

IN4MATX 133: User Interface Software

Lecture 18:
Wrap-Up

Professor Daniel A. Epstein
TA Eunkyung Jo
TA Lucas de Melo Silva

Announcements

- A5 due Tuesday
- In-class participation & A4 grades hopefully up later this week
 - Slack participation/extra credit will be added after the A5 deadline
- Assignment curve applied to lower scores for A1-A3
 - We may add an overall course curve, likely only at the lower end

Announcements

My Evaluations

Department Activated **Self Activated**

DOWNLOAD RESULTS

Filter:

Winter 2021  Filter by status  

Class	Status	Responses	Actions
COMPSCI 248A LEC A: INTRO UBIQ COMP (34800) IN4MATX 241 LEC A: INTRO UBIQ COMP (36450)	Open until 3/15/2021 7:50am	44% 4/9	
IN4MATX 133 LEC A: USER INTERACTION SW (35970)	Open until 3/15/2021 7:50am	32% 31/97	
IN4MATX 209S LEC A: SEMINAR INFORMATICS (36415)	Open until 3/15/2021 7:50am	27% 3/11	

Today's goals

By the end of today, you should be able to...

- Describe how Jo and Lucas concepts from IN4MATX 133 in their research and practice
- Summarize what you learned in IN4MATX 133
- Describe the relevance of the topics to different disciplines in industry
- Fill out the course evaluation!

Putting 133 concepts to use

- How do Jo and Lucas use 133 concepts in their research and practice?

Designing Self-Tracking Experiences for Mental Health



Eunkyung Jo

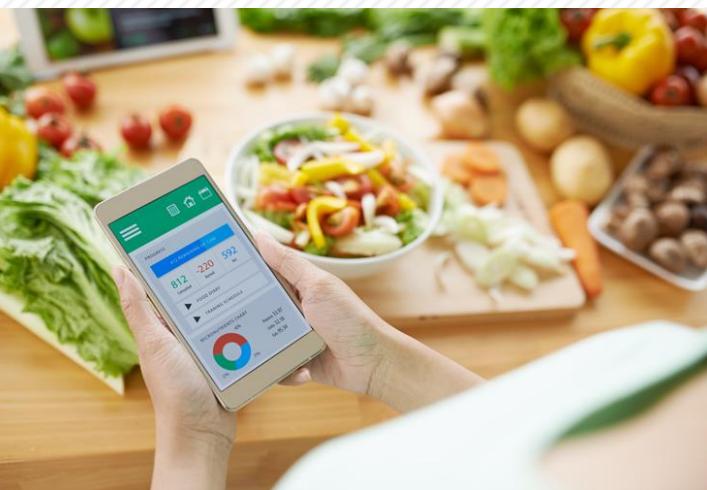
INF 133, Winter 2021

Personal Informatics

Definition: systems that “help people collect personally relevant information for the purpose of self-reflection and gaining self-knowledge” (Li et al., 2010)



Activity tracking



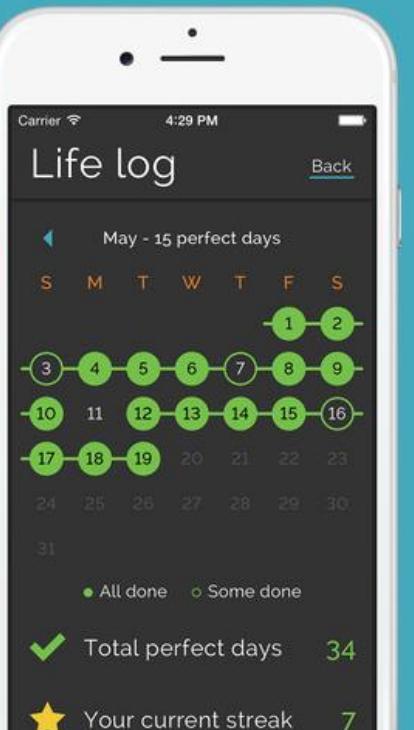
Food journaling



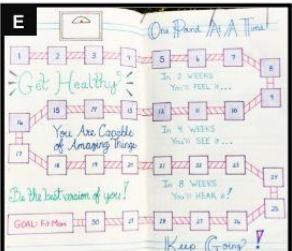
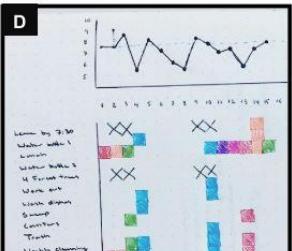
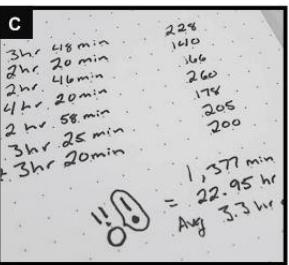
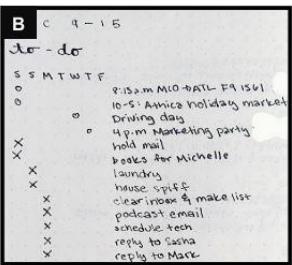
Sleep tracking



