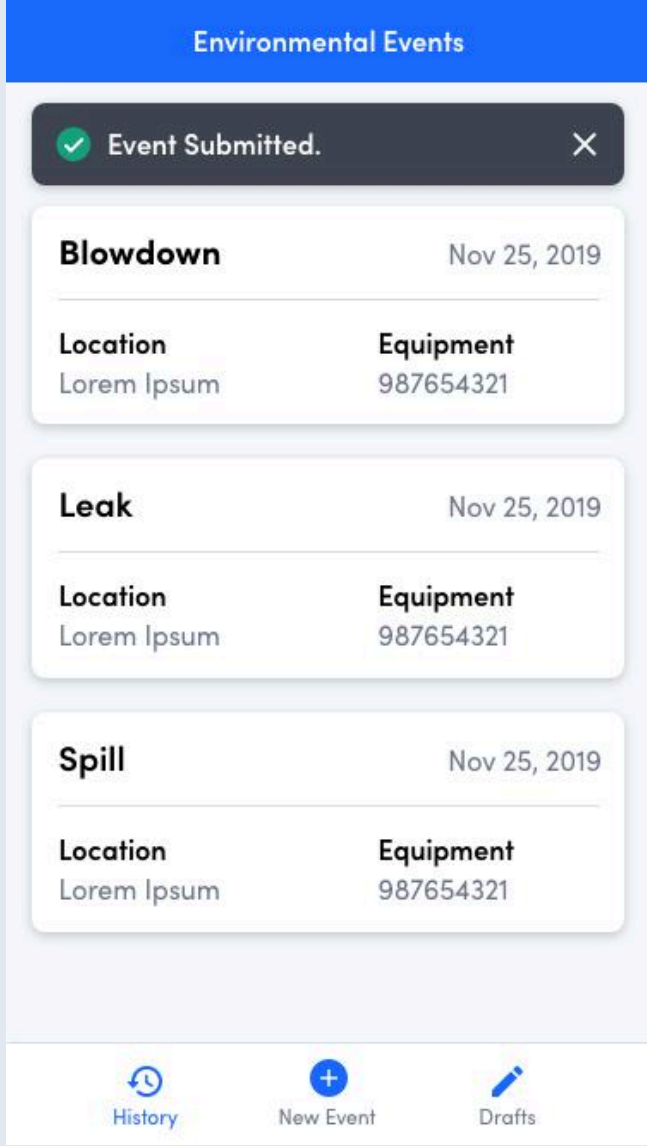
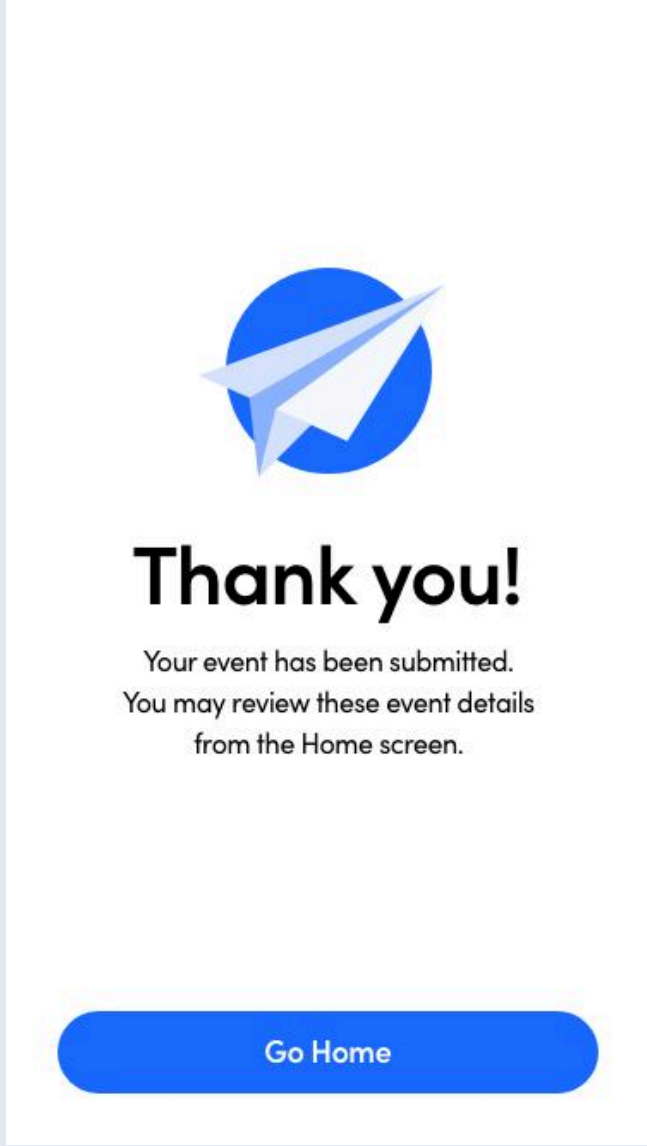
