

Written Assignment

Low-fi Prototyping & Pilot-Usability Testing

Anna C, Radha J, Aditi P, Matthew S

Human 2.0 Studio, CS 147, Fall 2017

INTRODUCTION

VALUE PROPOSITION

Advisr equips you with the best four-year plan to accomplish your goals.

PROBLEM & SOLUTION

Students planning their course schedules are often confused which classes fulfill their requirements, satisfy their long-term learning goals, and fit in their schedules. Advisr creates personalized, balanced quarterly schedules and helps users track their progress towards any number of given degree(s).

UPDATED TASKS

During this week, we realized that one of our previous tasks, “view other students’ plans” was not as imperative to our prototype as we initially imagined. For this reason, we added a new task: ‘View and manage requirements.’ See **appendix 1** for details.

SKETCHES

CONCEPT SKETCHES

Mobile

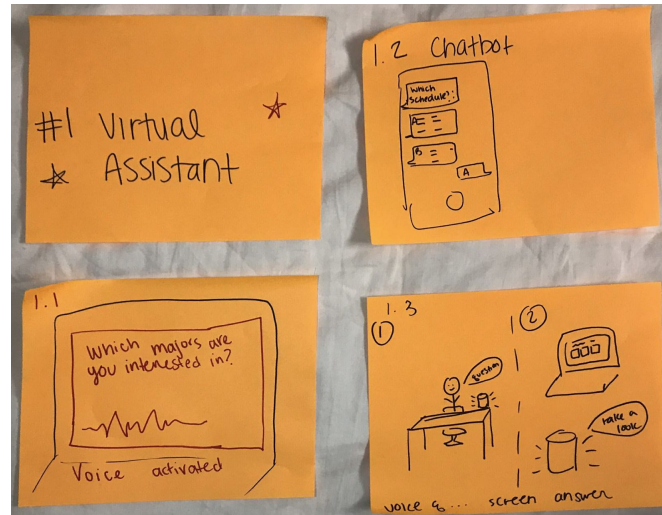


Figure 1: Concept 1 Virtual 'advisor': avatar interface answers logistical questions and creates plans with you.

Web

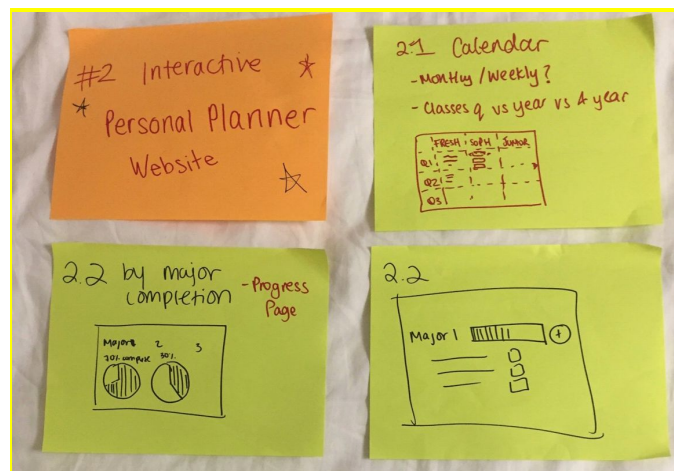


Figure 2: Concept 2 Interactive Academic Planner Website.