Build a life where things get done

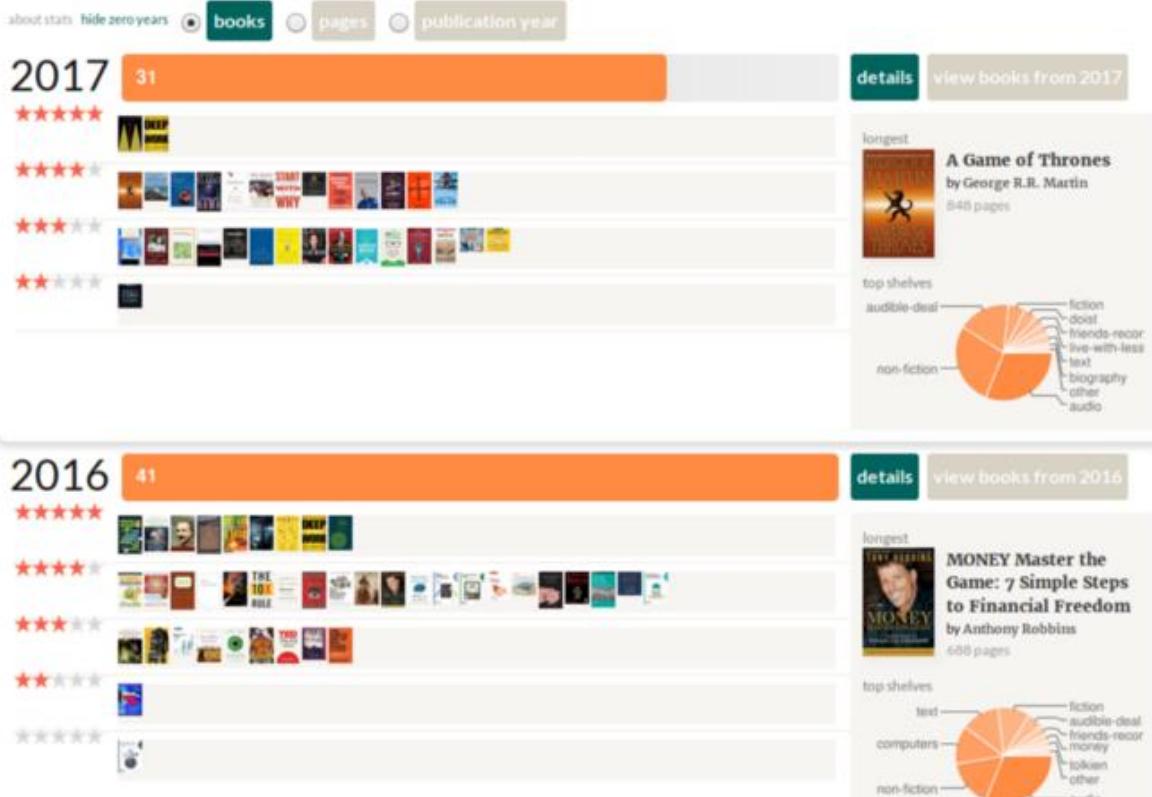


Paper journals



Smartwatch / Smartphone

My Books > Stats



Benefits of Web and Mobile Tech

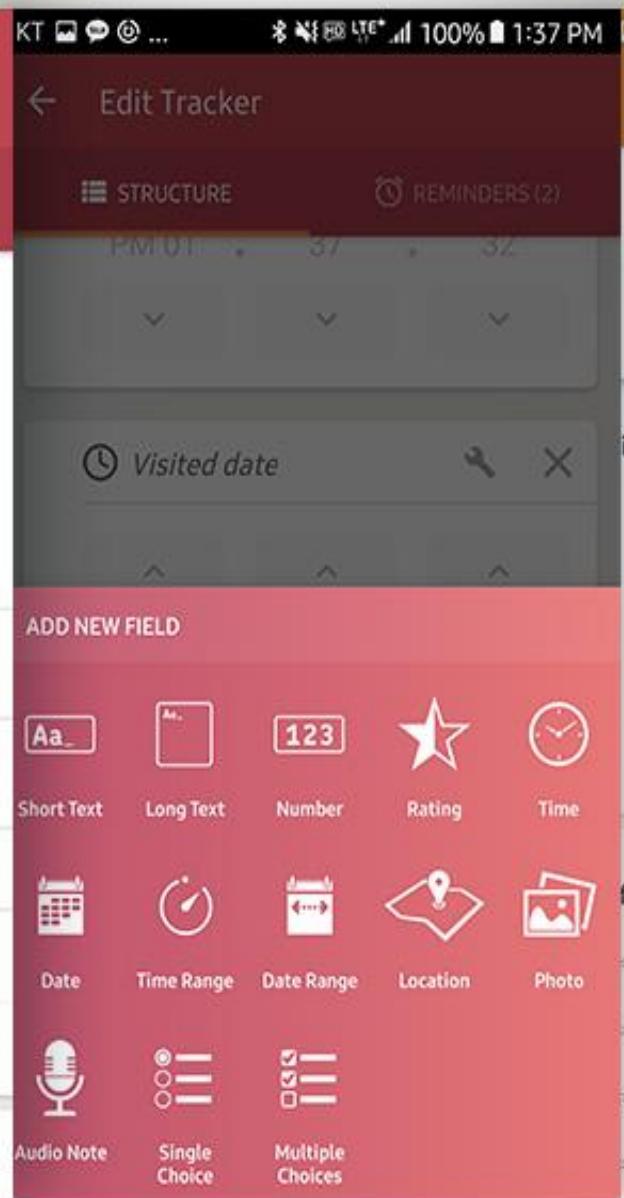
