Assignment 3:

LOW-FIDELITY PROTOTYPING AND HEURISTIC EVALUATION

SENG 310

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Brainstorming Ideas:

1. Original Idea: Notification Alerts System (N.A.S)
   - Sends a construction notification of the user's preferred format(s).
   - users could receive text messages, email, or visit the website.
   - Could be website/mobile app

2. User-reported construction map.

Figure 1. Example sketch of user reported construction map

- users can self report construction along their route
- users can review other alerts made by others to verify authenticity
- Can comment on the actual impact to their commute
- Could upload pictures of the construction site
- Can have a point based system to reward accurate reporting

3. Interactive Map with Time Slider

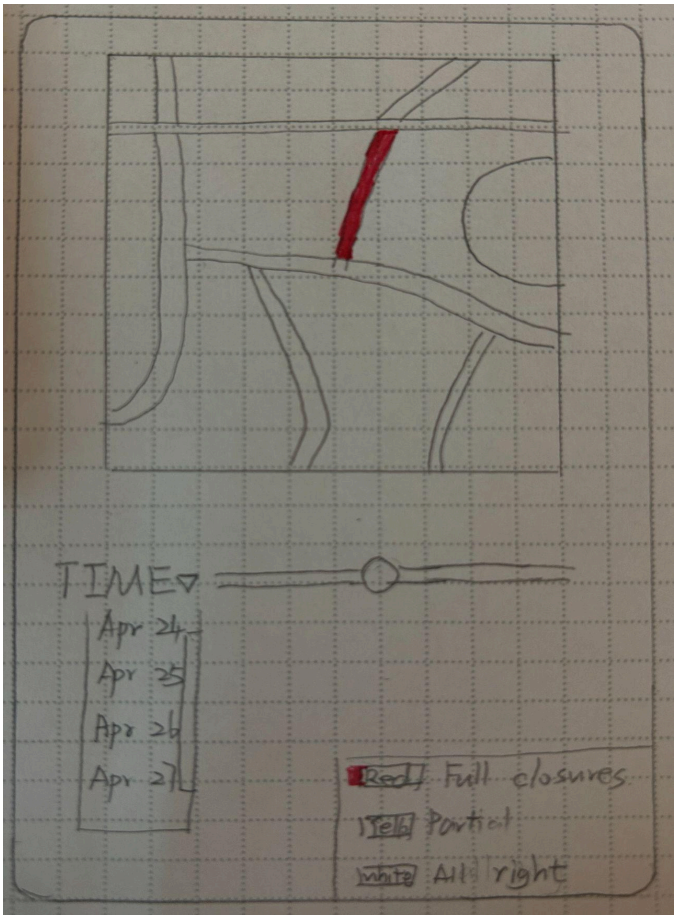

Figure 2.Example sketch of Time Slider

- An interactive map with a time slider that lets users view upcoming construction events across the city
- Different colors indicate severity: red for full closures, yellow for partial disruptions.

4. Real time alert system

- notifies users beforehand that they may be driving into a construction zone
- correctly navigates them through to a more optimal route
- software device installed into vehicle

5. Calendar View of Construction Events

- A monthly calendar-style interface (similar to Google Calendar) that shows which roads are under construction on each day.