Web

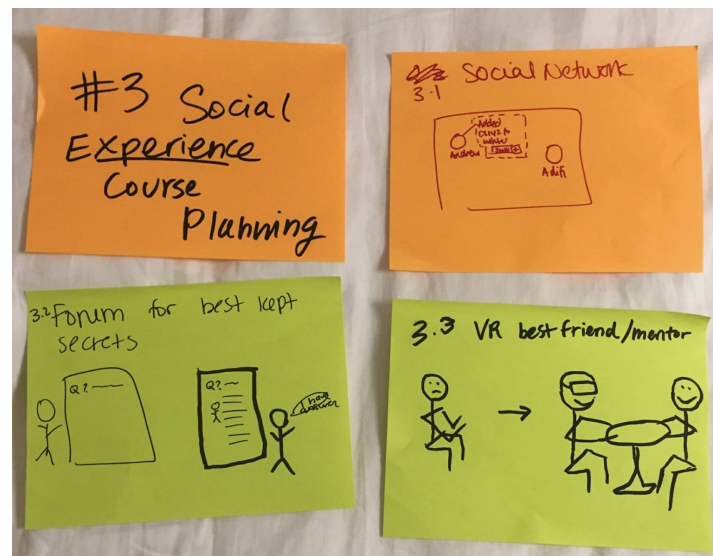


Figure 3: Concept 3: Social Network around Course Planning

Physical

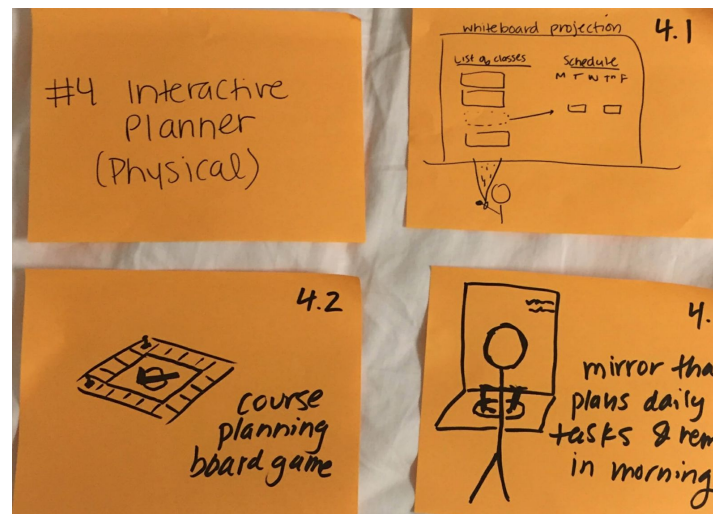


Figure 4: Concept 4: Haptic Interface for Class Selection

TOP TWO UI SKETCHES

Interface Design 1

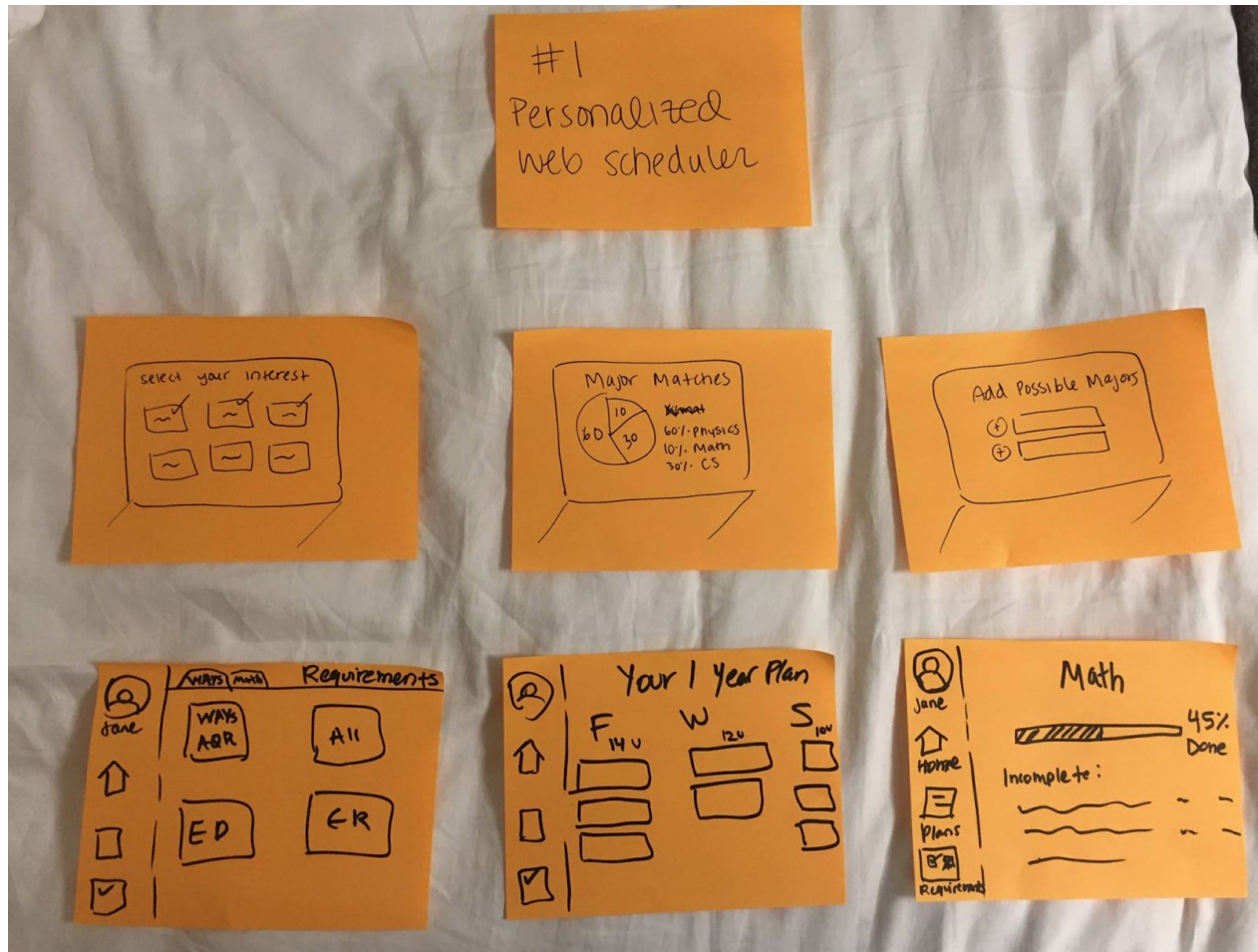


Figure 5: Interface Design 1 Personalized web scheduler

Our first interface asks users to input their interests, presents possible majors, and then generates possible 1-year plans that fit those requirements. Users can easily track their progress, see their short-term plan and personalize their classes.

Interface Design 2

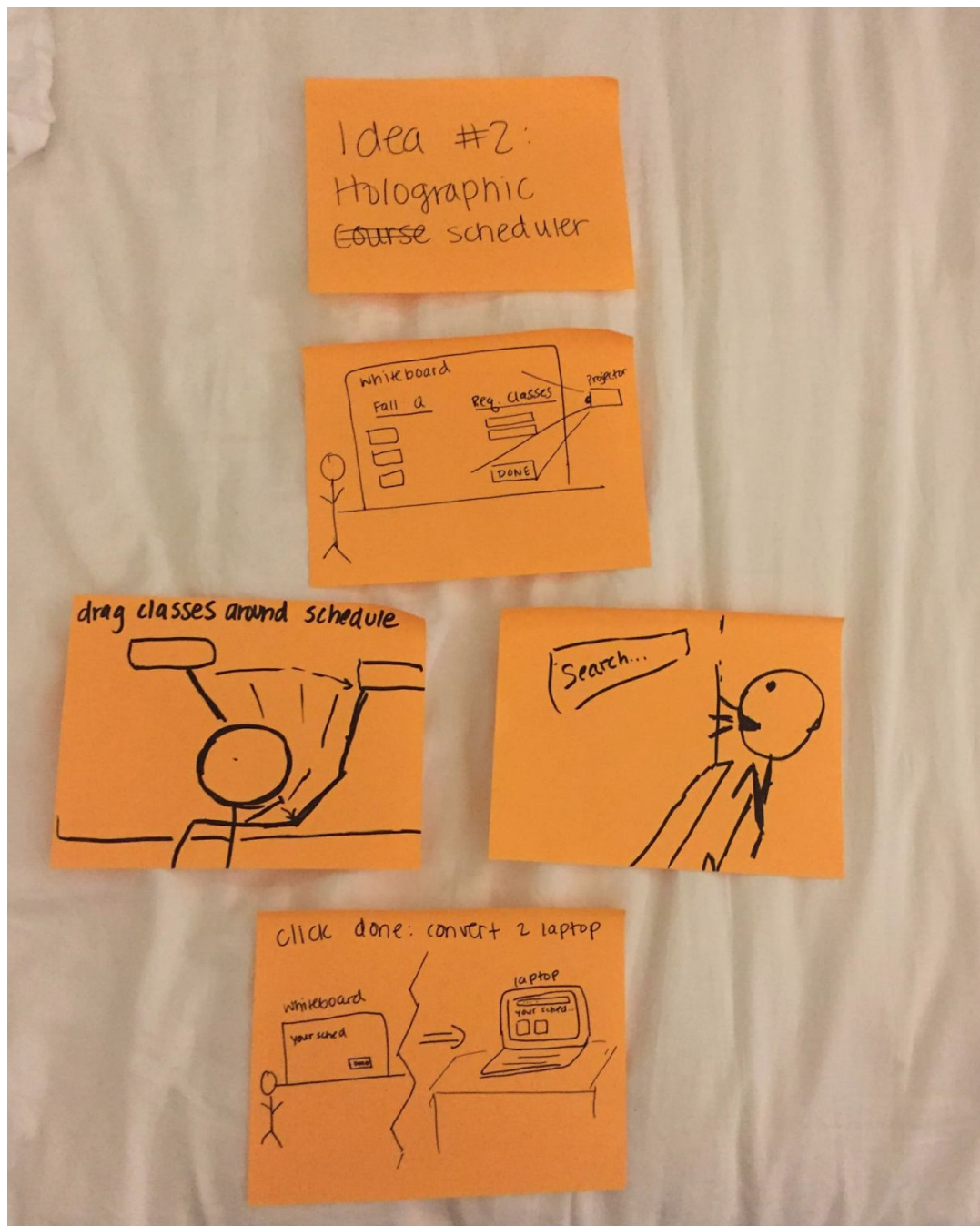


Figure 6: Interface Design 2 Holographic course scheduler

Our second interface is a holographic whiteboard where the user can drag and drop course plans "in person", talk with the board to search and customize their plan, and then sync the resulting plan to their laptops.

SELECTED INTERFACE DESIGN

REASONING FOR SELECTION

When choosing our top two designs, we were faced with a tradeoff. Design 1 was an intuitive improvement of current planning tools based off our needfinding results. However, it was not particularly cutting edge. Design 2 was inspired by Professor Landay's comment to 'push the envelop.' We wanted to create something novel built upon the idea that people find comfort in manipulating plans physically. However, our ultimate goal was to create an easy process, and we felt that familiarity and fast adoption would be the two prioritized metrics. For this reason, we selected Design 1. See [Appendix 1](#) for our pros and cons list.

DESCRIPTION OF ARTIFACT: WEB APP

Task	Description/ Rationale
1. Explore Interests (Simple)	In the onboarding process, students input data about themselves: interests, possible majors/minors, etc, used later to curate personalized recommendations.
2. Manage Requirements (Moderate)	advisr provides an easy way to view GER/major requirements. Students are able to click on an unfulfilled requirements to browse and select top choices.
3. Personalize Plan (Complex)	Students can view multiple plans, move courses around using a simple drag/ drop UI, and view plans from different timelines (4 years, 1 year, quarterly). Students can select specific courses that advisr suggests based on preferences.