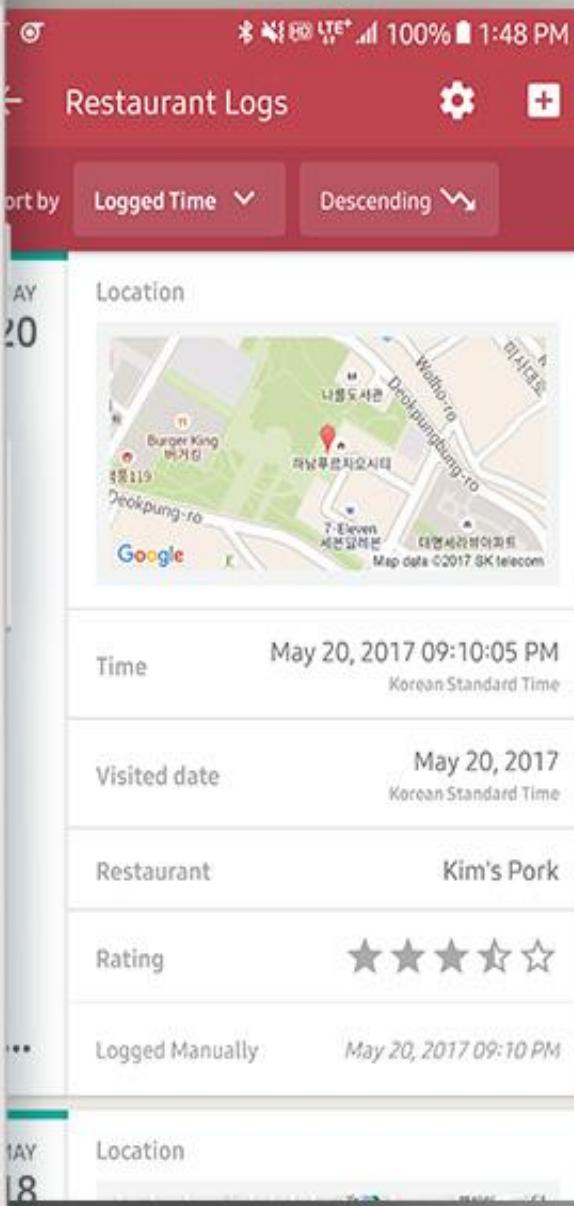
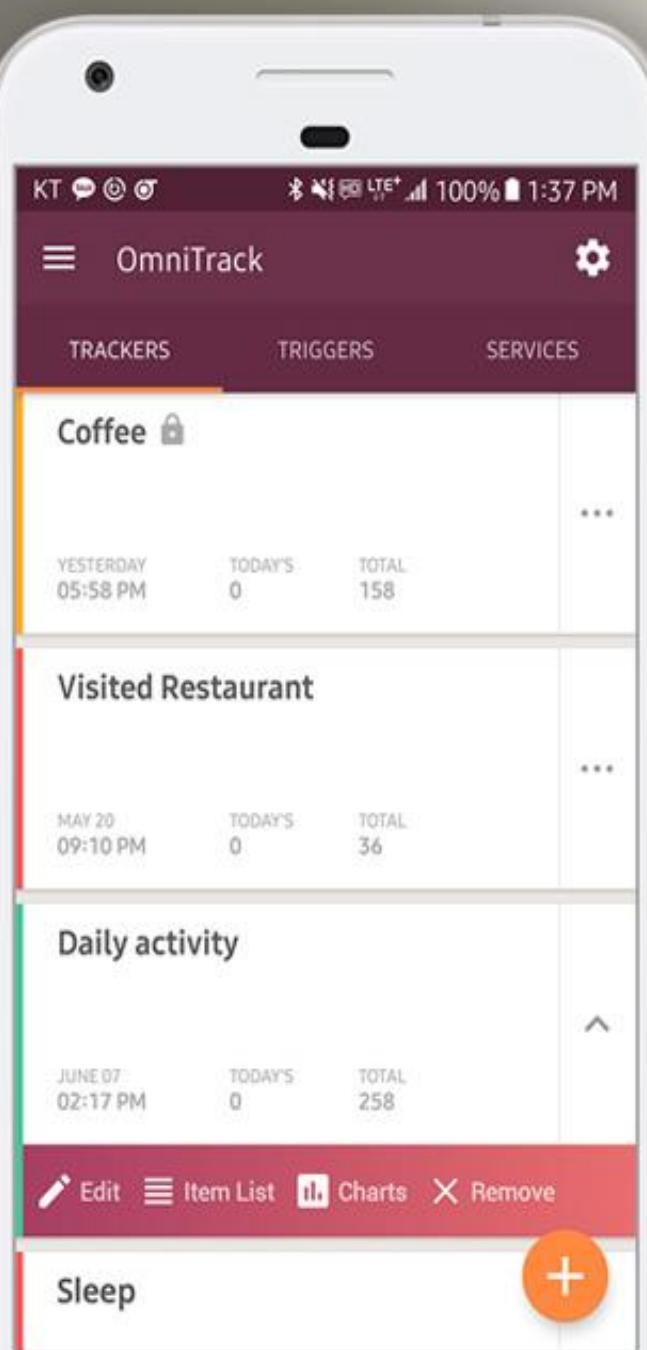
- Automatic data collection
- In-situ data collection
- Automatic data analysis
- Social sharing of personal data
- And many more!



