

WHAT IS THE PRODUCT?

UNISON is a **web application** developed for public safety teams and organizations. It leverages big data analytics so **users can effectively manage limited resources and proactively respond to public safety incidents.**

WHO IS IT FOR?

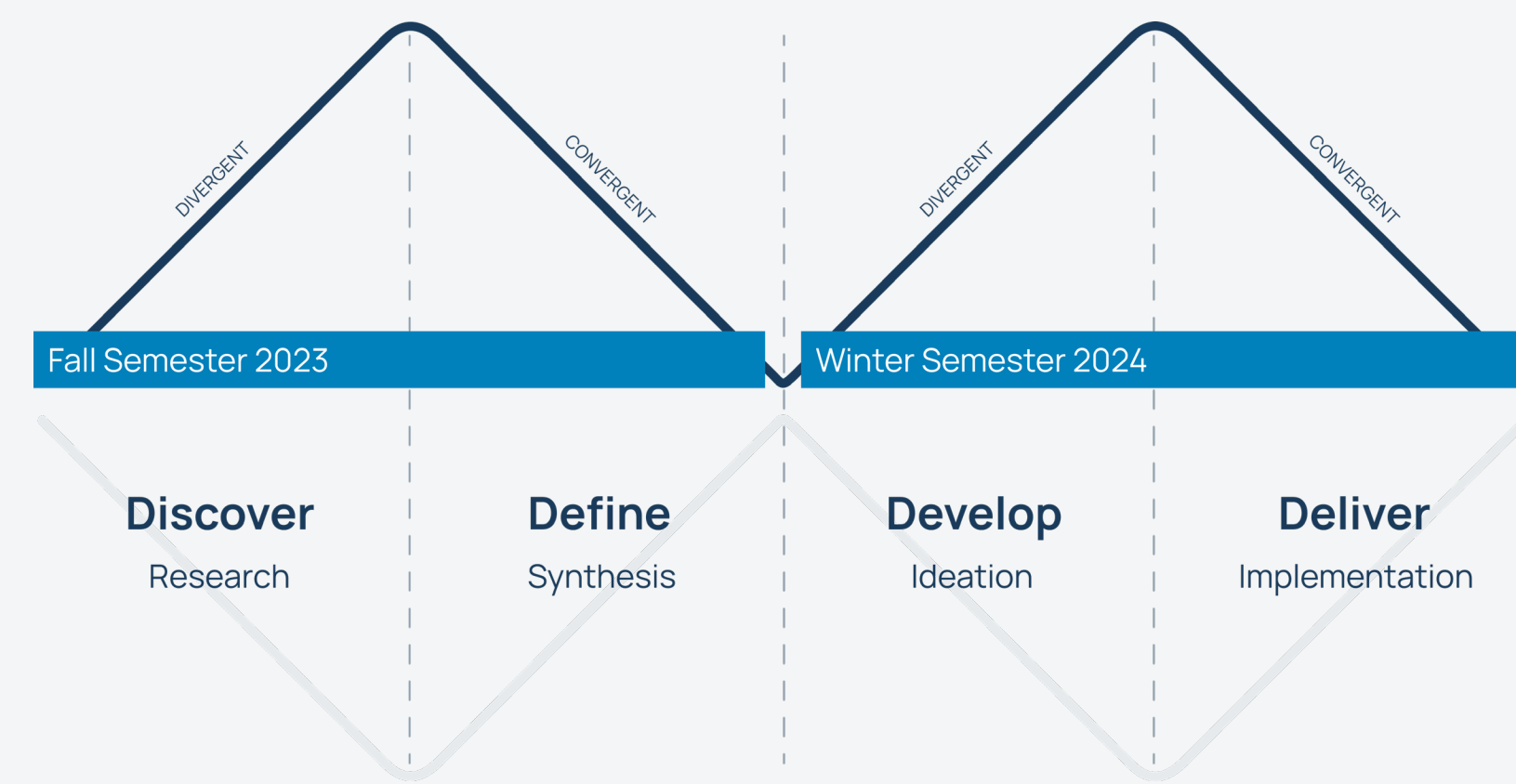
Primary users are **back-line public safety workers** and decision makers (e.g., supervisors, coordinators). Secondary users are **front-line public safety workers** who interact with citizens (e.g., security officers, social workers).