ONBOARDING / TASK #1

① Log-in

② Pick Initial State

③ Track A: Know Major

④ Choosing bit majors

⑤ No clue which major

⑥ No clue which major

⑦ No clue which major

⑧ No clue which major

⑨ No clue which major

⑩ No clue which major

⑪ No clue which major

⑫ No clue which major

⑬ No clue which major

⑭ No clue which major

⑮ No clue which major

⑯ No clue which major

⑰ No clue which major

⑱ No clue which major

⑲ No clue which major

⑳ No clue which major

㉑ No clue which major

㉒ No clue which major

㉓ No clue which major

㉔ No clue which major

㉕ No clue which major

㉖ No clue which major

㉗ No clue which major

㉘ No clue which major

㉙ No clue which major

㉚ No clue which major

㉛ No clue which major

㉜ No clue which major

㉝ No clue which major

㉞ No clue which major

㉟ No clue which major

㊱ No clue which major

㊲ No clue which major

㊳ No clue which major

㊴ No clue which major

㊵ No clue which major

㊶ No clue which major

㊷ No clue which major

㊸ No clue which major

㊹ No clue which major

㊺ No clue which major

㊻ No clue which major

㊼ No clue which major

㊽ No clue which major

㊾ No clue which major

㊿ No clue which major

Task #1: Explore Interests

What are you interested in?

50% CS

35% PD

20% Art

ENTER

Final onboarding step.

DASHBOARD VIEW

Task #2: Track multiple major requirements

3 Identify Requirement Preferences

GER'S Econ CS

PWR 1? **Math?** **Science?**

THINK? **Econ 1** **TiS?**

WAYS-APP? **Econ Upper?**

Generate 1-year

1-year Plan
Drag & Drop to rearrange.
Toggle classes.

F **W** **S**

M U **17 U** **12 U**

3 hrs/week HW 45 hrs/week HW 20 hrs/week HW

Diversity: 25% Diversity: 88% Diversity: 40%

PWR 1 options

your suggested	Work/hrs	Notes	Interest Lvl
			1 2
1. _____	14 hrs	Lots Reading	0 0 0
2. _____	4 hrs	Brilliant prof	0 0 0
3. _____	6 hrs	WAYS-All	0 0 0
4. _____	10 hrs	Chill Prof	0 0 0
Other	_____	_____	0 0 0
_____	_____	_____	0 0 0
_____	_____	_____	0 0 0

view 1-year plan, adjust quarterly balance
- that was 4 part X
- drag/drop diff. combos
- start on combo (4 hrs work, diversity, completion)

Figure 8: Task 2 View unfilled requirements, select classes you like for each.

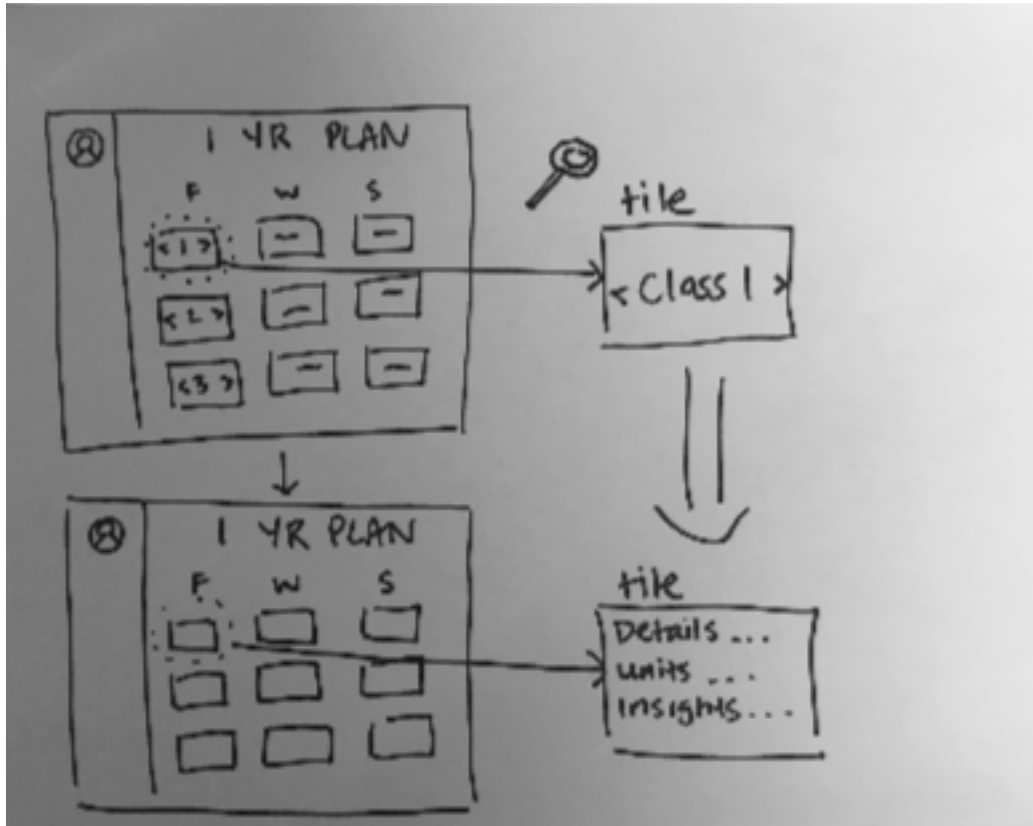


Figure 9: Task 3 Personalize plan: click tile for detail, swipe to change.

PROTOTYPE

DESCRIPTION

The overarching goal of our physical prototype was to test 1) flow and 2) level of intuition necessary to complete steps within each task. The following section displays each screen of our prototype with the intended user action. The entire prototype map is at the end.

PROTOTYPE SCREENS

Screen #1



Figure 10.1: Onboarding Start Screen

Desired Action:

User selects which statement best describes them to begin onboarding.