**How can we design self-tracking experiences
that better support individuals' mental health?**



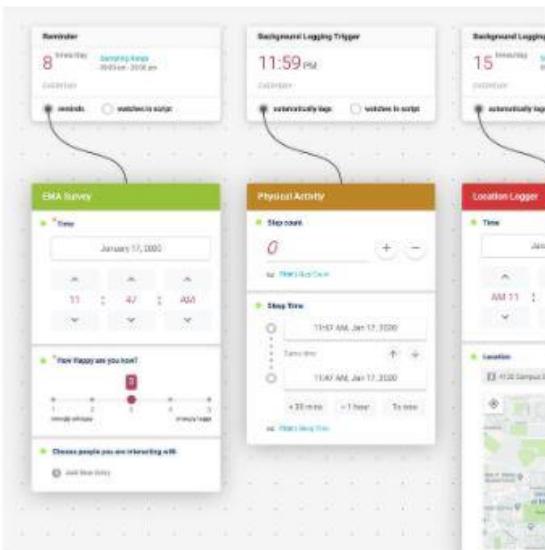
Co-Designing Self-Trackers with OmniTrack



What is OmniTrack for Research?

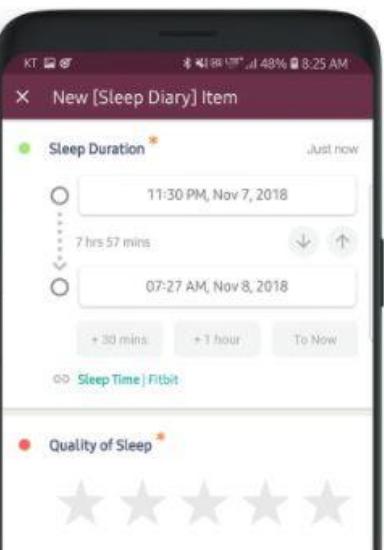
OmniTrack for Research (O4R) is a free and open-source research platform for mobile-based *in situ* data collection, which streamlines the implementation and deployment of a mobile data collection tool. O4R enables researchers to rapidly translate their study design into a study app, deploy the app remotely, and monitor the data collection, all without requiring any coding.

Author Study Protocol



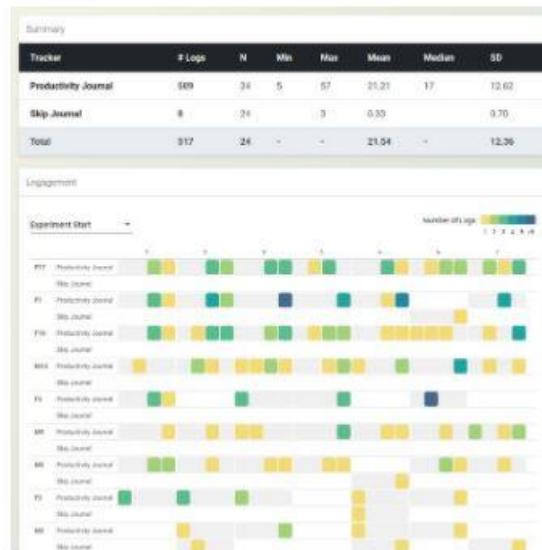
Implement a study protocol using an authoring interface on web. O4R supports between-subject design with highly-personalizable self-reporting schema, based on semi-automated tracking concept.

