

# DESIGN FELLOWSHIP 2023

## SUMMER

Data & Technology Services, Austin Transportation Department  
City of Austin, TX

Patrick McDonnell— Senior Product Manager

coding it forward >



MADISON FAN  
Stanford University  
Major in Design (AI + Digital User Experience)

# ABOUT ME

- Studying **Design** (AI + Digital User Experiences) and **Computer Science** with a concentration in Human Computer Interaction
- Only worked in private industry before
- This summer challenged my previous idea of what government work would be like - it was agile, iterative, and progressive!

# FELLOWSHIP OVERVIEW

Week 01 02 03 04 05 06 07 08 09 10

## Mobility Project Viewer

Design + Usability Testing Preparations

## Vision Zero Editor User Research

Observation Sessions + User Journey Mapping

## Design Improvements

VZE Crash Page Header, VZE 404, DTS Website

# MOBILITY PROJECT VIEWER (MPV)

Week 1-5

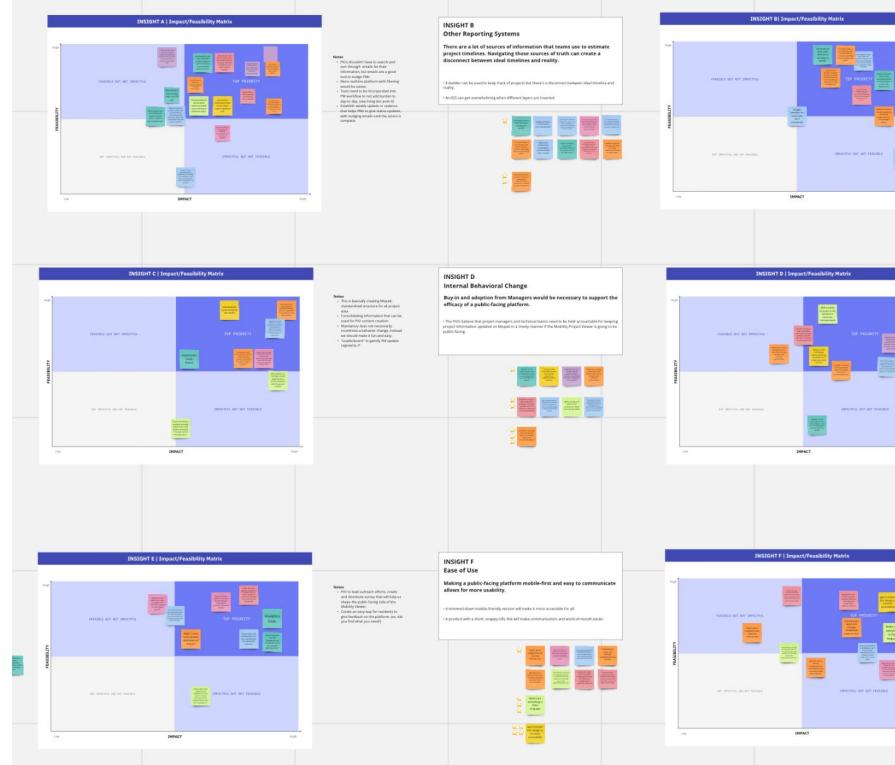
# CONTEXT

- Austin has growing population, traffic, and amounts of mobility infrastructure constructions
- City of Austin is developing a **publicly accessible map** to update residents on ongoing mobility projects
- Previous CIC fellows have conducted user research and initial prototypes



# RESEARCH

- Review CIC'21 and CIC'22 Fellows' research, interviews, and design
- Most previous interviews were conducted with internal users and PIO, not residents