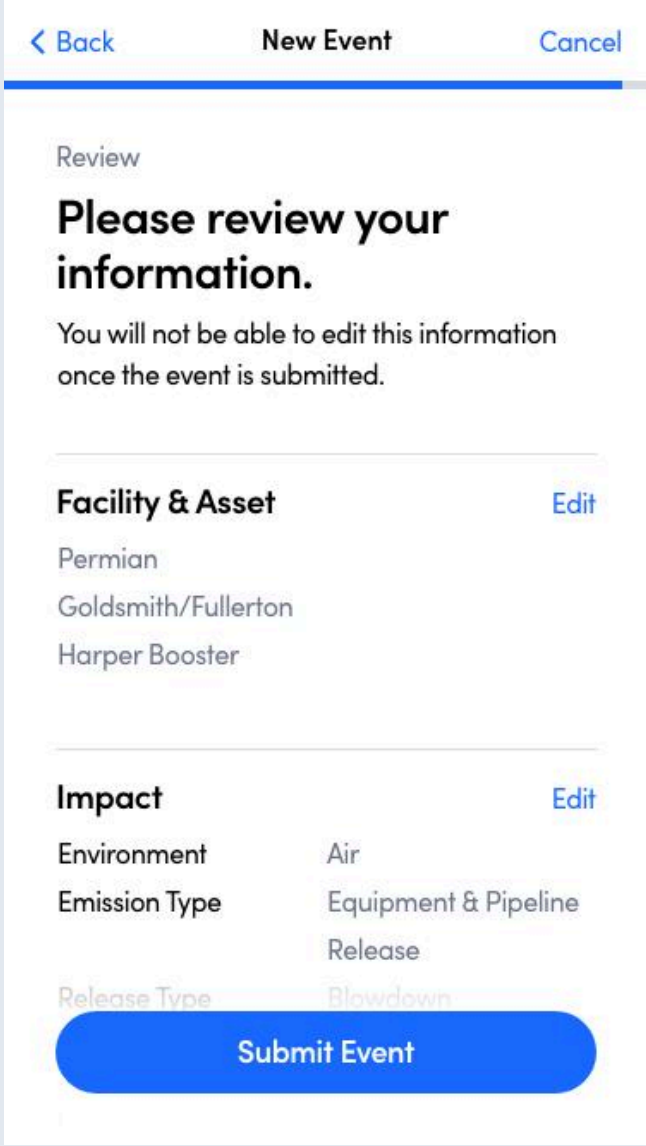
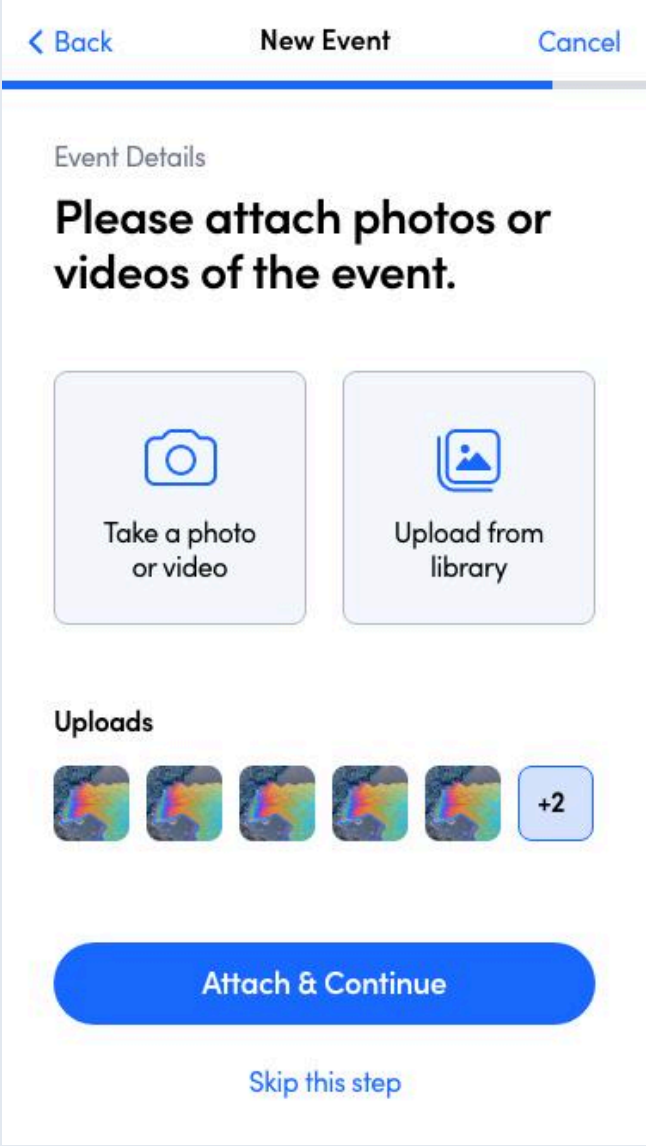
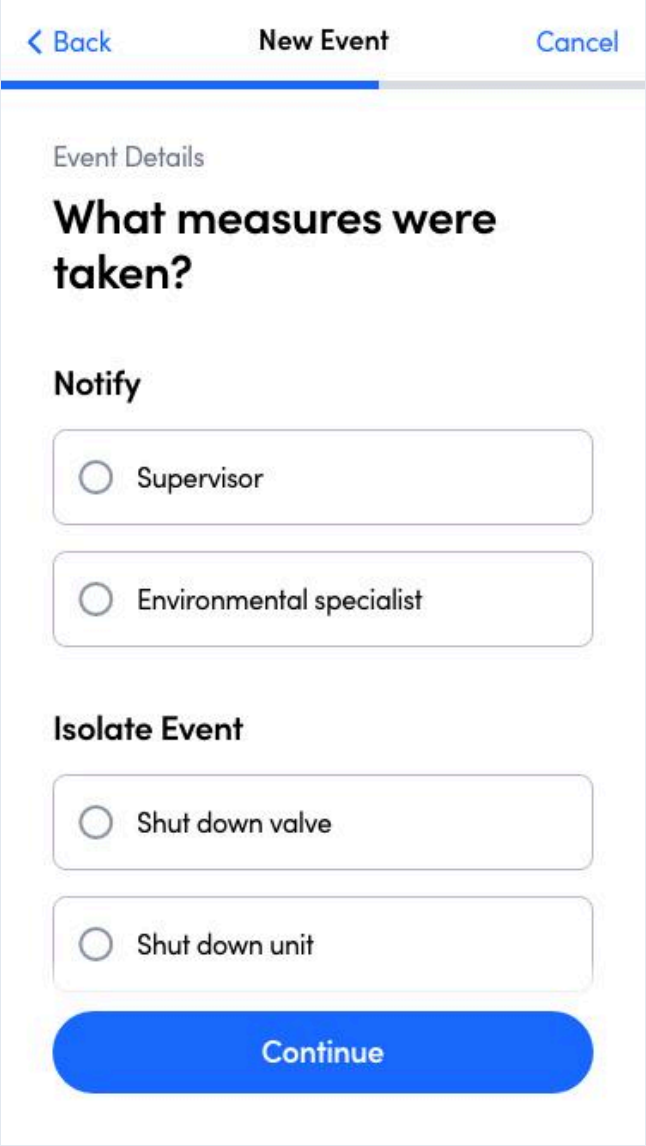