Deploy Mobile App



O4R builds and provides a sharable URL to install an *Android app* for study participants. The entire build process is handled by the server.

Manage Data Collection



Monitor the progress of the study participant's data collection during the study period. Participants' reporting data and interaction timestamps are uploaded to the server in realtime.

Self-Tracking for Adolescents with ASD

Session 1:
Co-creating
a personal tracker

One week of
self-tracking

Session 2:
Revising
a tracker

Another week
of self-tracking

Session 3:
Co-reviewing
Tracking data



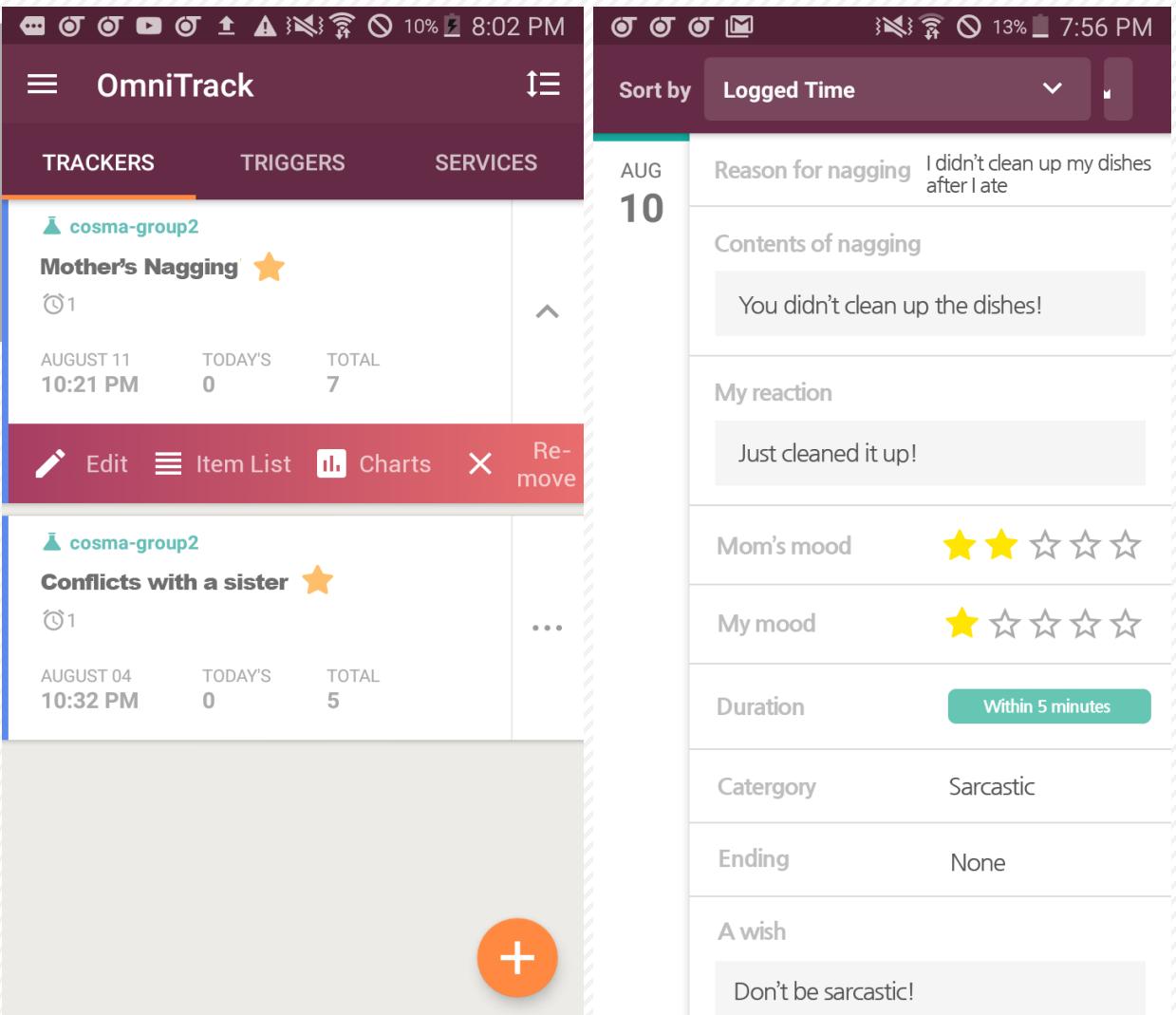
[2] 작성한 주제들 중 가장 만들어보고 싶은 주제 3 가지와 선정한 이유를 적어주세요◎ 어제부터	
1	주제 : <u>운동</u> / 대중교통 이유 : <u>운동 보건부이고 스마트폰</u> <u>운동하는 이유는 모르겠다</u>
2	주제 : <u>나의 개인기록</u> / 대중교통 이유 : <u>운동 보건부이고 스마트폰</u> <u>운동하는 이유는 모르겠다</u> <u>운동하는 이유는 모르겠다</u>
3	주제 : <u>친구하고 운동하기 위한 대화</u> 이유 : <u>친구하고 운동하기 위한 대화</u> <u>운동할 수 있는 주제를 만들다. (운동)</u> <u>(운동)</u> <u>그분이 내 운동을 반복적으로 한다. 모르겠다.</u> <u>그리고 운동하는 이유나 운동하기 모드가 기기</u> <u>((인기 기관도))</u>