WHO'S THE CLIENT?

UNISON is developed by the **Data Science and Research** group at the City of Edmonton. Led by Kris Andreychuk, the UNISON team comprises only four members. Key constraints include time, budget, and person power.

PROJECT TIMELINE

This capstone project was completed over the past year with a community partner, UNISON, using the Double Diamond process.



USER INTERFACE REDESIGN

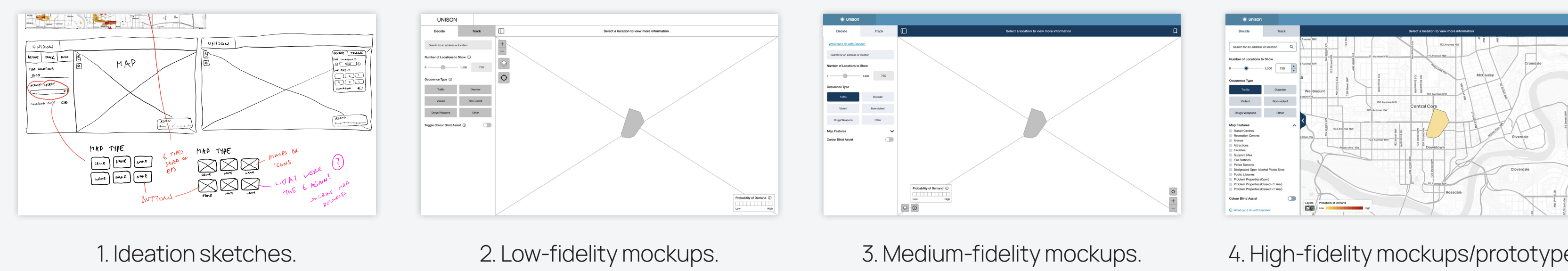
Goals

- Resolve usability issues of clarity, legibility, and discoverability.
- Generate new features that benefit both primary and secondary users (back-line and front-line public safety workers).

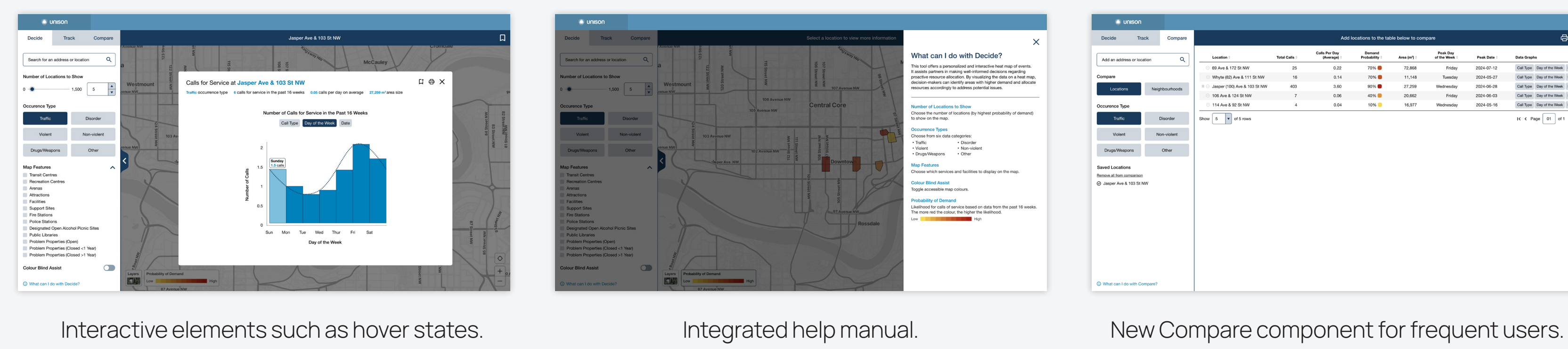
Constraints

- Interactions and features are limited to the capabilities of the front-end libraries and components.
- Account-related features are not possible.