# GOAL



**Conduct usability testing with Austin residents to define the desired interactions and information.**

# DESIGN

### Mobility Project Viewer

Project filters >

Project name, Project ID, eCAPRIS ID

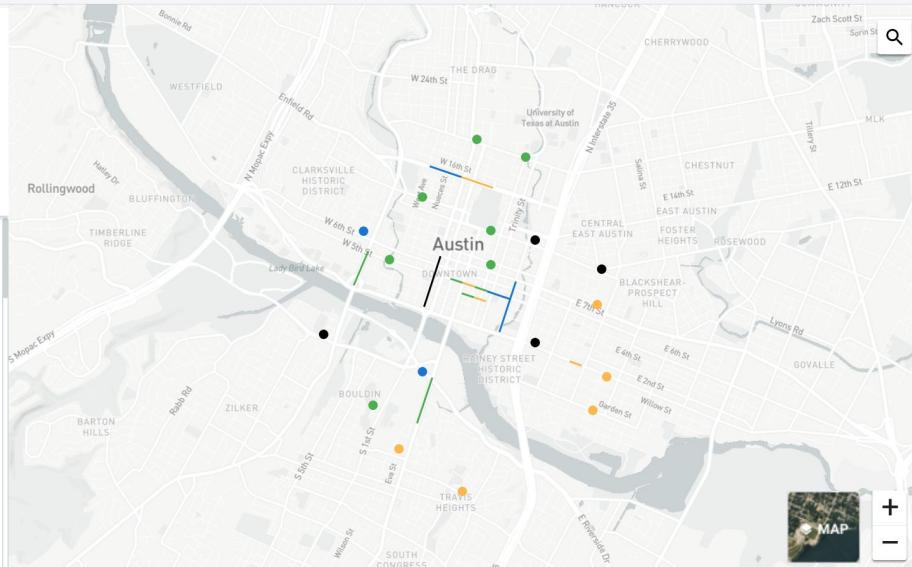
RESET FILTERS SAVE VIEW EXPORT DATA

100 PROJECTS QUERIED ⓘ  
50 projects in current map view

MAP VIEW  
 Project phase  Project type

PROJECT PHASE ⓘ  
 Complete  
 Construction  
 On Hold  
 Potential  
 (DESELECT ALL)

PROJECT TYPE ⓘ  
 Transit  
 Pedestrian  
 Bicycle  
 Trail  
 Motor vehicle



LEARN MORE

CIC'22 Fellow's MPV Design

# DESIGN

## - Accessibility

This screenshot shows the 'Map' tab of the Mobility Project Viewer. At the top, there are navigation links: Dashboard, Projects, Staff, and Map. A 'NEW PROJECT' button and a 'RB' icon are also present. On the left, a sidebar titled 'Project filters' contains several sections: 'Project filters' (with a search bar and buttons for 'RESET FILTERS', 'SAVE VIEW', and 'EXPORT DATA'), '100 PROJECTS QUERIED' (with a note that 50 projects are visible), 'MAP VIEW' (selected), 'PROJECT PHASE' (with checkboxes for Complete, Construction, On Hold, Potential, and 'DESELECT ALL'), and 'PROJECT TYPE' (with checkboxes for Transit, Pedestrian, Bicycle, Trail, and Motor vehicle). The main area is a map of Austin, Texas, with a blue box highlighting a cluster of project markers in the downtown area.

Before

This screenshot shows the 'Map' tab of the Mobility Project Viewer after optimization. The interface has been simplified. The 'PROJECT PHASE' and 'PROJECT TYPE' filters from the previous screen are no longer present. The main area is a map of Austin, Texas, with a blue box highlighting a cluster of project markers in the downtown area.

After

# DESIGN

- Usability and visual appeal updates to search bar, buttons, and query view

Before

After

# DESIGN

- Reevaluate project filters' complexity and necessity
- Create three versions of mockups with different levels of complexity

MAP VIEW

Project phase  Project type

PROJECT PHASE ⓘ

- Complete
- Construction
- On Hold
- Potential
- (DE)SELECT ALL

PROJECT TYPE ⓘ

- Transit
- Pedestrian
- Bicycle
- Trail
- Motor vehicle
- Signal
- Safety
- Green infrastructure
- (DE)SELECT ALL

PROJECT SPONSOR ⓘ

- COA ATD
- COA PWD
- Capital Metro Transit Authority
- Central Texas Regional Mobility Authority
- State of Texas
- Travis County
- Williamson County
- Private Developer
- (DE)SELECT ALL

TIMELINE ⓘ

Start date: 06/01/2015 - 06/01/2015

Construction date: 06/01/2015 - 06/01/2015



Project Phase ⓘ

- Complete
- Construction
- On Hold
- Potential

Project Sponsor ⓘ

- City of Austin
- Others

Timeline ⓘ

Start date: 06/01/2015 - 06/01/2015

End date: 06/01/2015 - 06/01/2015

Project Phase ⓘ

- Complete
- Construction
- On Hold
- Potential

Project Sponsor ⓘ

- City of Austin
- Others

Project Phase ⓘ

- Complete
- Construction
- On Hold
- Potential

Complex

Medium

Simple

# DESIGN

### Mobility Project Viewer

PROJECT PHASE PROJECT TYPE

Project Phase ⓘ

- Complete
- Construction
- On Hold
- Potential

Project Sponsor ⓘ

- City of Austin
- Others

Timeline ⓘ

Start date: 06/01/2015 - 06/01/2015

End date: 06/01/2015 - 06/01/2015

50 in current map view ⓘ  
100 projects filtered

Search

Saved views

AERIAL

The map displays a comprehensive overview of mobility projects across Austin, with a focus on the central business district and surrounding urban areas. The color-coded markers indicate the status of each project, providing a visual summary of current developments in the city.