Self-Tracking for Adolescents with ASD

Session 1:
Co-creating
a personal tracker

Two weeks of
self-tracking

- **Self-tracking
with the custom tracker**



Self-Tracking for Adolescents with ASD

Participant	Daily Challenges	Tracking Topics
Lucas	Deficits in his communication skills	Conflicts with his younger sister and his mother
Ethan	Lack of mind-reading skills	Showing consideration to others
Ella	Concerns about extreme mood swings	Mood toward her boyfriend
Sam	Concerns about academic pressure	Anxious or overwhelming situations

Self-Tracking for Managing Parenting Stress

- Five Korean mothers
- Living in a small college town in the US
- Primary caregivers of young children



Self-Tracking for Managing Parenting Stress

Table 2: Participants' Initial and Revised Tracking Topics

Participant	Initial Tracking Topics	Revisions of Topics
Dayoung	Husband's involvement in parenting	Time for myself
	Time for myself	→ Time spent with my husband
Jina	Fun conversation with my husband	Fun conversation with my husband
	Time for myself	→ Communication with my husband
	Quite time	
Miyoung	Going out	Added 'Baby naps'
	Exercise	
Soojin	Husband's involvement in parenting	
	Stress reduction strategies	
	Sleep	N/A
	Frustration toward my baby	
Yumi	Husband's involvement in parenting	
	Going out	N/A
	Sleep	

Self-Tracking for Managing Parenting Stress

Having a better understanding of one's life

- *Effectiveness of existing stress reduction strategies*
(i.e., meeting close friends are helpful)
- *Negative patterns in daily lives*
(i.e., lack of sleep, lack of time for oneself)

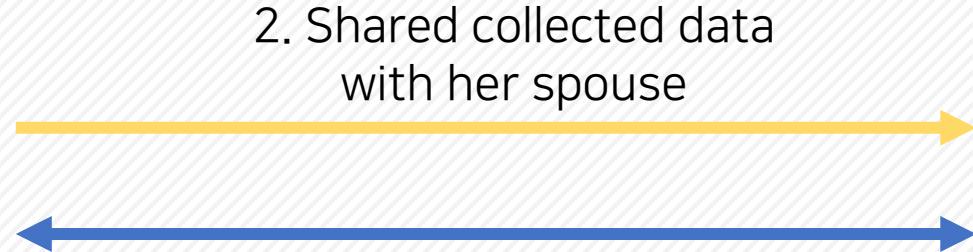
Self-Tracking for Managing Parenting Stress

Supporting data-mediated communication



Soojin

1. Collected data to facilitate communication with her spouse



Soojin's husband

3. Better understood Soojin's daily difficulties



Supporting gradual discontinuation (tapering) of psychiatric drugs

Tapering antidepressants

Background

It is recommended that **psychiatric drugs are gradually discontinued (taper)** rather than going cold turkey to avoid severe withdrawal symptoms.

During the taper, it is essential for psychiatric providers to **monitor patients' withdrawal symptoms**.

Patient-generated data can help providers monitor patients' withdrawal symptoms and adjust their prescriptions accordingly.

Tapering antidepressants

We aim to design and evaluate a desktop application for psychiatric providers to aid taper & symptom tracker configuration.