Development



New Features

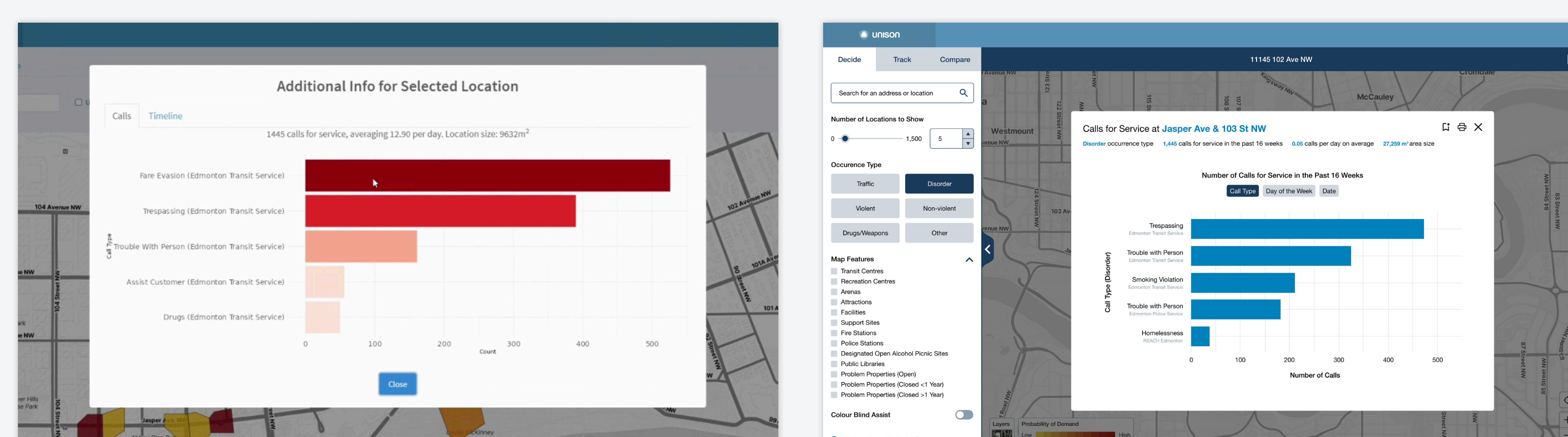