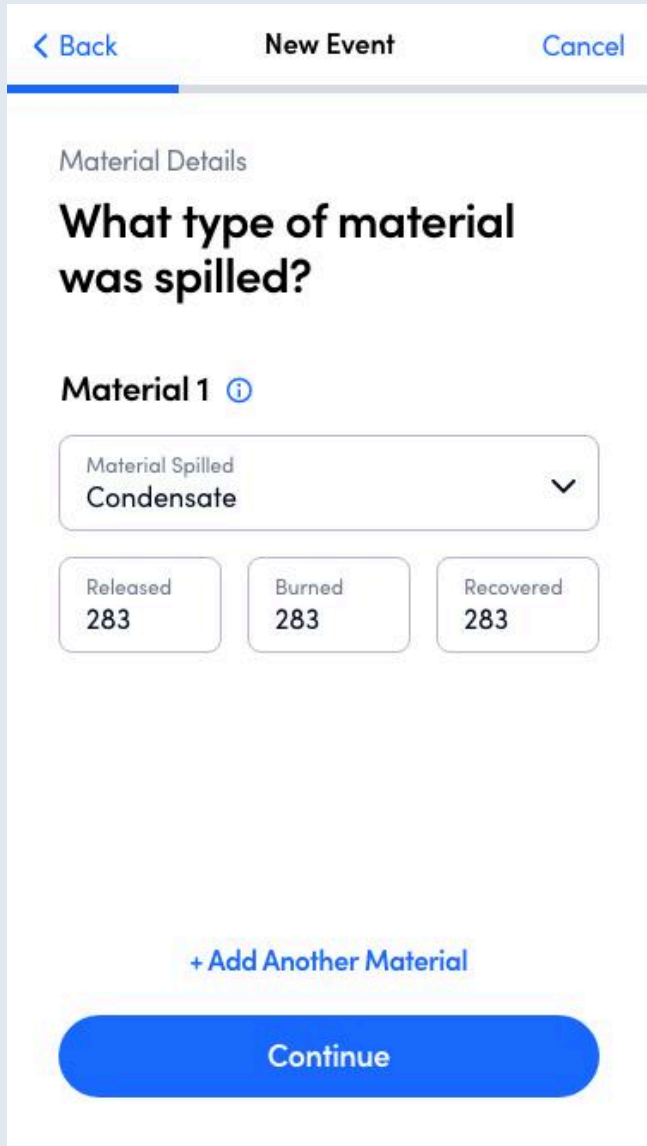
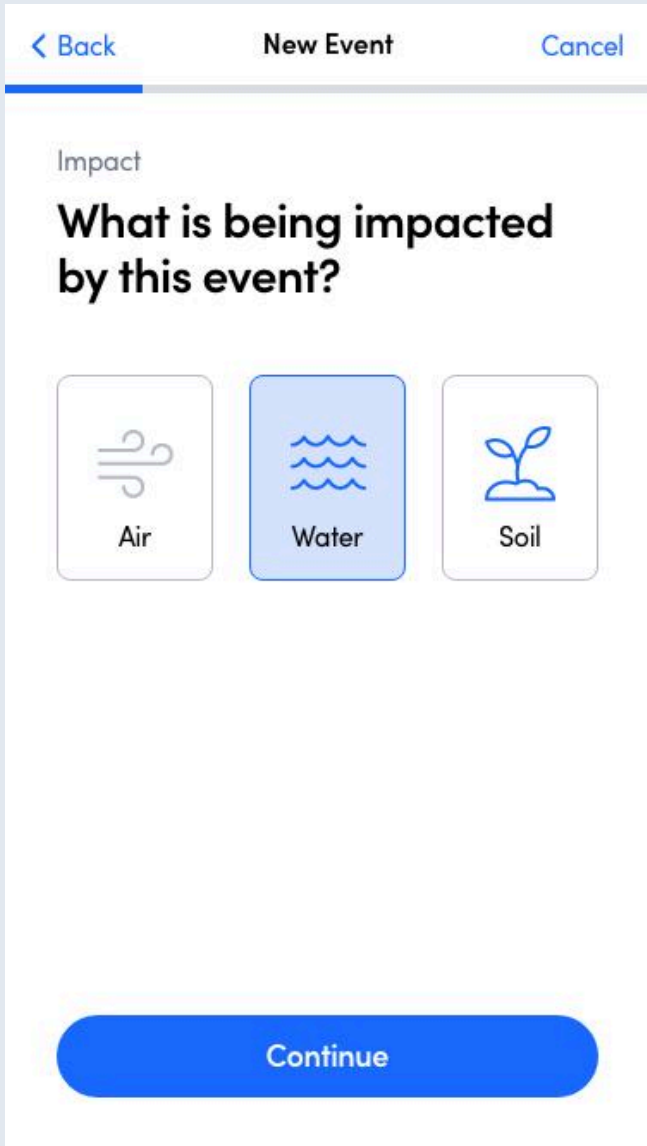