6. Review Page with public access

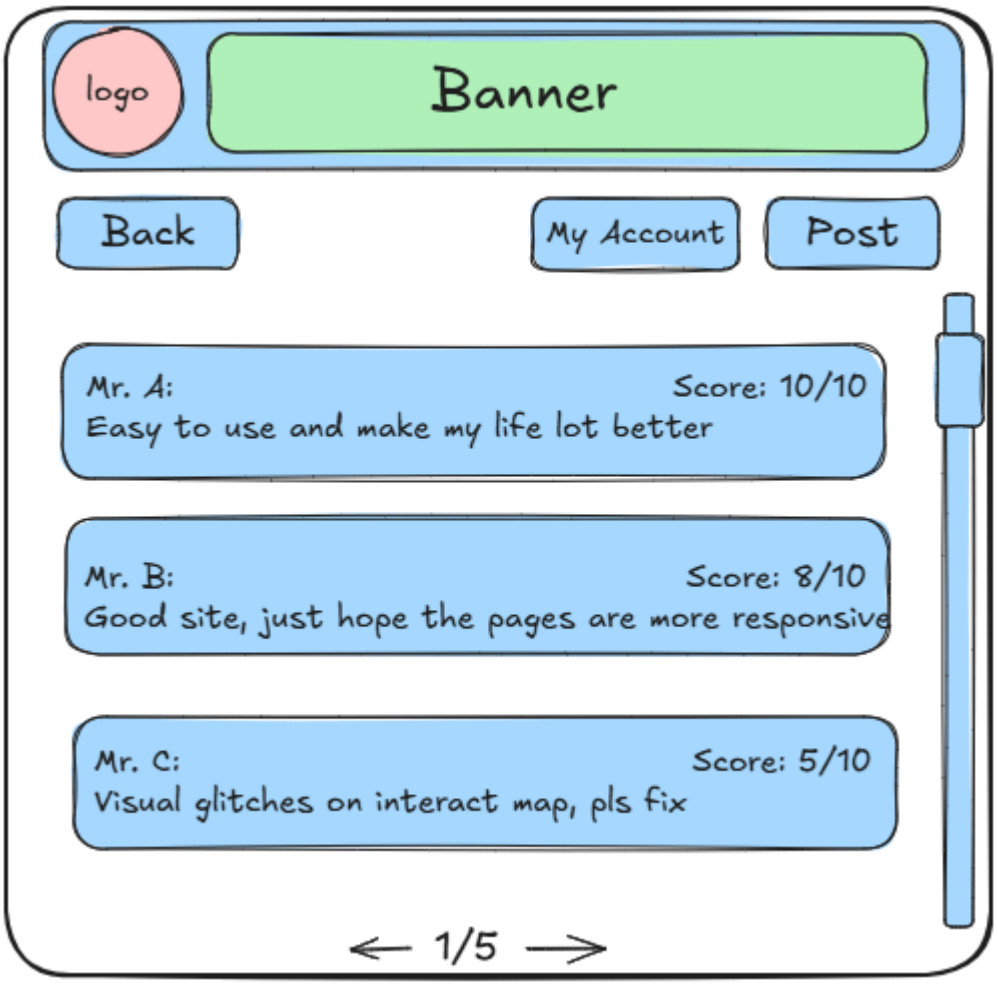

Figure 3. Sketch of review page with public access

- Subscribers are able to post reviews on the page about their experience while using the website and suggestions on future updates, with review scores and allowing other subscribers to leave comments or impressions.
- Non-subscribers are not allowed to post but can still access and view the page.

7. Road-Specific Details with Official Links

- Users can click on specific roads on the map to view detailed construction information, such as the reason for the closure, start and end dates, and disruption type.

8. System for Construction Crew to share Information

- Construction crew can share operating times to be expected
- approximated time of construction

Brainstorming Process:

Firstly, we thought of an alternative to our original idea of notification alert system for reference, instead of relying on data from official websites and notifications, we came up with the idea of a user reported system that is more community centric, as well as easier to construct. We then brainstormed several ideas of additional features in order to search for solutions that will improve our system to be more user-friendly as well as more accessible. We came up with several additions ranging from the simple ones to the more complex ones, such as interactive maps, a calendar for construction events, a review page for public feedback and visibility, links that provide detailed construction information on specific roads, as well as a system that allows construction crew to share information on their road projects.

Analysis of Ideas:

Idea Grouping by Functionality:

1. Core Notification & Planning System
    - Original Idea: Notification Alerts System (N.A.S)
      pros/cons:
        + Reliable and consistent source of information
        + Information sent automatically to email or messaging app
        - Larger demand from developer to upkeep information
    - Idea #3: Interactive Map with Time Slider
      pros/cons:
        + This allows users to visually understand the overall construction landscape in the Victoria area.
        - Colors may change frequently
    - Idea #5: Calendar View of Construction Events
      pros/cons:
        + This text-based view complements the map and is ideal for long-term trip planning.
        - Construction conditions change all the time, long-term planning may change frequently, and availability is questionable
    - Idea #7: Road-Specific Details with Official Links
      pros/cons:
        + Each entry includes a link to the official government source for verification and credibility.
        - The data format of government websites is not uniform and the update frequency is unstable

This group focuses on helping users stay informed and plan ahead. The Notification Alerts System (N.A.S) offers direct updates through email or SMS, while the interactive map and calendar view support different planning styles. Road-specific details with official links provide extra clarity when needed.

These ideas are practical and technically feasible using existing tools and data sources. The main challenge is keeping information current and accurate. Compared to apps like Google Maps or Waze, our system is more localized and focused on planned construction, offering a unique solution tailored to community needs.