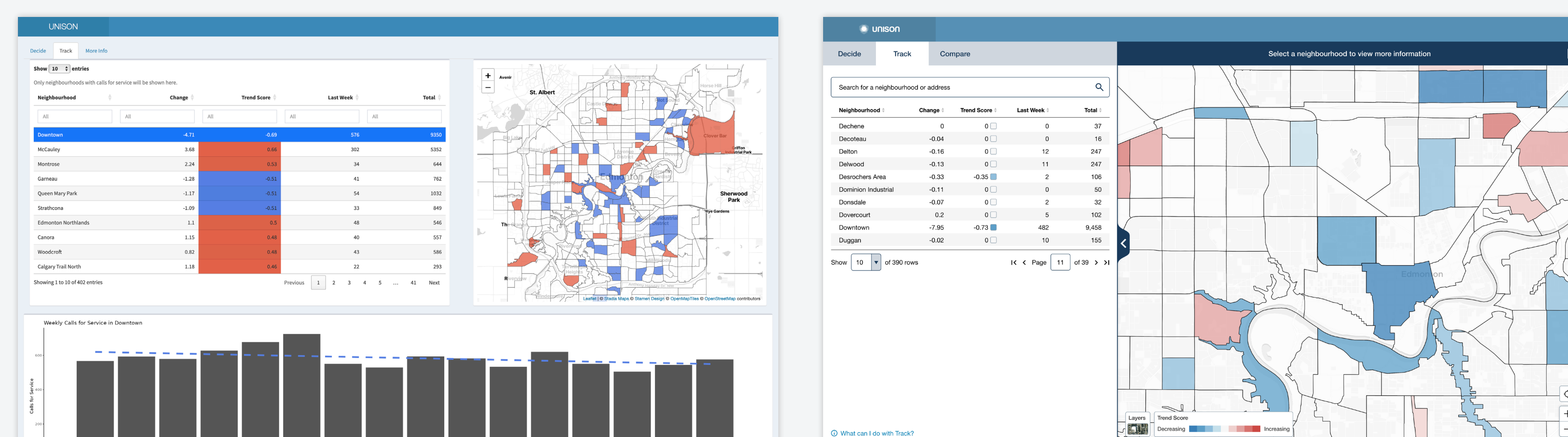
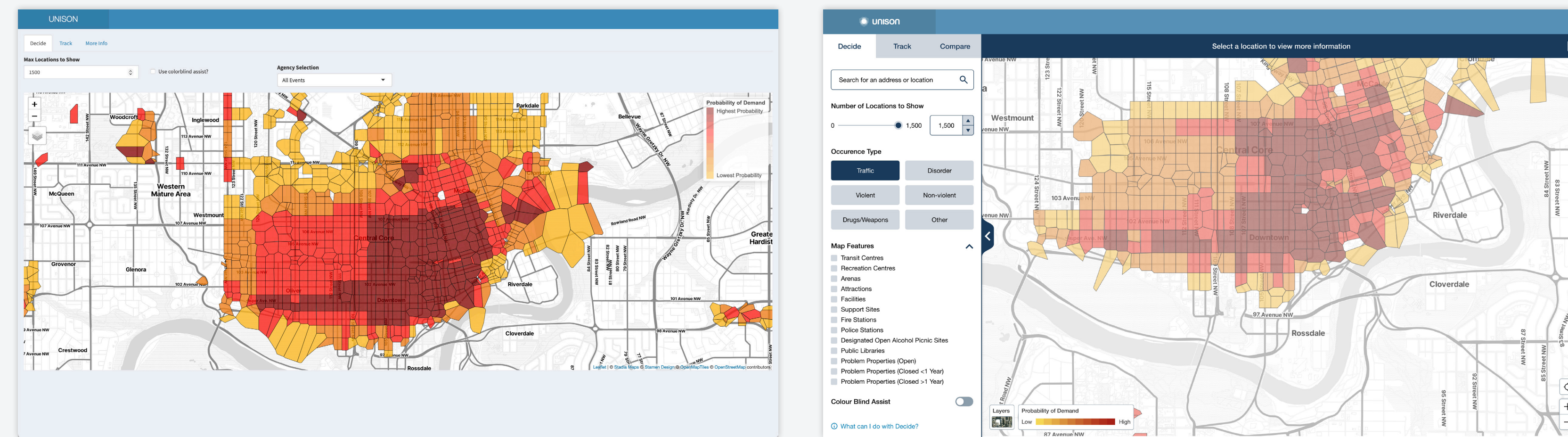