Screen #2

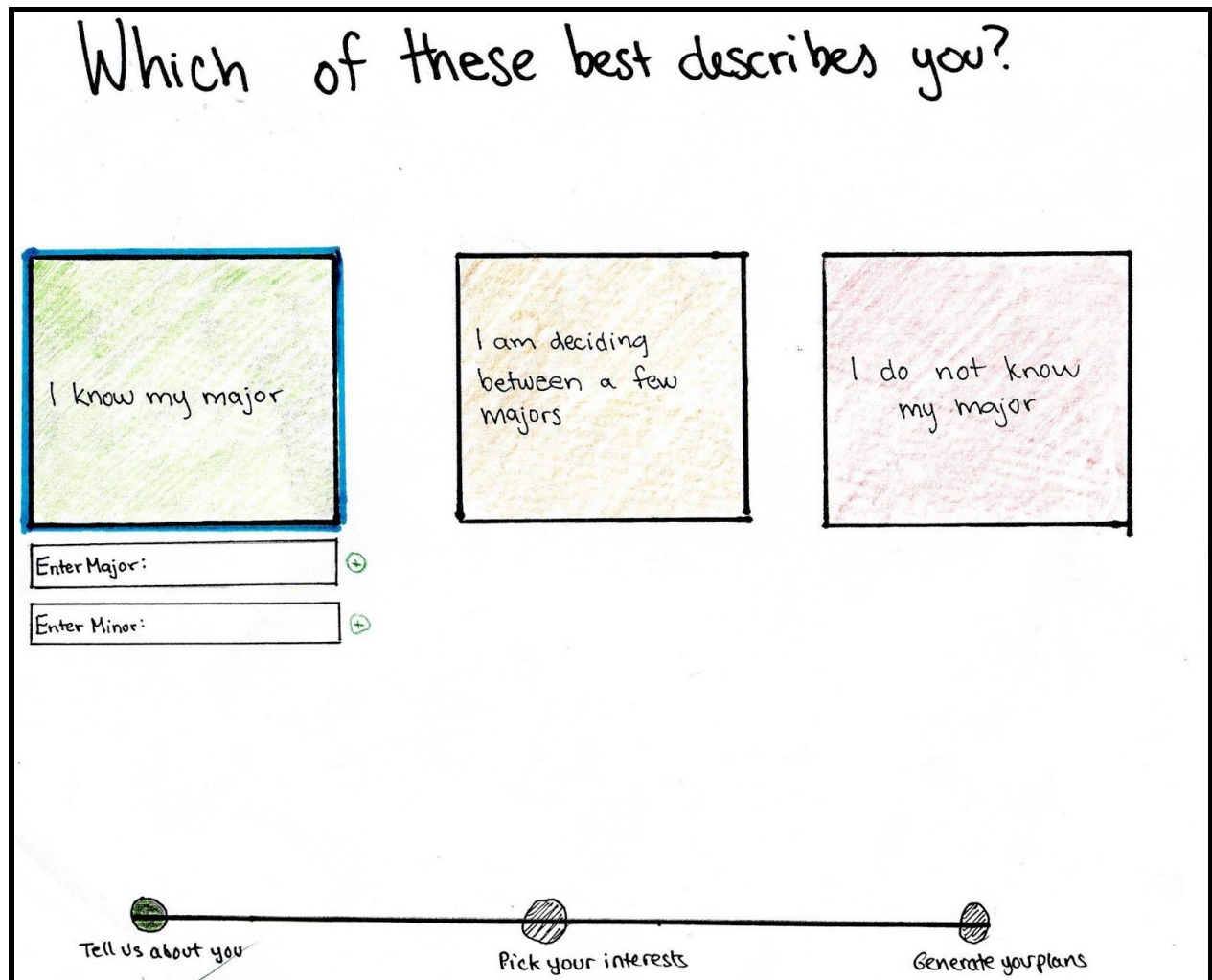


Figure 10.2: Onboarding Path A: Known Major

Desired Action:

Inputs their decided major(s) and minor(s).

Screen #3

Which of these best describes you?

I know my major

I am deciding between a few majors

I do not know my major

Potential Major 1:

Potential Major 2:

Potential Minor 1:

Tell us about you Pick your interests Generate your plans

Figure 10.3: Onboarding Path B: Considering Multiple Majors

Desired Action:

Inputs the major(s) and minor(s) that they are deciding between.

Screen #4

Which of these interests you?

<input type="checkbox"/> Building products with my hands	<input type="checkbox"/> creative writing	<input type="checkbox"/> Understanding my society	<input type="checkbox"/> Beautiful logic proofs
<input type="checkbox"/> coding projects	<input type="checkbox"/> exploring political events	<input type="checkbox"/> questioning social constructs	<input type="checkbox"/> Science experiments

NEXT

Tell us about you Pick your interests Generate your plans

Figure 10.4: Onboarding Path C: Totally Unknown Major

Desired Action:

(If user selects "I do not know my major") --> Selects each card that they are interested in. These will be used to help suggest classes and majors.

Screen #5

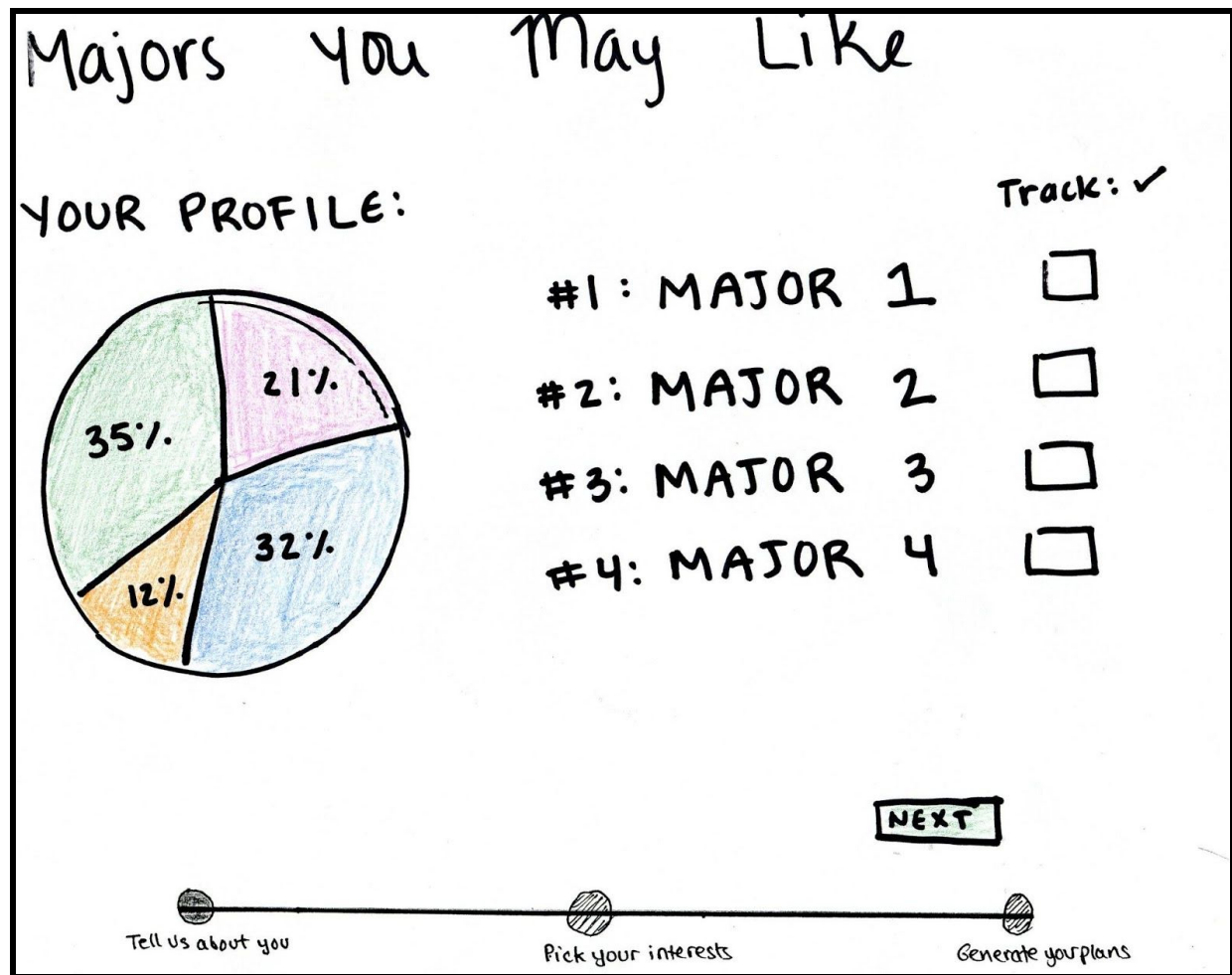


Figure 10.5: Potential Major Matches (Path C)

Desired Action: User receives potential major matches based on their interests. Choose which majors they want to track on their dashboard.