# MPV - TEST PREP

## Mobility Project Viewer Usability Test Plan

### Overview

These tests will be conducted to gauge the usability of the latest designs of Mobility Project viewer.

### Objectives

[Figma prototype link](#)

What are the goals of the usability test?

- Use high-fidelity wireframes to validate feature requirements of the Mobility Project Viewer.
- Understand different types of external users' motives for using MPV
- Understand user preferences for searching/filtering
- Discover opportunities to improve usability of the current designs

What specific questions will be answered?

- What are different ways external users use MPV for?
- What search/filter methods do external users find helpful?
- What do external users wish to learn about individual projects?

What hypotheses will be tested?

- External users would like to filter by project phase/type, project sponsor, and timeline of the project
- External users would like to see a preview of a project on MPV that includes phase, type, sponsor, short description, location, and link to full description

## Mobility Project Viewer Usability Testing Interest Form

The City of Austin Transportation Public Works Department is currently developing a [publicly accessible map](#) to update residents on ongoing projects. We invite Austin residents to provide valuable feedback on the most recent design of our Mobility Project Viewer.

The usability tests will be conducted from 7/24/2023 - 8/4/2023. For your participation in the usability testing, we are offering a \$25 gift card as compensation. If you have any questions or concerns, please reach out to [data.technology@austintexas.gov](mailto:data.technology@austintexas.gov)

This form takes approximately 5 minutes to complete.

[madison.fan@austintexas.gov](#) [Switch account](#) 

 Not shared

\* Indicates required question

We offer two usability testing options. Both options require a computer  (laptop/desktop) and internet connection. Please select your preferred method(s)

### 1. 30 minute online moderated usability test

In a 30-minute online video call, our team member will guide you through our product, asking you to complete tasks, and provide feedback on your experience.

### 2. Self guided usability test

A self-guided usability test involves completing tasks on a product through an interactive link and providing feedback.

Check all that apply:

I would like to do a 30 minute moderated usability test

## Usability Test Plan

## Usability Outreach form

# IMPACT & NEXT STEPS

## Impact

Prepped MPV for usability testing with Austin residents by creating mockups, test plan, and outreach material.

## Next Steps

Collaborate with PIO to recruit Austin residents for usability testing.

# DESIGN IMPROVEMENTS

Week 5-7

# DTS WEBSITE PROJECT DETAILS

- DTS website has pages to show what projects the department is working on
- Improve usability, visuals, and add new features

The screenshot shows a project details page for the "TPW Service Transition". The page header includes the Transportation Public Works logo and navigation links for Products, Projects, About, and Get help. The main content area displays the project title "TPW Service Transition", its type (Operations), status (In Progress), workgroup (OPM), and issue number (#12623). Below this, there are tabs for Description, Evaluation, Activity, and Issues, with "Description" currently selected. The description text reads: "Support the efficient, strategic transition of Austin Transportation, Corridor Program Office, and Public Works into a coordinated and cohesive Transportation and Public Works department." The "Background" section notes that on March 24, 2023, the City Manager announced reforming three departments into two new ones: Transportation and Public Works (TPW) and Capital Delivery Services (CDS). It also mentions that the Office of Performance Management and Data & Technology Services were engaged to facilitate the smooth transition. The "Key Transition Needs & Goals" section aims to bring a wider group of employees into the conversation about the future of the consolidated department. The "Support service divisions" section lists TPW Finance, Human Resources, Data & Technology, Office of Performance Management, Public Information Office, and Administration. The "Operational + Strategic divisions" section lists Engineering, Civil Engineering, SBO + Signs & Markings, VZ, AMD, OSE, ROW, and Transportation Services. The "Project Plan" section is currently empty.