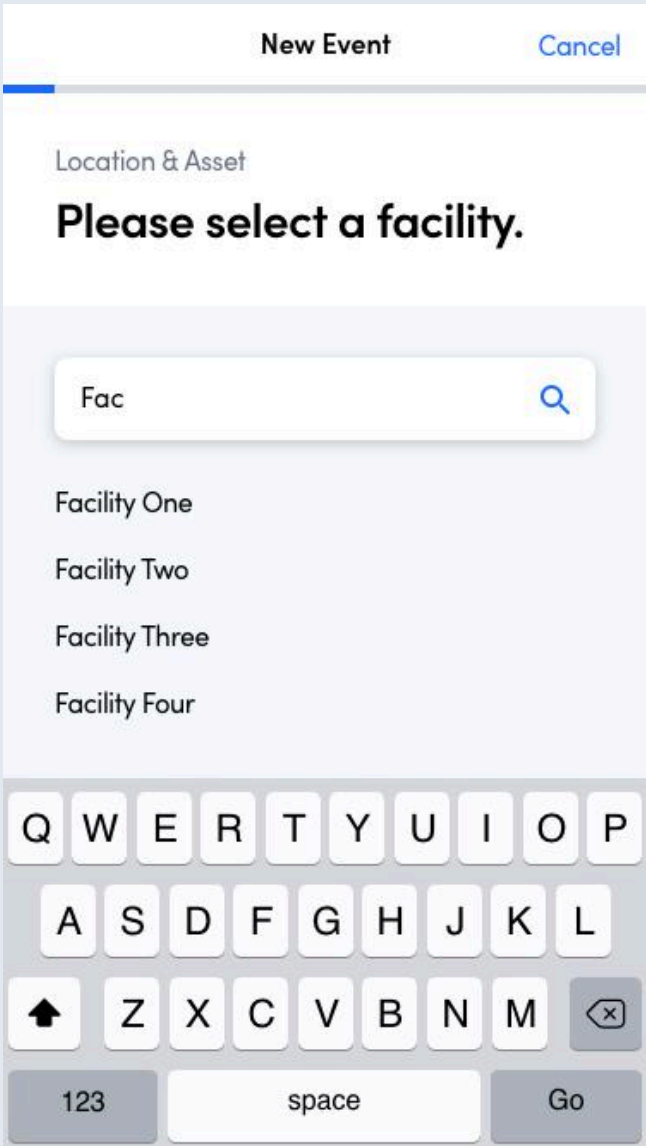
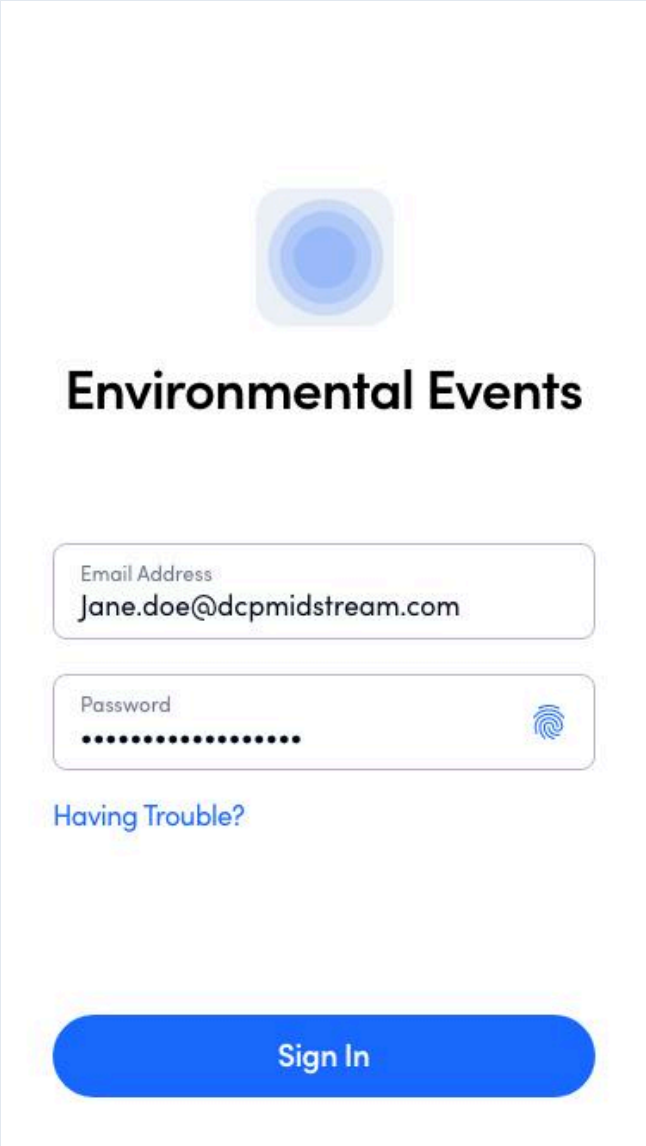