Screen #6

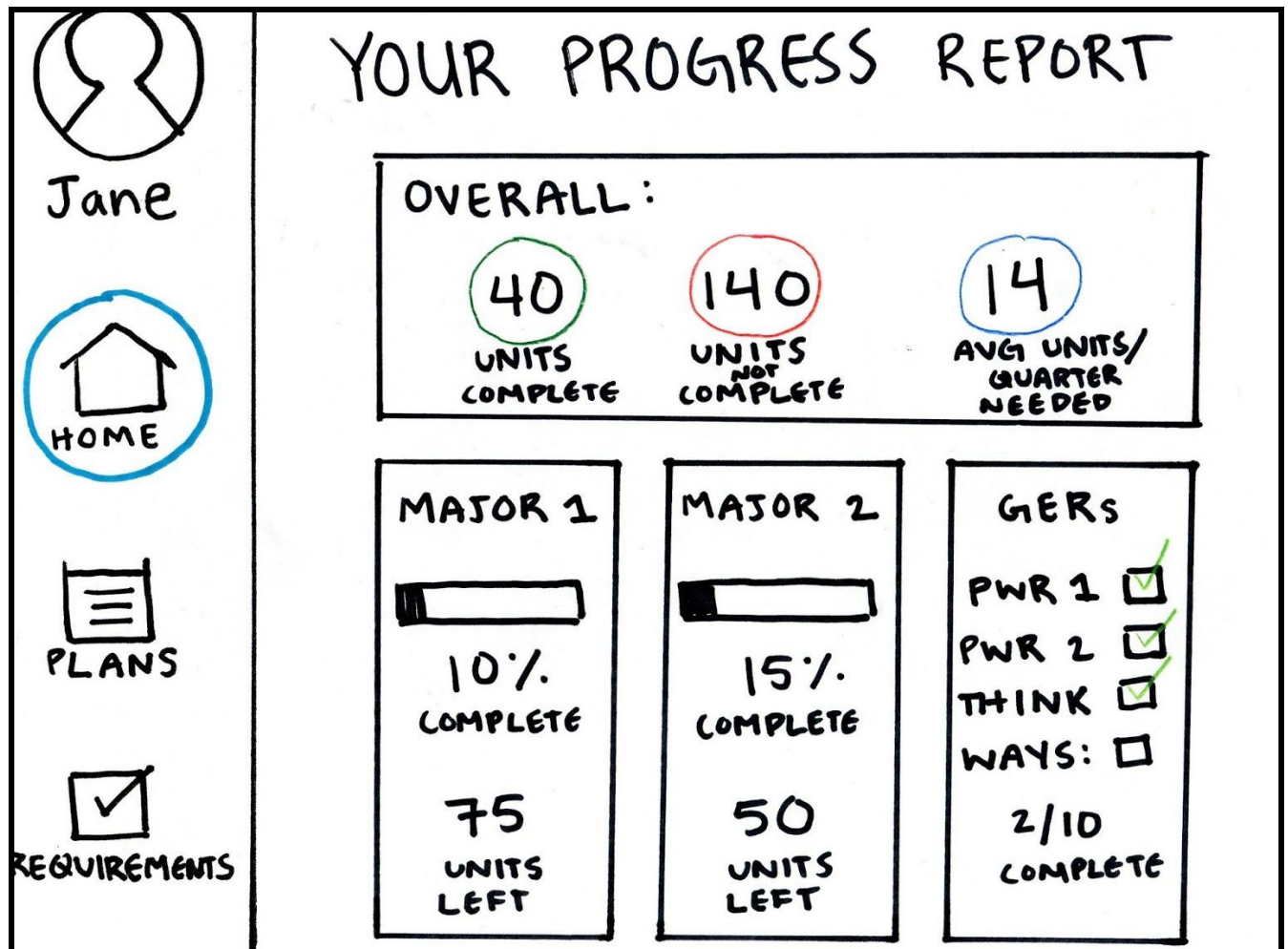


Figure 10.6: Dashboard - Overall Progress View

Desired Action:

After onboarding, user lands here and views progress towards their potential/declared majors. Then user navigates to one of the menu tabs.

Screen #7

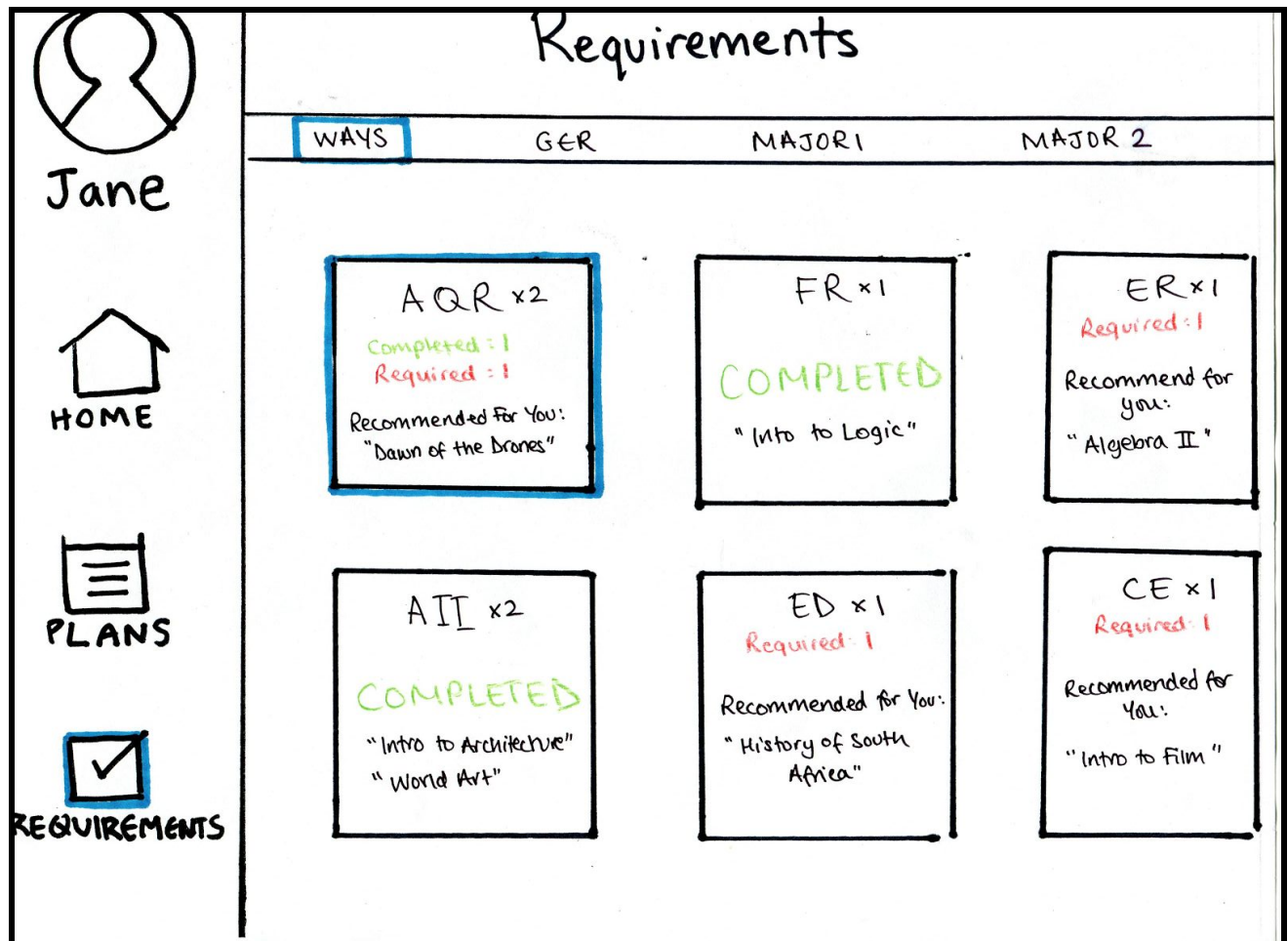


Figure 10.7: Requirements - Overall Requirements View

Desired Action:

Student sees which requirements are unfulfilled. User clicks on a requirement to customize which classes to take.