# DTS WEBSITE PROJECT DETAILS

- Created sidebar for narrower screen width and constant view of info despite scroll

The screenshot shows a desktop view of the 'Project Details' page. At the top, there's a navigation bar with links for 'Products', 'Projects', 'About', and 'Get help'. Below the navigation is a header with the 'TRANSPORTATION PUBLIC WORKS' logo and a 'Back to projects' link. The main content area has a title 'TPW Service Transition' and a sub-section 'Project Details'. It includes a table with columns for 'Type', 'Status', 'Workgroup(s)', and 'Issue'. The 'Type' column shows 'Operations' and 'Status' as 'In Progress'. The 'Workgroup(s)' column shows 'OPM' and the 'Issue' column shows '#12623'. Below this is a horizontal navigation bar with tabs for 'Description', 'Evaluation', 'Activity', and 'Issues'. The 'Description' tab is active. The main content area contains a paragraph about the strategic transition of departments. Under 'Background', there's a paragraph about the reforming of departments on March 24, 2023. The 'Key Transition Needs & Goals' section has a single bullet point. The 'Support service divisions' section lists various departments. The 'Operational + Strategic divisions' section lists engineering and support services. The 'Project Plan' section is at the bottom.

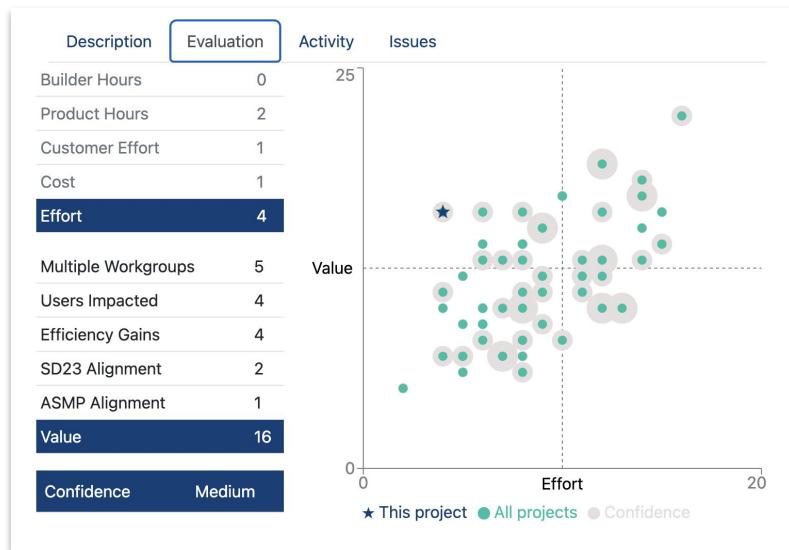
Before

The screenshot shows the same 'Project Details' page after adding a sidebar for narrower screens. The sidebar on the right contains sections for 'Type' (Operations), 'Status' (In progress), 'Workgroup(s)' (OPM), 'Issue' (#12623), 'Team members' (Person 1, Person 1, Person 1), and 'Relevant links' (Project page). The main content area remains the same as the 'Before' screenshot, but the sidebar provides a constant view of this information without requiring a scroll.

After

# DTS WEBSITE PROJECT DETAILS

- Improved visual hierarchy for evaluations tab



Before



After

# DTS WEBSITE PROJECT DETAILS

- Added new content/feature based on user feedback

< Back to Projects

## Project Details

### TPW Service Transition

Description   Evaluation   Activity   Issues

#	Title	Type	Status	Size	Updated
12123	Create testing material for residents	↳ Enhanc.	<input type="checkbox"/> New	4	7/31/2023
12123	Create outreach materials for residents	↳ Enhanc.	<input type="checkbox"/> Icebox	2	7/31/2023
12123	Create 3 mockups	↳ Enhanc.	<input type="checkbox"/> Needs Scoping	1	7/31/2023
12123	Project Map   Conduct user research	↳ Testin.	<input type="checkbox"/> Backlog	3	7/31/2023
12123	Create 3 mockups	↳ Researc.	<input type="checkbox"/> On Deck	5	7/31/2023
12123	Create outreach materials for residents	↳ Researc.	<input type="checkbox"/> In Progress	5	7/31/2023
12123	Create 3 mockups	↳ Researc.	<input type="checkbox"/> Ongoing	5	7/31/2023
12123	Project Map   Conduct user research	↳ Researc.	<input type="checkbox"/> Blocked	3	7/31/2023
12123	Project Map   Conduct user research	↳ Researc.	<input type="checkbox"/> Review/QA	1	7/31/2023
12123	Create testing material for residents	↳ Researc.	<input type="checkbox"/> Ready to Deploy	1	7/31/2023
			<input type="checkbox"/> Closed		
			<input checked="" type="checkbox"/> All		

Reset   Ok

Filters for issues tab

Type  
Operations

Status  
In progress

Workgroup(s)  
OPM

Issue  
#12623

Team members

- Person 1
- Person 1
- Person 1

Relevant links

- Project page

Project team members and links added to sidebar design

# VISION ZERO EDITOR

- Vision Zero Editor is a data analysis platform for Austin's fatality and serious injury crash data

