These are the design documents that must be posted on your team website. Note that many of these documents should be a collaborative effort between the CS and HU students on your team, while others are the primary responsibility of either the CS or HU students. For the app itself, CS and HU students should collaborate on interface design. HU students will also be responsible for suggesting design and creating content for the reference/help material which will be incorporated into the app (such as an in-app tutorial). This content should be taken into account when designing the app interface.

The design documents must include:

- Modified app summary after the second meeting with your scientist/clients. This is the design document you produced in Project Assignment 1 Part C. (CS & HU students)
- Brief overview of the system, including the device and any other device used by the system (CS & HU students)
- Descriptions of important stakeholders, including users (CS & HU students)
- 4 user personas (See lecture notes) (CS & HU students)
- Descriptions of the environment that users will be in while using the device and performing tasks (CS & HU students)
- ~~Scanned or transcribed notes from the interviews with the scientist and among yourselves (CS & HU students)~~
- 2 scenarios describing the nominal use of the application, drawing on your personas (See lecture notes and below) (CS & HU students)
- Simplified hierarchical task interaction design (See lecture notes and below) (CS students)
- A Preliminary Instructional and other Content Design Plan for the app. (HU students)
- A description of your database schema (CS students)

App Summary / System Overview

In the future, instead of people choosing a route to their destination, this task will be handed over to a self-driving vehicle. Our app will teach users how the vehicle will make this choice. It will display graphically how route-optimization algorithms function, allowing a class of students to dynamically simulate an actual traffic optimization problem.

The system will have two main views; a student and professor view. The students will sign in and be shown a map and each will be given a random starting point and random endpoint that they have to route to when it's their turn. The duration of a student's turn is just how long it takes them to click through the paths to get to the end point. After each turn the map updates with new weightings on the edges based on the previous students turn. After each student has taken a turn (which is called an iteration) they will have a chance to change their route based on the updated map. The game will end after every student decides not to change their route or until they hit the iteration limit. The professor can start a game session for students to log into. The professor can view all the students logged into the current session and can generate a random order for the students to take their turns in. The professor can also see the map that the students are interacting with and has a button to reset the game. The professor can save rounds of the game and load previous rounds as well and can step through each turn of each game.

App Use Environment

Our app will be primarily used in a teaching environment inside a classroom of some kind.

This will most likely take place on MTU's campus, although the app may be expanded further in the future. Students will be using the app one-by-one in sequential order until several iterations of the "game" are complete. The app will output a descriptive graphical interface somewhere in the room (likely using a projector) at all times during execution in order to maximise learning potential for the students.

Task Interaction Hierarchy

Simplified hierarchical task interaction design (See lecture notes and below) (CS students)

I suggest making a *simplified* HTA which dispenses with links and uses intended tabs to represent the hierarchy. The intent of the simplified HTA is to represent the views of the application by the different indentation levels. A single indentation level may represent more than one view. Try to represent all the views. In other words, the simplified HTA still represents all the uses of the applications, but does not attempt to diagram the actions. You may need to use several indentation tables for application goals that have little in common.

I suggest using a top-down approach to develop the simplified HTA. First list all the major goals or tasks of the application; this will represent the views. Then indent and list the actions to achieve the corresponding goal or task; this will represent UI elements in the view. Try to name the tasks and sub-tasks with words that might be used in the application view.

- Login View
    - User email login
        - Text box for email/password entry
    - Instructions
        - How to use the application
- User Routing View
    - Map/Network Display
        - Graphical display taking up most of the screen
        - Current congestion/load/weight of network
    - Session info taskbar
        - Display for assigned origin-destination pair
        - Display for assigned turn number
- Control Setup View
    - Map/Network Input
        - Size of map/network
        - Interactable nodes/edges to select route
        - Current congestion/load/weight of network
    - Iteration limit
        - Cap iterations or play until nash equilibrium is reached
    - Student ordering scheme input
        - Random order after each iteration

- - - ■ Same order after each iteration
    - ○ Student invite link
      - ■ Button to invite students to game session (Class mailing list?)
    - ○ Session name input
- ● Control View
  - ○ Map/Network Display
    - ■ Graphical display taking up most of the screen
    - ■ Current congestion/load/weight of network
  - ○ Student turn counter
  - ○ Iteration counter
  - ○ Session controls
    - ■ End session button
    - ■ Start next iteration
- ● Analysis View
  - ○ Download button
    - ■ Saves CSV or other game information
  - ○ Replay session
  - ○ Session statistics
    - ■ Select details from CSV/output displayed on screen

Reference / Help Material

HU students will also be responsible for suggesting design and creating content for the reference/help material which will be incorporated into the app (such as an in-app tutorial). This content should be taken into account when designing the app interface.

A Preliminary Instructional and other Content Design Plan for the app. (HU students)

[How-to-use instructions and any other reference material here.]