Before

Top to bottom: Decide component, graph showing the types and count of calls for service, and Track component.

After

Top to bottom: Decide component, graph showing the types and count of calls for service, and Track component.



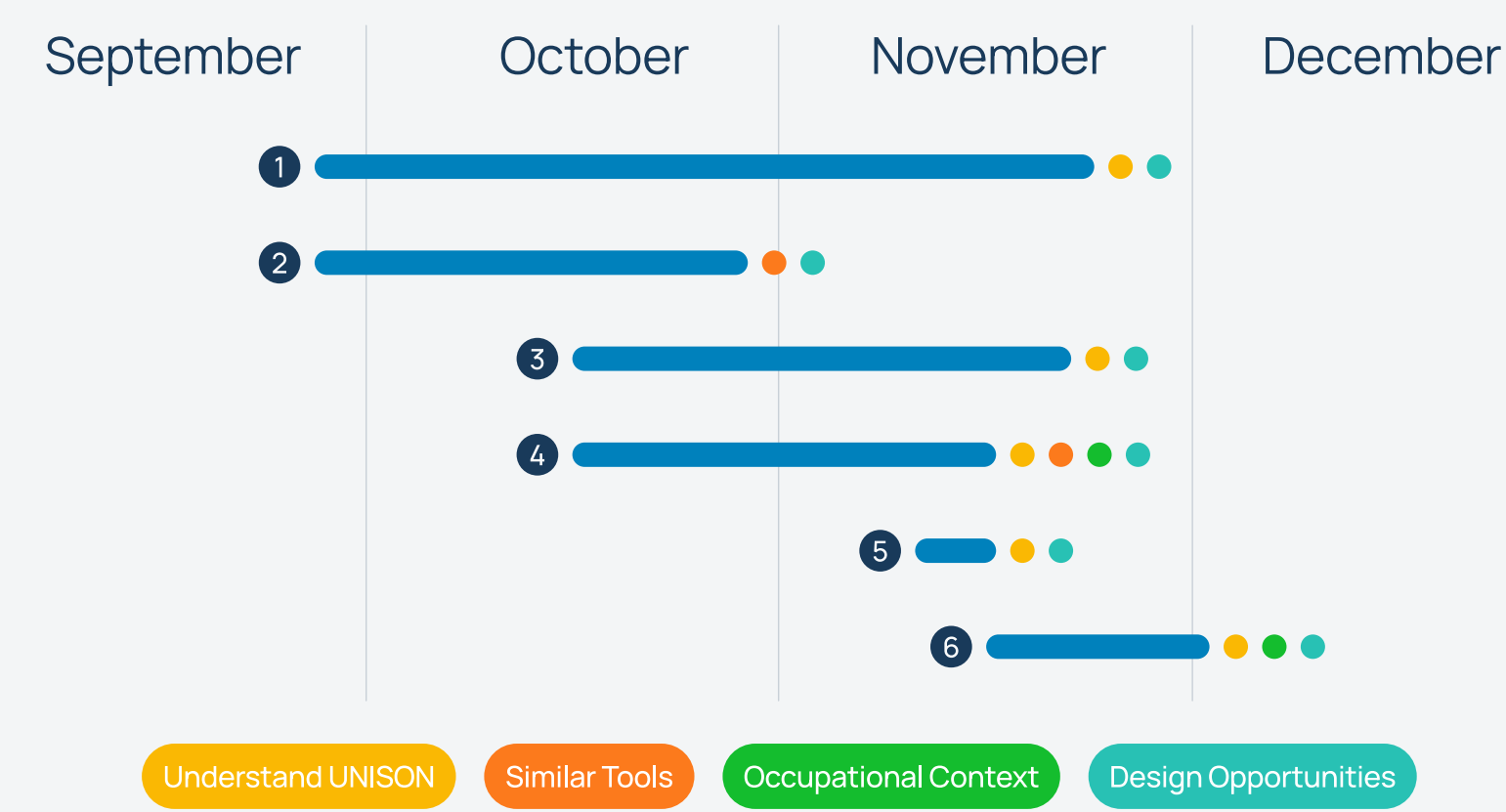
RESEARCH

How Might We...

- Make UNISON more user-friendly and attractive to users?
- Adapt UNISON to front-line public safety workers?

Goals & Methods

- Extended Literature Review:** learned about the technology and algorithms behind UNISON's big data analytics.
- Comparative Analysis:** identified and compared similar tools and competitors.
- Heuristics Analysis:** analyzed the user friendliness of the existing product using Jacob Nielsen's "10 Usability Heuristics for User Interface Design" (2024).
- Interviews:** conducted semi-structured interviews with two primary users: a security advisor from Corporate Security and a supervisor with the Edmonton Transit System (ETS).
- Survey:** conducted a survey with a mix of primary and secondary users from UNISON's client organizations.
- User testing:** conducted sessions with various participants at every stage of solution development.