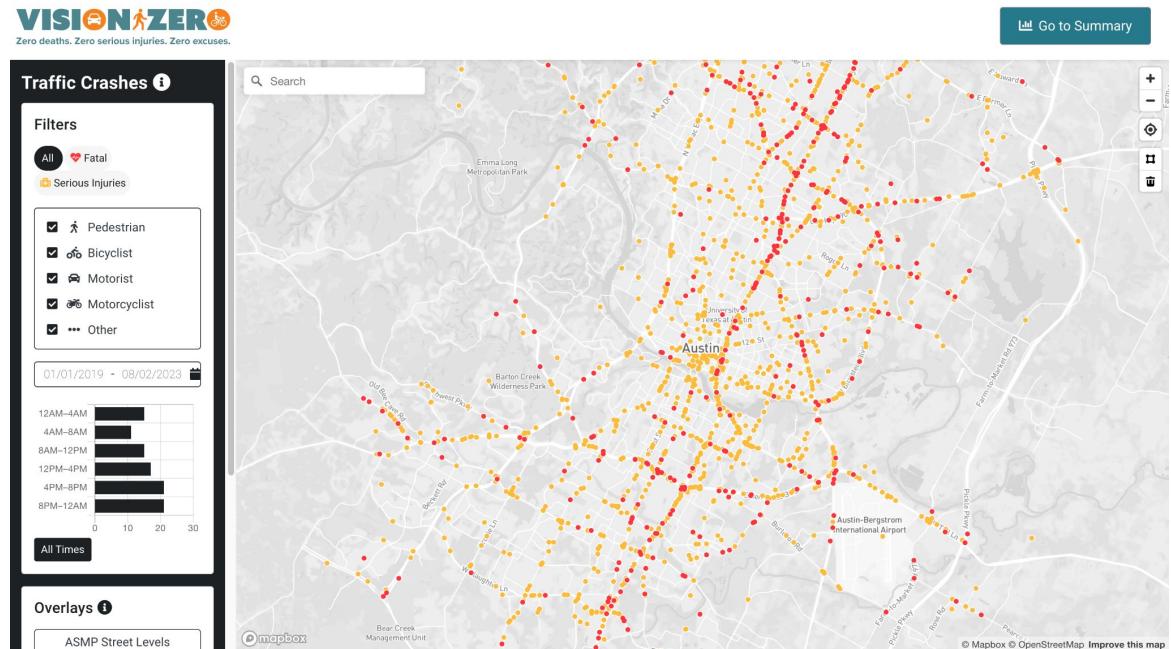
The screenshot displays the Vision Zero Editor web application. At the top, there is a dark sidebar with the 'VISION ZERO' logo and a navigation menu containing links to 'Dashboard', 'Crashes', 'Locations', 'Changes', 'ADMIN' (with sub-links for 'Fatalities', 'Reports', 'Tools', 'Upload Non-CR3', 'Create Crash Record', and 'Users'), and a 'Logout' button.

The main content area shows a crash record for the location '7100 BRODIE LN & 3500 BANNOCKBURN DR'. Key statistics are displayed in three boxes: '0 FATALITIES' (red icon), '0 SUSPECTED SERIOUS INJURIES' (yellow icon), and '0 YEARS OF LIFE LOST' (blue icon).

Below the statistics, an aerial map shows the crash location at the intersection of 7100 Brodie Ln and 3500 Bannockburn Dr. A yellow location pin marks the exact spot. To the right of the map is a 'Crash Diagram' section, which includes a 'Field Diagram - Not to Scale' showing the road layout and vehicle positions. Buttons for 'Edit Coordinates' and 'Download CR-3 PDF' are also present.

# VISION ZERO EDITOR

- Vision Zero Editor is a data analysis platform for Austin's fatality and serious injury crash data
- Data is shown on a public facing visualization tool: Vision Zero Viewer