2. User-Contributed Content & Community Engagement
    - Idea #1: Image Sharing System
      pros/cons:
        + Gives accurate insight into what road conditions are really like
        - Depending on who is uploading the photos, the images may be out of date or inaccurate
        - additional complexity based on who/what is managing this system
    - Idea #2: User-Reported Construction Map
      pros/cons:
        + Less work for the developers to maintain specific information about construction
        - Could lead to inaccurate reports from users
        - Less reports about smaller local roads with less traffic
    - Idea #6: Review Page with public access
      pros/cons:
        + Provide direct feedback to the developer as well as help people decide whether to try the website or not.
        - User reviews can be varied in terms of quality.

This group encourages users to share and validate construction information. Features like user-reported maps, image uploads, and public reviews support community involvement and make the system more dynamic.

These ideas are easy to implement but may face issues with inaccurate or outdated reports. They offer good coverage for local or lesser-known disruptions and reduce the system's reliance on official data. The review page, while not contributing directly to navigation, provides a feedback loop for iterative design, aligning with HCI practices that emphasize continuous user feedback.

3. Advanced / Real-time Data Integration Features
    - Idea #4: Real-Time Alert System (In-Vehicle)
      pros/cons:
        + Users do not have to prepare in advance before their commute
        + Users will be alerted in real time to find an alternative route
        - Can be distracting
        - May be confusing to learn

- Idea #8: System for Construction Crew to share Information pros/cons:
    + Will provide useful information from the construction crew themselves and not a middle man
    - Construction that is short may not be reported

This group explores ideas that extend beyond the browser or mobile app into real-time, context-aware systems — offering futuristic potential but limited immediate feasibility. The real-time in-vehicle alert system closely mirrors commercial solutions such as Garmin GPS with live traffic, or Apple CarPlay construction notices, but integrating these features from scratch may be too difficult for our team at this time.

These ideas demonstrate originality in thinking beyond the typical user interface, but fall short in near-term feasibility. While technically impressive, these features are better suited for a future release roadmap once the core system is validated.

Idea Selection:

Our process for idea selection involved using a combination of voting and the four categories method. This process started by each selecting ideas that we thought were the most rational and another long shot idea which was our favorite. We then gathered all these selected ideas and we each got a couple votes to choose which ideas we wanted to move forward with. This led us to a conclusion that we wanted to continue with our original idea which was the notification alerts system. This was based on the fact that this idea seemed to be the most rational and that it had good compatibility with the other features we came up with.

Storyboarding:

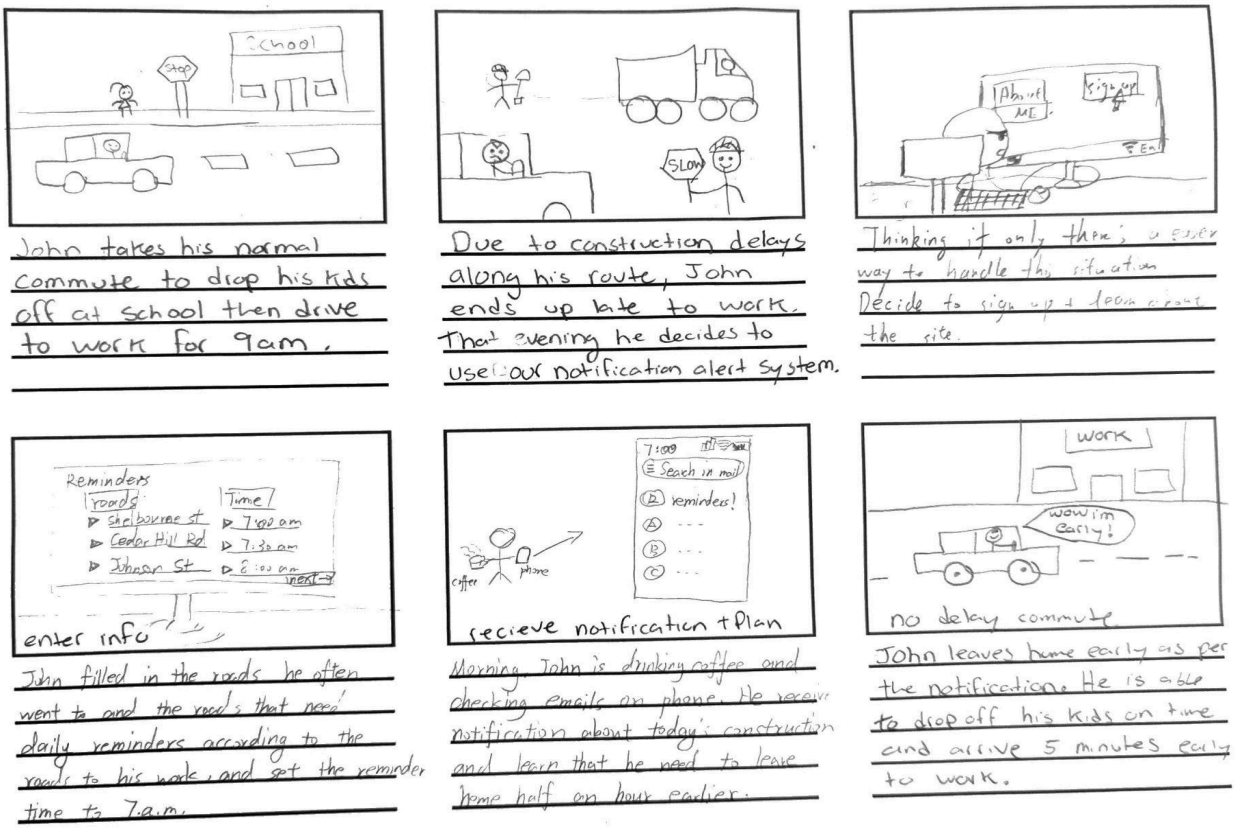

Figure 4. Storyboard for planning a route with the construction alert system

Storyboard depicts the typical user loop of being late due to construction and using our solution to remedy future delays. This involves going onto our webpage, signing up for our personalized construction notifications and planning future commutes based on it.

Video Prototype:

Note: This is included as an attachment to the assignment 3 submission dropbox on brightspace.

The provided video prototype portrays a low fidelity mockup of our construction notification alerts website. It shows the process of signing up for an account, setting up personalized notifications regarding one's commute, and receiving email alerts each day you commute.

Heuristic Evaluation:

Visibility and System Status

Severity rating: 1, Cosmetic problem only

In terms of visibility and system status, our prototype includes features that provide clear and timely feedback to users. The loading screen reassures users by indicating when the website is fetching data or changing pages, while the dropdown menu confirms the selected time slot, boosting confidence in their input. We also simulate receiving road construction notification emails on mobile devices, clearly presenting key information. As the prototype is low-fidelity, we recommend adding dynamic indicators like spinners or progress bars in the final version to enhance system status visibility.

Aesthetic and minimal design

Severity rating: 0, no usability problems

In regards to aesthetic and minimal design, the overall structure of our website focused on the functionalities that provide information on road construction without including unnecessary features, so that users would not be overwhelmed and can easily find the services they seek. Each button and link follows a simplistic design that contains only relevant texts with the purpose of communicating their functions to the users clearly. Highlights and additional information will only appear when the mouse is hovering over the activation areas such as text links or input fields.

user control and freedom

Severity rating: 2, minor usability problem

In terms of user control and freedom, the registration process allowed the user to go back or edit previously completed text fields. Since each page of the website has a navigation bar at the top, the user is able to go back to any of the other main webpages. In regards to the construction notification email, the bottom of the email had a clear link to unsubscribe from future reports. As for recommendations, a back button on the registration screen could be added to bring the user back to the login

screen. With the current low fidelity prototype the user would have to go back to the landing page and then click login/signup.

Consistency and standards

Severity rating: 0, no usability problems

When it comes to consistency and standards, our website design follows the same guidelines as other platforms, with the different pages of the website sharing the same language, consisting of mainly white color, as well as using similar structures for wording and ordering. The input syntax such as buttons and input fields have similar design as other websites, such as lines or rectangle boxes for username and password input, rounded rectangle boxes for buttons and navigation bar below website's logo and banner. This shared consistency and standards should help familiarize users with the website's features.

Reflection:

Throughout this stage of the project, we have been working as a team to come up with creative ideas and successfully construct our low-fidelity prototype, but we also think there're things that can be improved so that we can perform better next time. For example, during the brainstorm session, we were able to come up with a completely different approach from our original main system, as well as some additional features, but among those new features, lots of them have already been brought up and discussed in previous stages of the development, and are mostly rational and grounded additions that we planned to include in our project anyway. In conclusion, we were not able to utilize the brainstorm session to its full extent, so next time we should be more active and come up with more ideas, even the wild ones.

On the other hand, we managed to produce both the storyboard and video prototype during lab sections, where we were able to clearly assign roles to each team member and put our works together. For the video prototype, we were able to quickly assemble our designs and film a satisfied product on a first try. However, it took us a lot of time to complete both sections and as a result, we were not able to complete the heuristic evaluation section during the lab. Next time we aim to work on the project with more efficiency while maintaining the quality and minimize mistakes.