### Sidebar Notes

- 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





Sidebar Notes

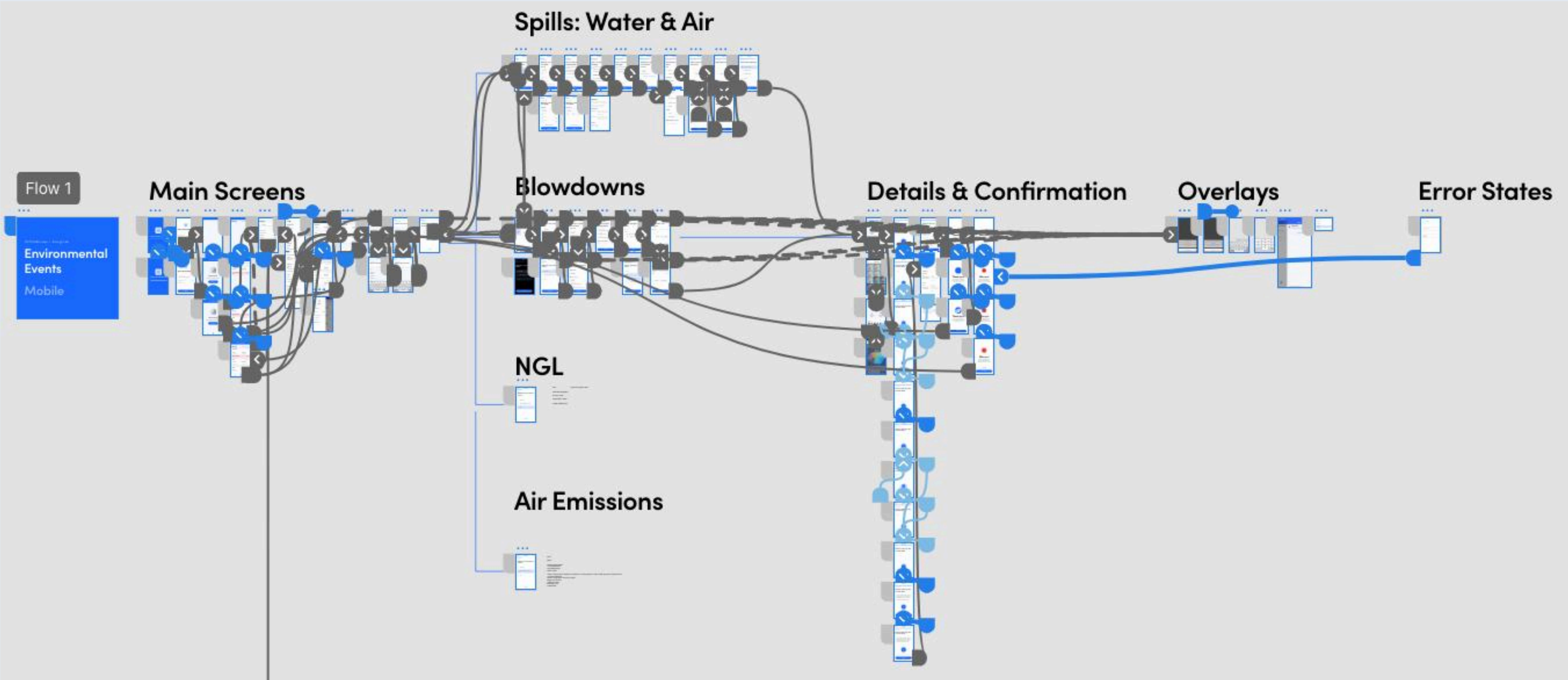
• Prototype

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.