Key Findings

UNISON's interface suffers from **poor usability**. There are 3 issues:

- Clarity:** some information is confusing, misleading, or missing.
- Legibility:** many elements are poorly designed, making them hard to read or interpret accurately.
- Discoverability:** users often don't know what actions they can take, and when they run into problems, there's no available help.

Finally, data regarding adapting UNISON to front-line public safety workers is controversial and incomplete. More research is required.

Chosen Solutions

- Redesign the user interface to address usability problems.
- Design a mobile app that alerts users when they enter hotspots of public safety incidents (proposed by client).

MOBILE APP

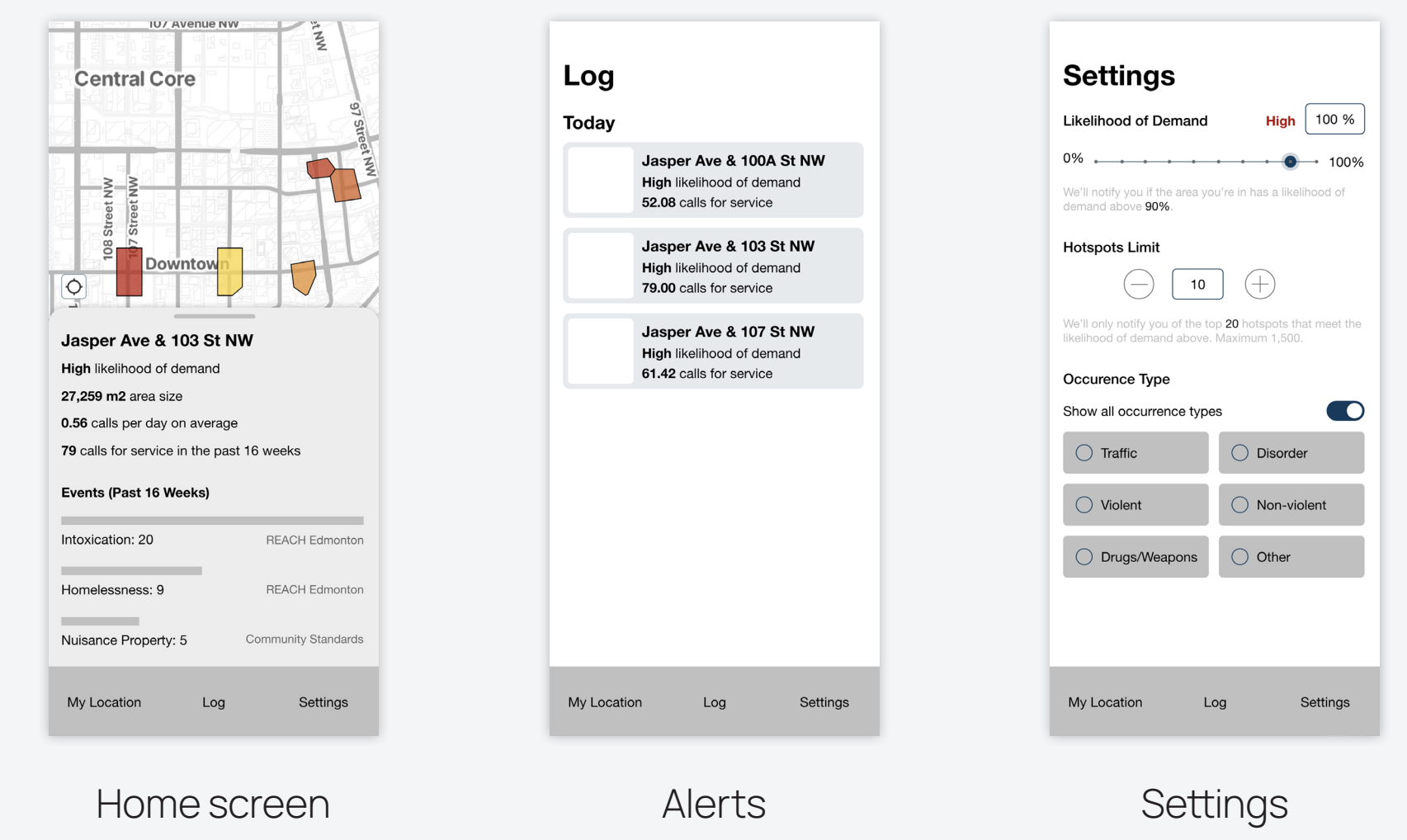
Goals

- Intended for front-line public safety workers only.
- Interactions must be as minimal and unobtrusive as possible.
- Be broadly usable by front-line users from all client organizations.
- Eventually replace any proprietary applications used by client organizations and their front-line employees.