- Flexible taper configuration to support providers' various regimens (e.g., reduction rate, interval)
- Provide relevant drug-related information (e.g., available dosages)
- Support the iterative process of configuring and adjusting the taper
- Flexible symptom tracker configuration that suits each provider's regimens and each patient's circumstances

Tapering antidepressants

← Taper Schedule

Start Date 10 07 2020

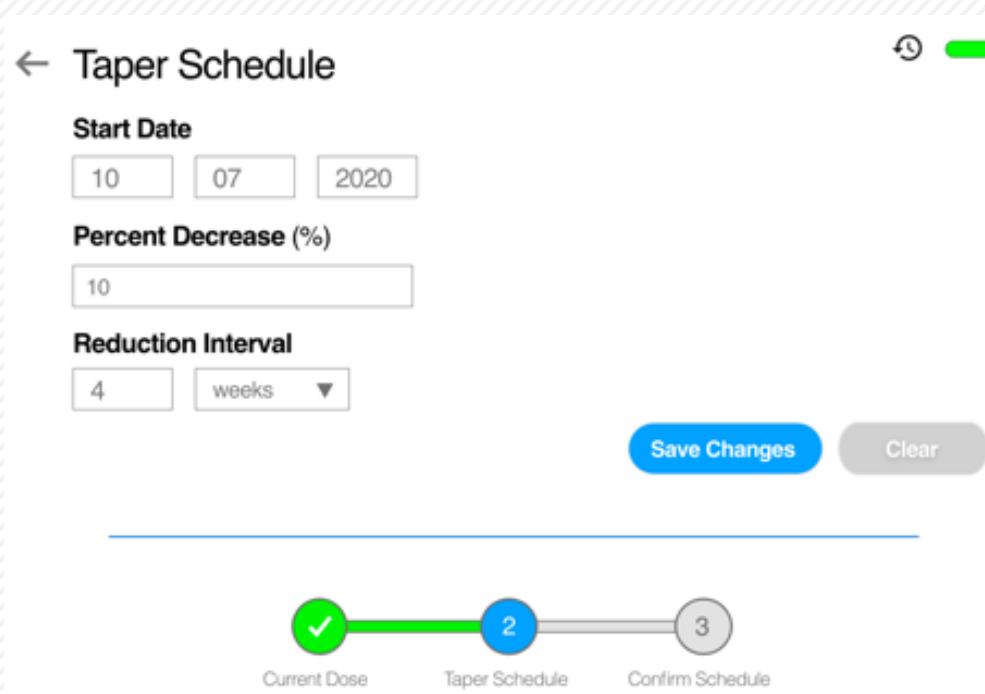
Percent Decrease (%) 10

Reduction Interval 4 weeks ▾

Save Changes Clear

1 ✓ 2 2 3

Current Dose Taper Schedule Confirm Schedule



← Confirm Schedule

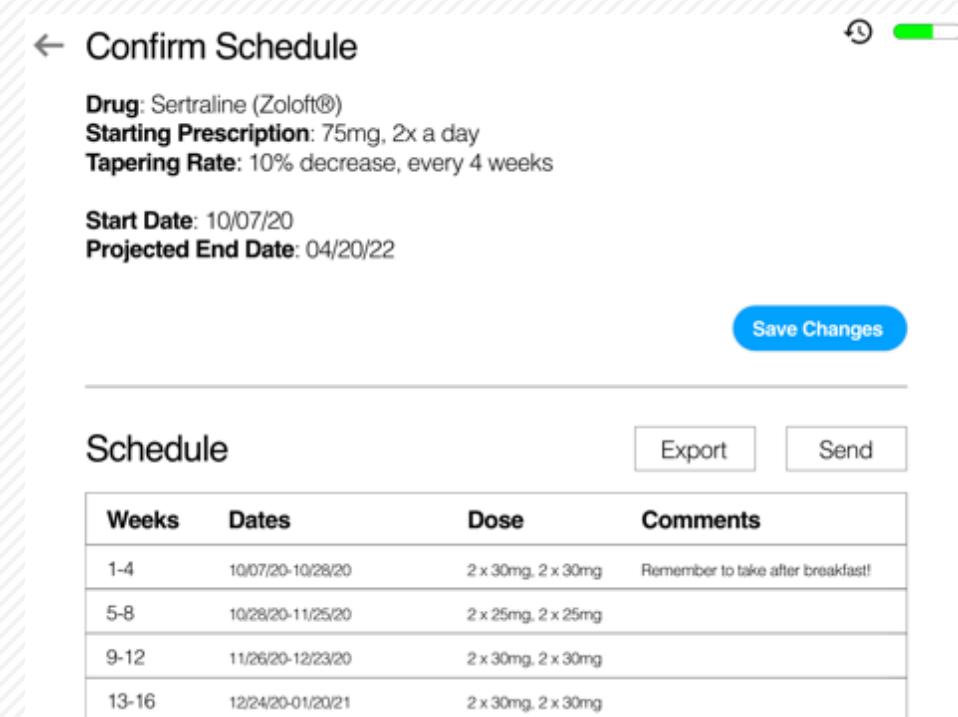
Drug: Sertraline (Zoloft®)
Starting Prescription: 75mg, 2x a day
Tapering Rate: 10% decrease, every 4 weeks