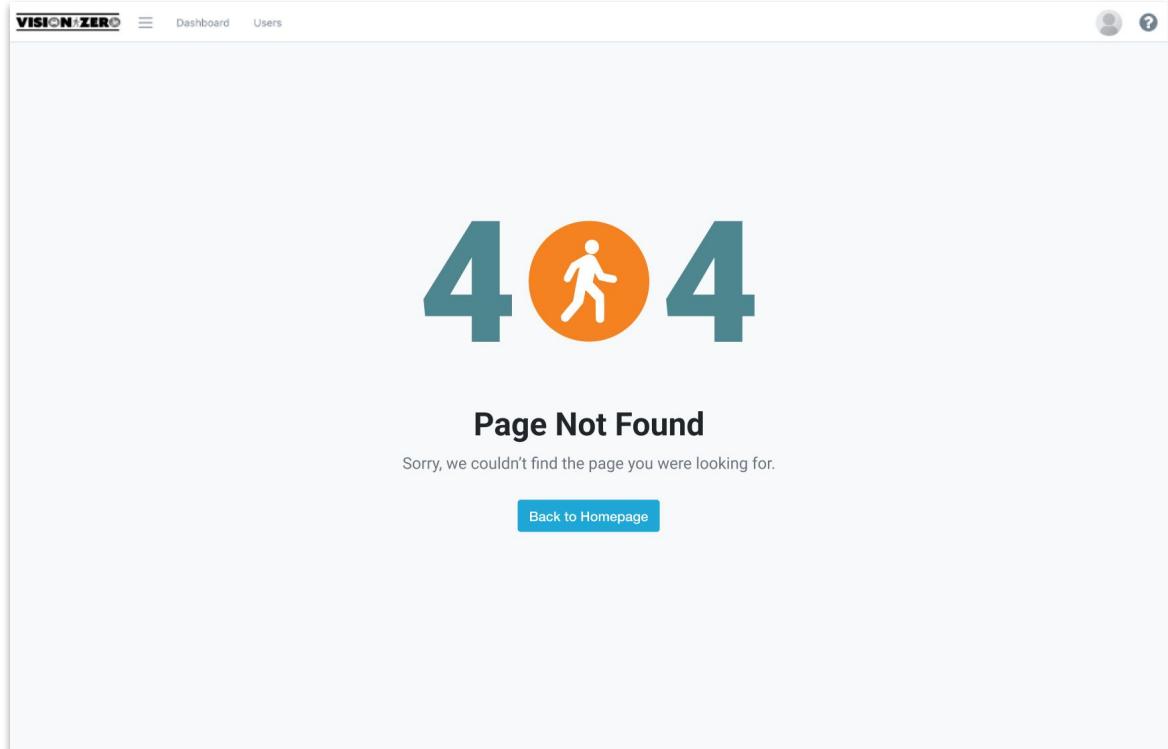
# VZE CRASH PAGE HEADER

- Add crash ID and case ID to the crash page's header
- Reduces scroll and increases productivity

The screenshot shows the VISION ZERO software interface. The top navigation bar includes the VISION ZERO logo, a menu icon, 'Dashboard', and 'Users'. On the far right are user profile and help icons. The left sidebar has a dark theme with sections for 'DATA' (Dashboard, Crashes, Locations, Changes) and 'ADMIN' (Fatalities, Reports, Tools, Users). The main content area is titled 'Crash Details' for 'E 400 RUNDBERG LN & N 9400 CREEK DR'. It displays three summary boxes: 'FATALITIES' (0), 'SUSPECTED SERIOUS INJURIES' (0), and 'YEARS OF LIFE LOST' (0). Below these are links for 'Crash Location (ID: ADE670C0E9)', 'Edit Coordinates', and 'Geocode Provider: CRIS'. A large satellite map shows the crash location at the intersection of E 400 Rundberg Ln and N 9400 Creek Dr. To the right is a 'Crash Diagram' section with a map titled 'Field Diagram - Not to Scale' showing the same intersection. Buttons for 'Download CR-3 PDF' and 'Reset' are also present.

# VZE 404 NOT FOUND PAGE

- Custom 404 not found page design for VZE
- Improved status indication and provides a continuation to interrupted user flow



# IMPACT & NEXT STEPS

## Impact

Elevated VZE and DTS website usability and visual appeal, which increases internal users' productivity.

## Next Steps

Handoff designs to developers and implement them.