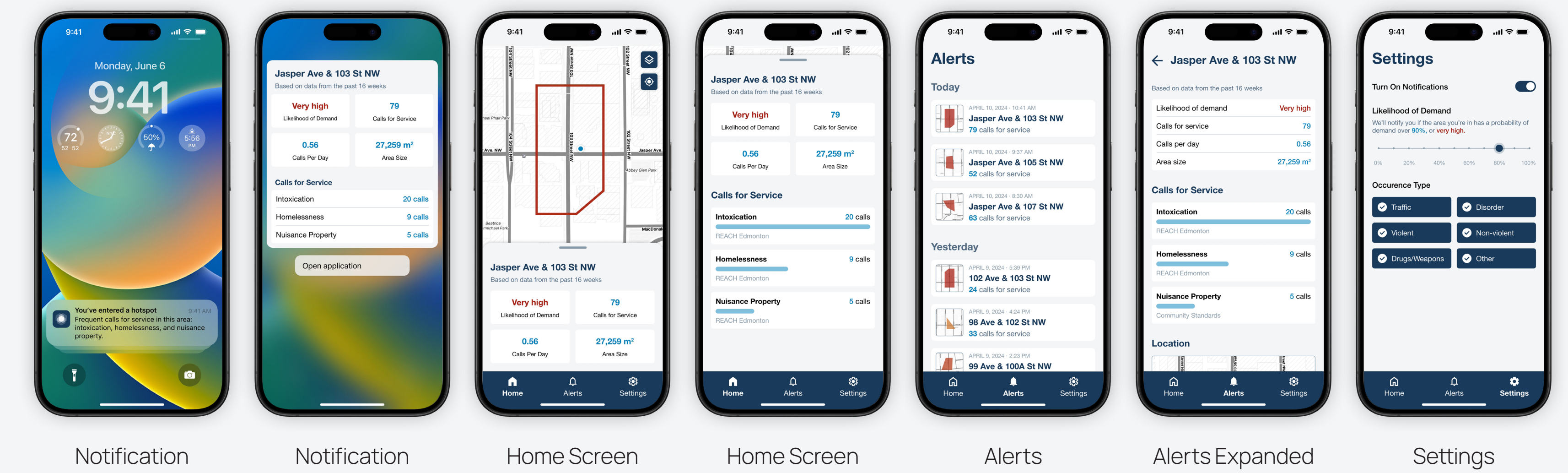
Constraints

- Must be simple and lightweight.
- Must be able to be coded with open-source technologies only.
- Limited time and budget to execute; the client is aiming for trials before the end of this year.