Screen #8

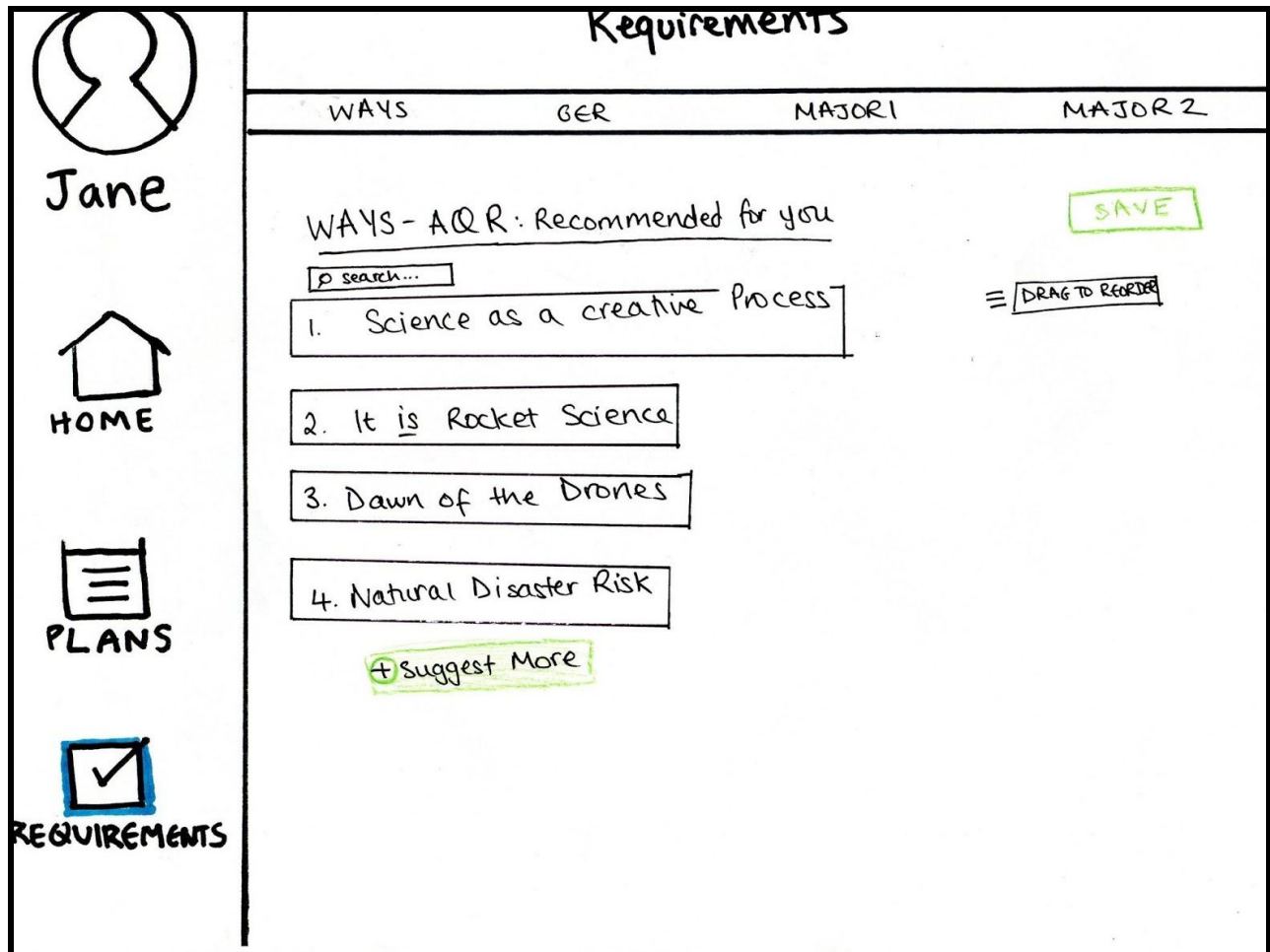


Figure 10.8: Requirements Detail View

Desired Action:

After clicking on a requirement, Advisr shows customized suggested classes. User can search/add additional classes for this requirement.

Screen #9

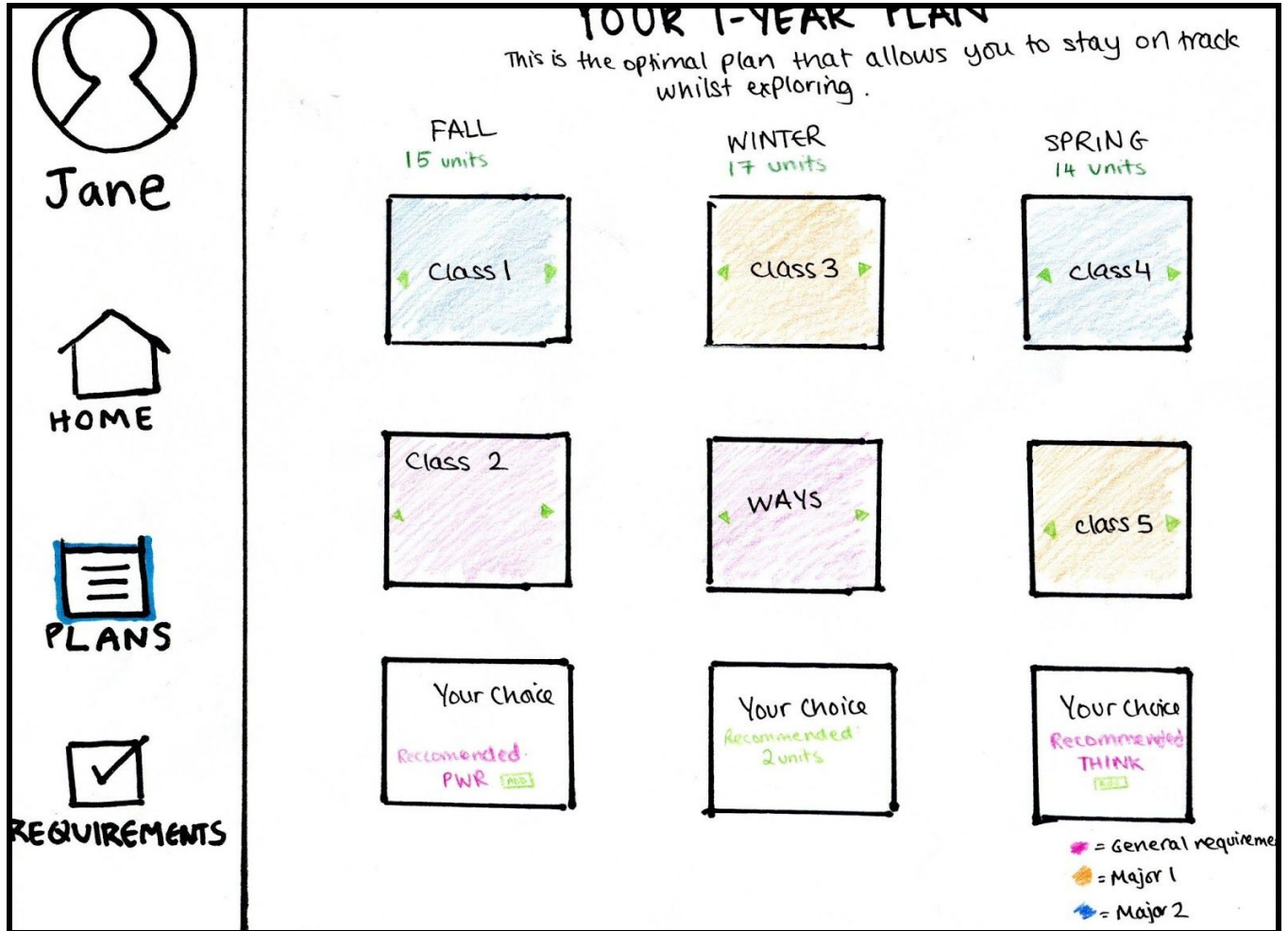


Figure 10.9: 1-year Plan - overall view

Desired Action:

Advisr generates an optimum 1-year schedule which the user can customize. Classes color-coded based on major/requirement. Easily toggle through classes that fulfill the same requirement. Click on classes for more info.