# VZE USER RESEARCH

Week 8-10

# CONTEXT

- Vision Zero Editor crash page and location page currently have many usability issues
- Not much user research has been done

The screenshot shows the VISION ZERO web application interface. The left sidebar is dark with white text, listing categories under 'DATA' (Dashboard, Crashes, Locations, Changes) and 'ADMIN' (Fatalities, Reports, Tools, Users). The main content area has a light gray background. At the top, it says 'Home / Crashes / Crash Details'. Below this, the location is specified as 'E 300 RUNDBERG LN & N CREEK DR'. Three summary boxes are displayed: '0 FATALITIES' (red icon), '0 SUSPECTED SERIOUS INJURIES' (yellow icon), and '0 YEARS OF LIFE LOST' (blue icon). Further down, there's a section for 'Crash Location' with an ID (ADE670C0E9), a 'Edit Coordinates' button, and a note about the 'Geocode Provider: CRIS'. To the right of this is a 'Crash Diagram' section with a 'Download CR-3 PDF' button. Below these are two maps: an aerial view showing the intersection with a yellow marker, and a detailed 'Field Diagram - Not to Scale' showing the road layout with labels like 'North Creek Dr' and 'E Rundberg Ln'. Navigation icons for zooming and panning are visible on both maps.

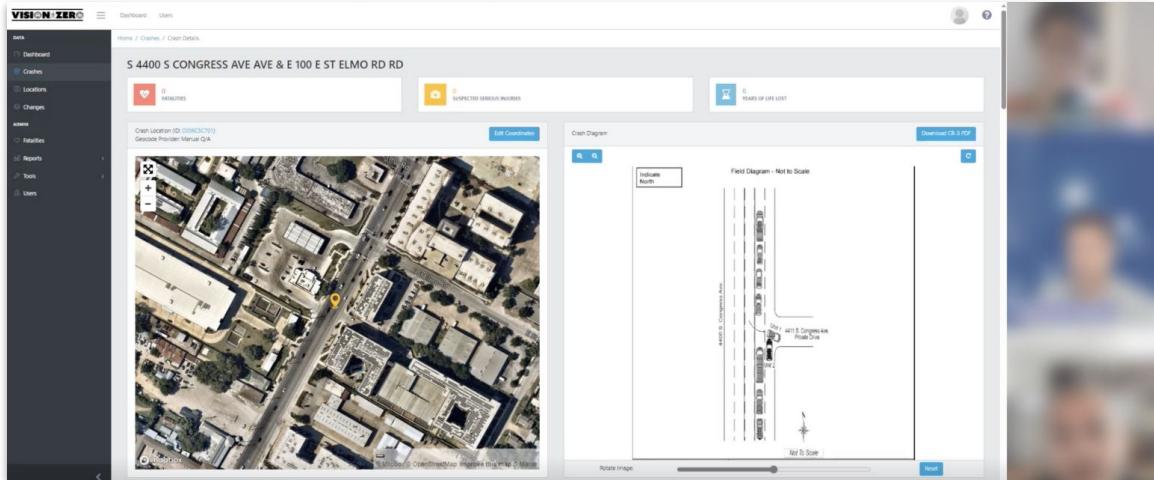
# GOAL



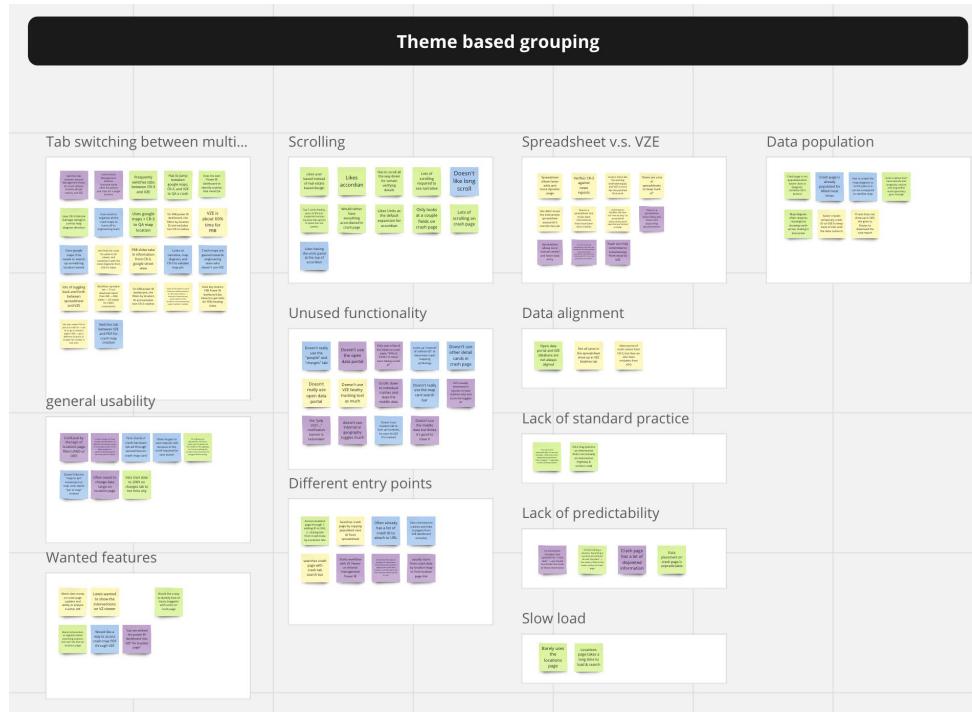
**Gain a deeper understanding of how the VZE is utilized by the team to inform design decisions for crash and location pages.**