Low/Mid-fidelity Wireframes



Prototype Screen Flow



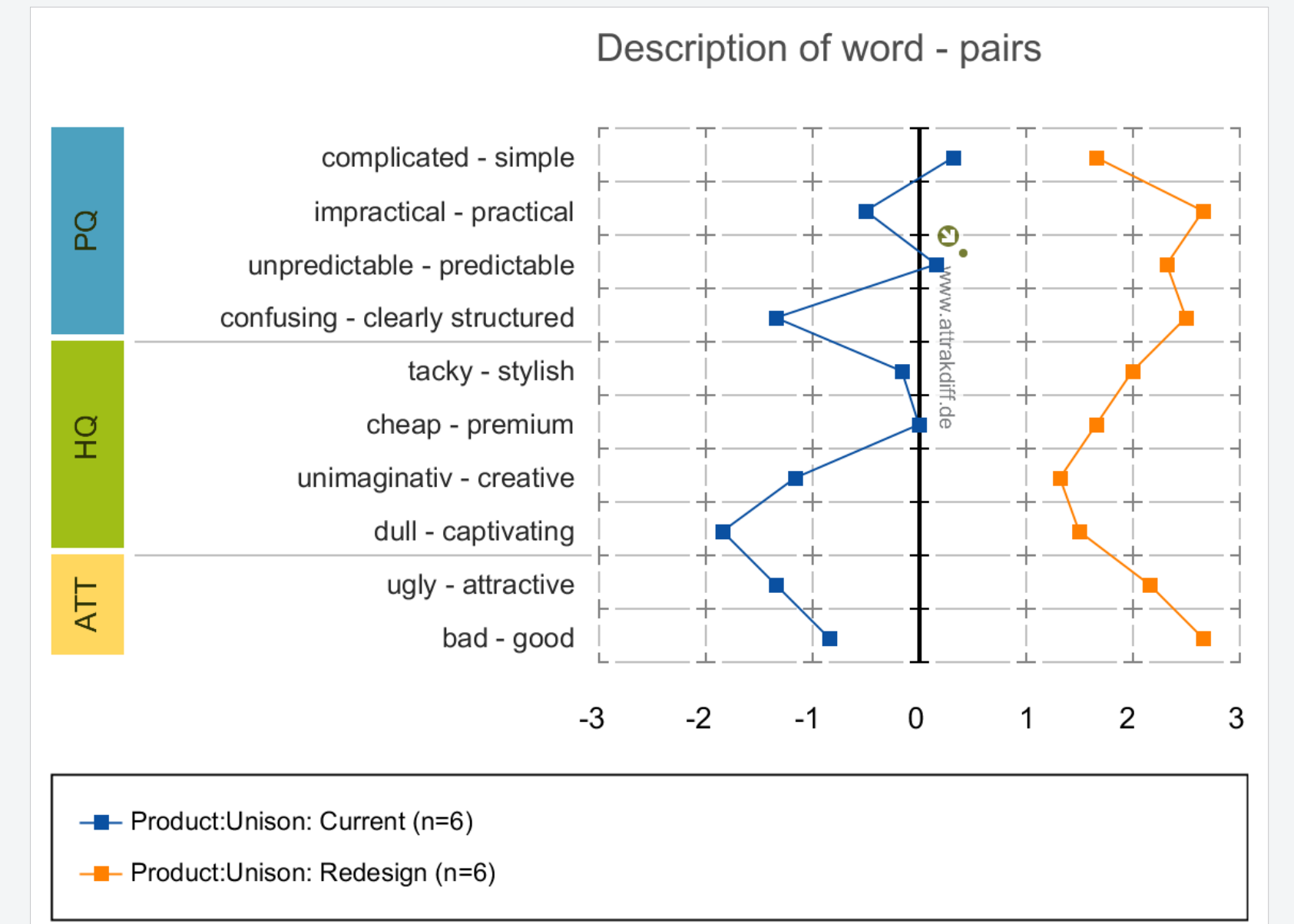
RESULTS

User Interface Redesign

- Six participants tested both the current and redesigned UNISON interface and then filled out two surveys rating the usability and visual design of both.
- Right:* the redesigned interface (orange line) scores significantly higher than the current interface (blue line) across all traits.
- This solution is successful and is currently being developed and rolled out by the client.

Mobile App

- This solution remains in an exploratory stage. More research and testing is required before any conclusions can be drawn.



REFERENCES

Nielsen, J. (2024, January 30). *10 Heuristics for User Interface Design*. Nielsen Norman Group. <https://www.nngroup.com/articles/ten-usability-heuristics>

ACKNOWLEDGMENTS

Capstone Supervisor: Dr. Isabelle Sperano
 UNISON Team: Kris Andreychuk, Aisha Masood, Sahand Somi

MORE INFORMATION

Scan the QR codes below to watch a video summary of this project, including research, development, and walkthroughs of each solution's screens and user interface.