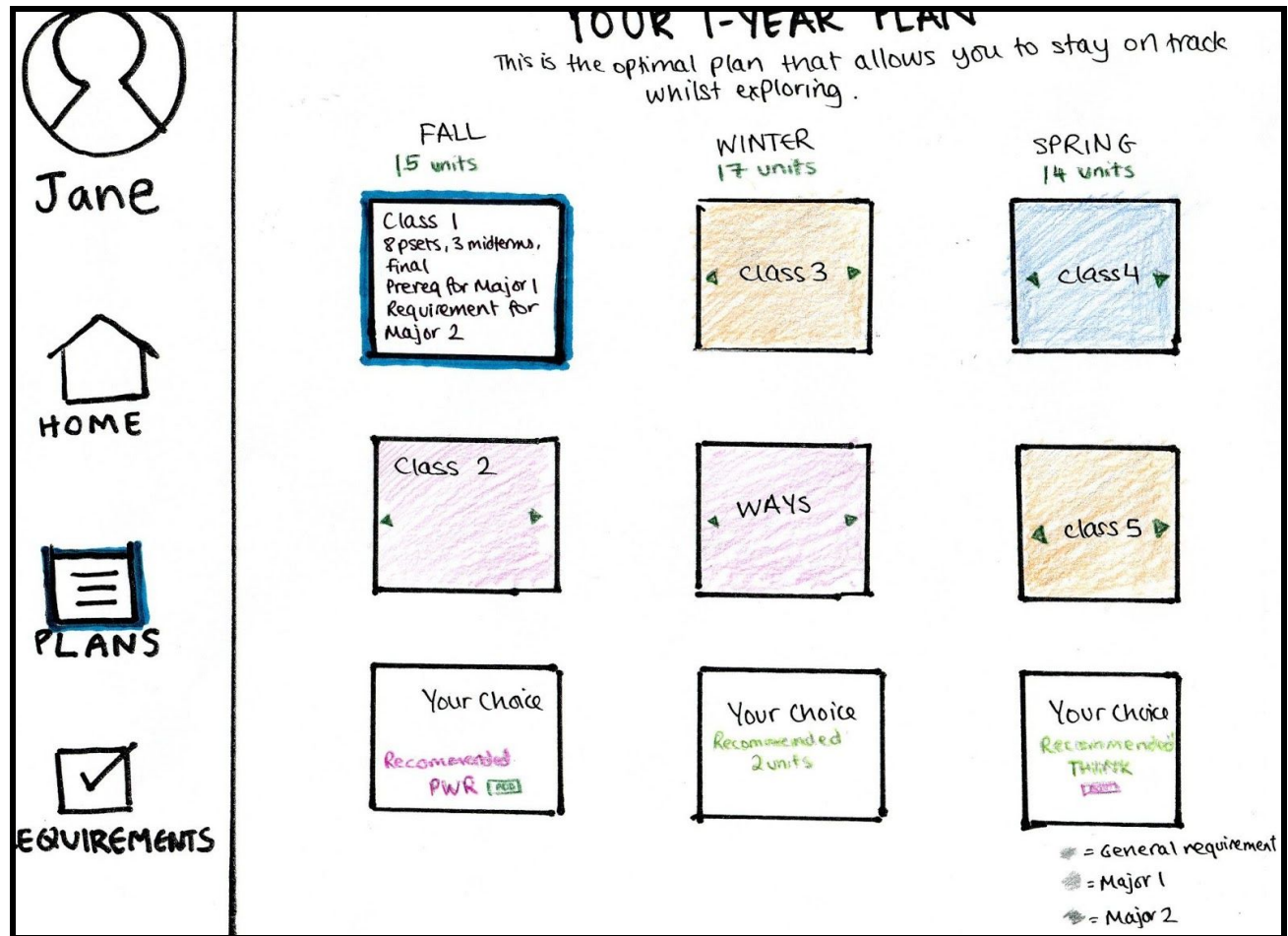


Figure 10.10: 1-year Plan - Class Detail View (Prototype)

Desired Action:

After clicking on a class, user can see details about that class.

Overview

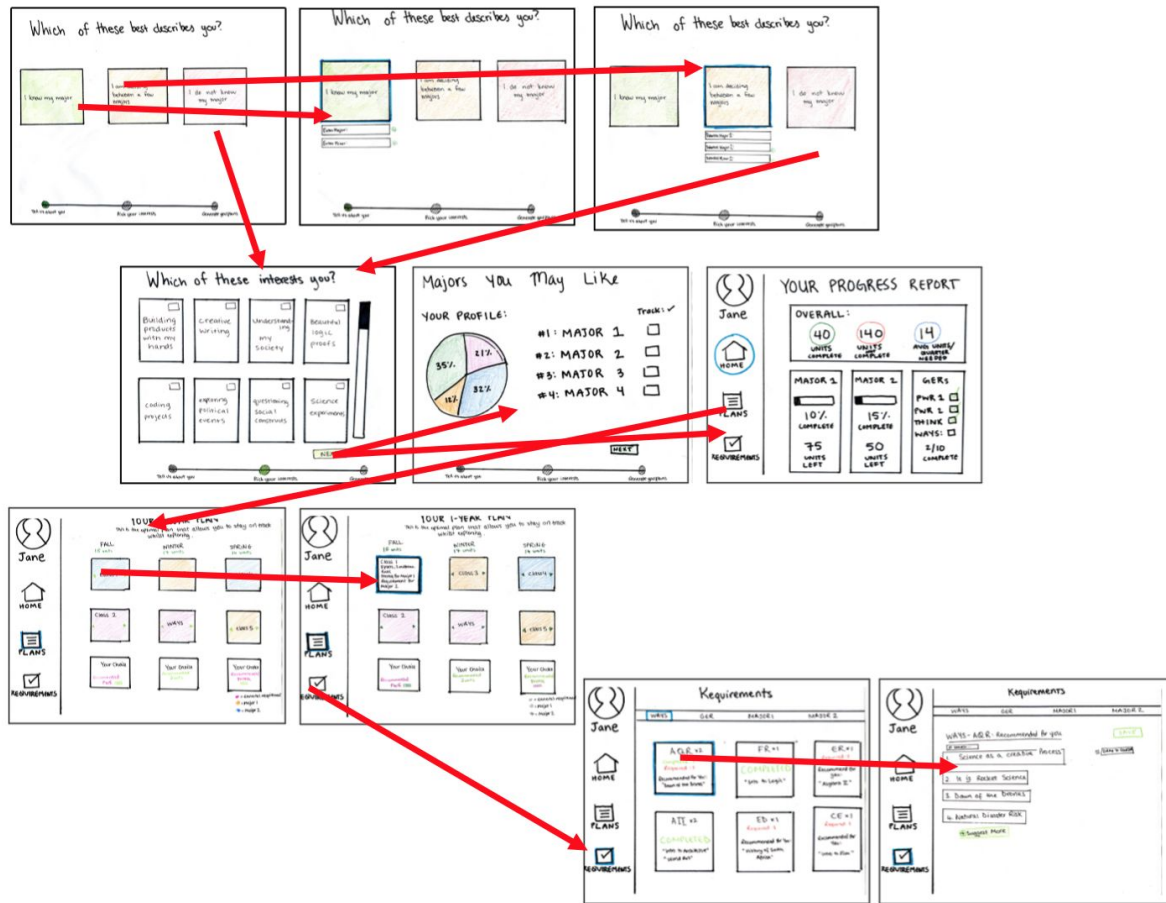


Figure 11. Entire Prototype System

METHOD

We chose to test on our product's anticipated user group: Stanford students.

TEAM MEMBER ROLES

Anna and Aditi created the prototype, and Radha and Matthew tested the prototype. Radha engaged the users (getting consent, interacting, changing screens) while Matthew documented interviews (notes, photos, videos).

ENVIRONMENT

We conducted our tests in Stern and Arrillaga Dining Halls and Tressider during lunchtime on October 25th. Our choice was deliberate: dining halls cater to all students, while academic buildings might host a self-selecting group of interests, ages, etc. We targeted individuals who were alone, and who did not appear busy with other tasks.