# OBSERVATION SESSIONS

- Conducted 4 observation sessions with Vision Zero team members to understand how their daily work involves VZE



# AFFINITY MAPPING



# RESEARCH INSIGHTS

1. Users have to use VZE with many other platforms, and different tasks involve different platforms. Each user has a **very different user journey** based on their task.
2. **Data alignment** across different platforms is a prominent problem
3. There are many **unused functionalities** because users either skip it in their use flow or they have other preferred tools

## VZE Observation Insights

### Overview

This report outlines the various usability issues observed within the user interactions with the VZE

### Purpose

Gain an understanding of how users interact with VZE, provide valuable insights for improving functionality and usability.

### Relevant links

[VZE Observation](#)

[Affinity maps](#)

Interview recordings with transcript: [Xavier](#), [Milad](#), [Joel](#), [Mary](#)

# USER JOURNEY MAPPING

VZE Crash Data QA								
STEPS	Data managing				Quality			
PLATFORMS	Xavier's own Power BI	AGOL Crash Data by Location Map	VZE location page	VZE Crash tab	VZE Crash page	CRIS/CR-3	VZE Crash page	Google Maps
GOALS	I want to get an overview of cases I need to look at	I want to see crashes in a specific polygon	I want to see the crashes in this location	I want to find the crash page ASAP	I want to understand the status of this crash page - Has it been Qued yet? - Is the CR-3 populated yet?	I want the source of truth for crash data	I want to correct the crash page data based on data I gathered	I want to look up the exact location of the crash
ACTION	Looks at KA fatality cases and grabs crash IDs	Selects polygon and clicks on link to VZE locations page	Clicks into the individual crashes	Attaches crash ID to crash tab URL	- Checks if "manual populate" CR-3 is in the crash direction map; crash is fully populated if the data assigned to see if page has been Qued  - Checks for "manual Qued" text in map box and whether directionality and map pin placement are correct	- Checks crash direction, crash direction, and other details to validate crash diagram direction and map pin placement	- Edit crash diagram direction based on collected data - edit map pin placement	uses distance measure tool in Google maps to find exact pin location
PAINPOINT		I don't use the location tab to search because it is too slow and I have other entry points	I don't use the location tab to search because it is too slow and I have other entry points	I have to look at very specific place to determine if CR-3 is not populated on VZE. I have to look up CR-3 on CRIS	CR-3 can potentially intersect existing high surface roads I have to frequently switch tabs between CRIS and VZE	I don't need most of these information to determine if a crash has been Qued or not. I just need to look at the location and the date of the crash. If the location and date are correct, then the crash has been Qued.	I frequent between map and VZE	The VZE map feature cannot help me determine the exact location of the crash
QUOTE	<p>When you click on the location, I don't know if it's a crash or not. It's just a location. So I have to go to the VZE location page and then I have to know that it's a crash and we know that it's been Qued.</p>		<p>Most often, I don't come in the morning. I don't have a diagram and I don't have a database to work with. So I have to know what I'm looking for to know that a crash exists and we know that it's been Qued.</p>		<p>"It's like nothing is cohesive. Everything is just kind of scattered all over the place."</p>			

# IMPACT & NEXT STEPS

## Impact

- Generated insights on how VZE is currently used and the pain points in each step
- Lays foundation for future research & design improvements

## Next Steps

- Conduct more observation sessions with other VZE users
- Create more user journey maps based on tasks

# FELLOWSHIP IMPACT SUMMARY

- Improve MPV designs and create usability testing materials
- Improve internal platform usability
- Provide better understanding of VZE usage for future design updates that can further streamline VZ team workflow
- Migrate from Adobe XD to Figma



# MY TAKEAWAYS

- Learned to be more inclusive and thoughtful in designs, especially when it can represent government
- It is important to understand the history and background to grasp the complexity of a problem
- Learning the way of Agile and some product management knowledge
- Learning more about the backscenes of a city's transportation department



# THANK YOU



To everyone who supported, advised and guided me  
To CIF for this wonderful opportunity  
To Patrick for being such a supporting and insightful mentor

coding it forward >



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