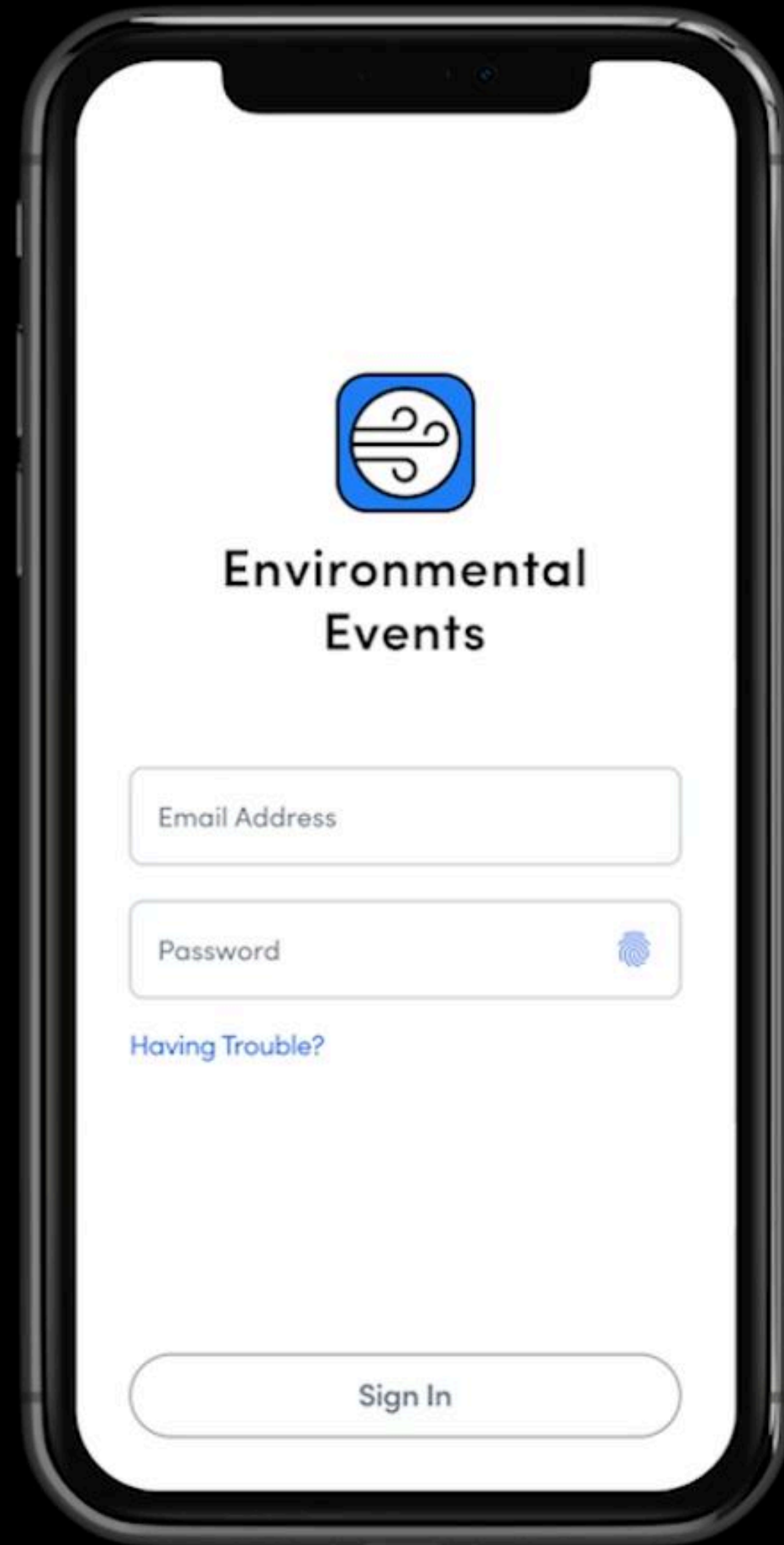


## V2 Completed Discovery

- ✓ **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**

### Sidebar Notes

- Roadmap  
Product roadmap after



- **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