PARTICIPANTS

We wanted diversity when choosing our participants, primarily, varied age and general interest. If we approached a student who matched a previous user's characteristics, we opted not to test with them. All of our users willingly volunteered to participate without compensation. Participant 1 was an undeclared freshman exploring paths. Participant 2 was a sophomore CS major looking to fulfill requirements. Participant 3 was a junior who switched majors to STS and wanted to graduate on time.

PROCEDURE

For testing, we used a paper prototype that resembled a desktop. The background was a piece of paper in the shape of a Chrome window, and there were 10 different screens we could choose to display depending on the choices that the user made. Throughout the experience, we used generic names (e.g. "Major 1") to ensure seamless transitions. Our script is in [Appendix 3](#).

All participants signed consent forms and agreed for videos of their interaction to be used for analysis later.

PROTOTYPE TASKS

Detailed user tasks can be found in the previous section under each photo's caption. The summary of tasks we tested were:

1. Choose major/potential majors based on skills and interests:
 - Determine which bucket you fall into (Path A/B/C)
 - Select interests
2. Select required courses
 - Select an unfulfilled requirement
 - Choose preferences for that requirement
3. Personalise 1 year plan
 - View course details
 - Remove a class from plan

TEST MEASURES

We wanted the user to clearly understand what they were achieving at all times and how to accomplish it. We asked users to explain their thought process out loud and detail what they like and what seems unintuitive.

Measures we took:

- Ask the user how they would perform a task
- Ask the user how they would perform a specific action on a page
- Inform the user when they have successfully completed a task
- Inform the user if they have incorrectly done a task

User actions we noted:

- Lack of clarity about how to perform specific tasks - indicated by hesitation, eye movement, long pauses etc.
- Questions about how to do something/if they had done it right
- Verbal feedback on likes/dislikes
- User actions that deviated from our intentions

RESULTS

Participant 1: *Freshman, Undeclared, 5 Potential Majors*

Participant 1 had no problem jumping in and interacting with the prototype. For the first task, he selected the "I don't know my major" button and then was taken to the interests page. He did not initially understand how to add potential majors and did not realize that the interests page scrolled. The user liked the "Results" page and choice of 4 majors. However, he found the "Dashboard" a bit confusing and hesitated when asked to complete task 2.

Participant 2: *Sophomore, CS*

Participant two was more hesitant than participant one. She started by clicking "I know my major" and understood that she would fill in her major. She selected her interests easily but expressed that she was confused why the program was asking her to do this. In the "Dashboard", she tried to click on "Major 1" but we didn't have functionality for it. On the plan, she intuitively clicked on one of the classes and also clicked on the green arrows to swap the classes.

Participant 3: *Junior, STS*

Participant three had already completed at least half of their coursework, which gave us a unique perspective. He had no issue with the onboarding process. However, he didn't intuitively click on any of the classes in the schedule. He also commented that he didn't understand what the green arrows meant for switching classes. When he clicked on the "Requirements" page, he laughed and said "this would have been super useful."

DISCUSSION

Overall, we were pleased that our users found our interface valuable, logical and fairly intuitive. Some common positive feedback we received was that users liked the intuitiveness of being able to click on requirements/classes/progress and being able to see a centralized breakdown of that information. Moreover, they appreciated the "Results" pie chart, to help them narrow down in interests, and enjoyed the ability to customize/swap out classes.

The main feedback we received in terms of improvement was that sometimes there was too much (text) on the screen, and users wanted a more visual simplified interface. Interestingly, we found that user's wanted to see their weekly schedule, and not just their quarterly schedule and they didn't always understand what "tracking majors" meant

Moving forward, the main structural changes are to make are to simplify the UI by making a tile-style UI universal throughout the website. Moreover, we need to motivate why the user must complete each step. Finally, some tooltips when users initially reach the dashboard would be helpful in navigating their schedule and requirements. We have outlined specific changes in Appendix 4.

Word Count: 1753

APPENDICES

Appendix 1: New Task

Julia is a junior who has recently switched majors. She feels anxious that she may not graduate on time. She needs a way to easily view which requirements she must fulfill, and rank her favorite options within each requirement.

Appendix 2: Pros/Cons List

Design 1: Web App Planner		Design 2: Holographic Planner	
Pros	Cons	Pros	Cons
Web app format is familiar; behavior is expected	Standard / less "innovative"	Novel: multiple mediums involved in plan creation (physical touch, voice, and laptop mouse)	Harder to use: multiple mediums might cause confusion
Improves upon existing model by capturing insights/frustrations from current students	Many course style websites exists (e.g. carts, axes); adding another to list	Involves physical process: users can create plan with hands (insight from needfinding)	More difficult learn and use
Very easy to use and learn		Removes pain point of manual entry of physical plan	If built, students would realistically not use today.
If built, students could use today			

Appendix 3 Test Script

Finding Participants:

Hi! My name is _____, and I'm a senior/junior. Do you happen to have fifteen minutes to spare to participate in a user test for a new academic service?

Intro

Great! Thanks so much for your time. We are currently testing our product, *advisr*, which is a website aiming to help students create four year plans. We would love your feedback.

Background

What year are you in and have you declared a major yet?

Instructions

This paper prototype is a draft of what our online web application will look like. We want you to interact with this prototype like you would a real website so click on different buttons and don't be afraid to voice concerns. Also it is helpful if you talk as you go to give us insight into your decision making.

Team Member demo

For example, if I were to use this I would click on the "I already know my major button" *click on the button with my finger*.

Task #1

The first task is to select your potential majors based on your interests (or simply input your major and interests if you already know your major).

Task #2

The next task is to select classes that fulfill your different requirements such as *WAYS* and *GERs*.

Task #3

The last task is to customize your generated plan by shuffling through potential classes and choosing which ones you want to take.

Appendix 4 Observations & Severity

Critical Incident (Positive in gray)	Location	Severity	Possible Fix
Add more interests Did not realize interests box scrolled	10.4 Interests	1	Will be clearer in higher-fi prototype.
Liked possible major matches Found it easier to narrow down from large list	10.5 Pie chart	N/a	N/a
Potential majors funnel X did not understand how to select majors once they appeared to be a "match." If we did not clarify, this would have stopped the entire process.	10.5: Pie Chart	4	Clarify the desired action
Onboarding completed with little friction Only one question about motivation	10.1-10.5		
Dashboard not interactive Tried to click on the dashboard tiles, but there was no action	10.6 Dashboard	2	Add a useful action on this page.

associated.			
1 Year Plan? Participants were confused why only the 1 year plan was showed. This would deter them from using the app	10.9 & 10.10 1 Year Plan page	3	Create a toggle that allows you to go back and forth between quarter, 1 year, and 4 year views.
Unintuitive Requirements Preference X questioned how difficult it would be to navigate search AND rank.	10.7: Reqs page	2	Allow students to save all classes they find interesting and rank after.
Requirements Interface X wanted a tile-style UI with more information about each class instead of a list-UI for clarity	10.7: Reqs page	2	Change UI to tile and pull data from Carta to show summaries.
Requirements "This would have been super useful" + *laugh*	10.7: Reqs page	N/a	N/a
Too much text Dashboard/ website after onboarding was overcrowded according to participants.	10-6.10.10	1	Modify UI to look more aesthetic and graphic. Remove excess text.

Why collect interests? X did not know why this was necessary.	10.3	2	Motivate interest collection using text.
Green Arrows Participant 3 unsure what the green arrows represented on the schedule.	10.10	2	Clearly label legend and tooltips to explain.

*Participants remain anonymous (X).

Appendix 4 Consent Form

The Advisr application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Advisr. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers (Radha Jain, Matthew Stewart, Aditi Poduval and Anna Carrol) or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I

give my consent to have data collected on my behavior and opinions in relation to the Advisr experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name _____

Participant Number _____

Date _____

Signature_____

Witness name _____

Witness signature_____