Start Date: 10/07/20
Projected End Date: 04/20/22

Save Changes

Schedule Export Send

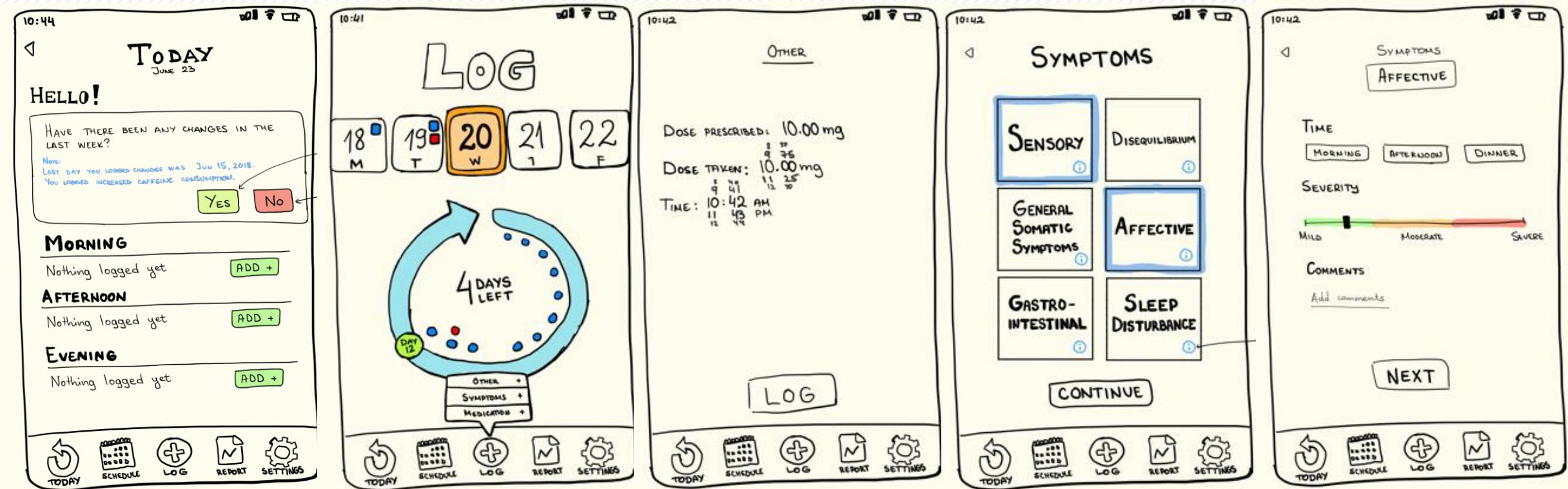
Weeks	Dates	Dose	Comments
1-4	10/07/20-10/28/20	2 x 30mg, 2 x 30mg	Remember to take after breakfast!
5-8	10/28/20-11/25/20	2 x 25mg, 2 x 25mg	
9-12	11/26/20-12/23/20	2 x 30mg, 2 x 30mg	
13-16	12/24/20-01/20/21	2 x 30mg, 2 x 30mg	



Prototype of desktop app for tapering configuration



Tapering antidepressants



Prototype of mobile app for patients to review taper plan, recording medication adherence, and logging symptoms

Next steps

- Develop a desktop application for providers that support flexible taper & symptom tracker configuration
- Run a deployment study with psychiatric providers and patients
- Develop a mobile application for patients to track their symptoms & medication adherence during the taper
- Run a deployment study with psychiatric providers and patients



Thank you!

If you want to chat about our work, please reach out(eunkyuj@uci.edu).



References

- Jo, E., Toombs, A. L., Gray, C. M., & Hong, H. (2020). Understanding Parenting Stress through Co-designed Self-Trackers. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. ACM, New York, NY, USA
- Kim, S. I., Jo, E., Ryu, M., Cha, I., Kim, Y. H., Yoo, H., & Hong, H. (2019). Toward becoming a better self: Understanding self-tracking experiences of adolescents with autism spectrum disorder using custom trackers. In *Proceedings of the 13th EAI International Conference on Pervasive Computing Technologies for Healthcare, PervasiveHealth 2019* (pp. 169-178). (ACM International Conference Proceeding Series). Association for Computing Machinery. <https://doi.org/10.1145/3329189.3329209>
- Kim, Young-Ho & Jeon, Jae & Lee, Bongshin & Choe, Eun Kyoung & Seo, Jinwook. (2017). OmniTrack: A Flexible Self-Tracking Approach Leveraging Semi-Automated Tracking . Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT). 1. 10.1145/3130930.
- Li, Ian & Dey, Anind & Forlizzi, Jodi. (2010). A stage-based model of personal informatics systems. Conference on Human Factors in Computing Systems - Proceedings. 1. 557-566. 10.1145/1753326.1753409.

Using Multiple Device Platforms for Personal Informatics

Lucas M. Silva

INF 133, Winter 2021

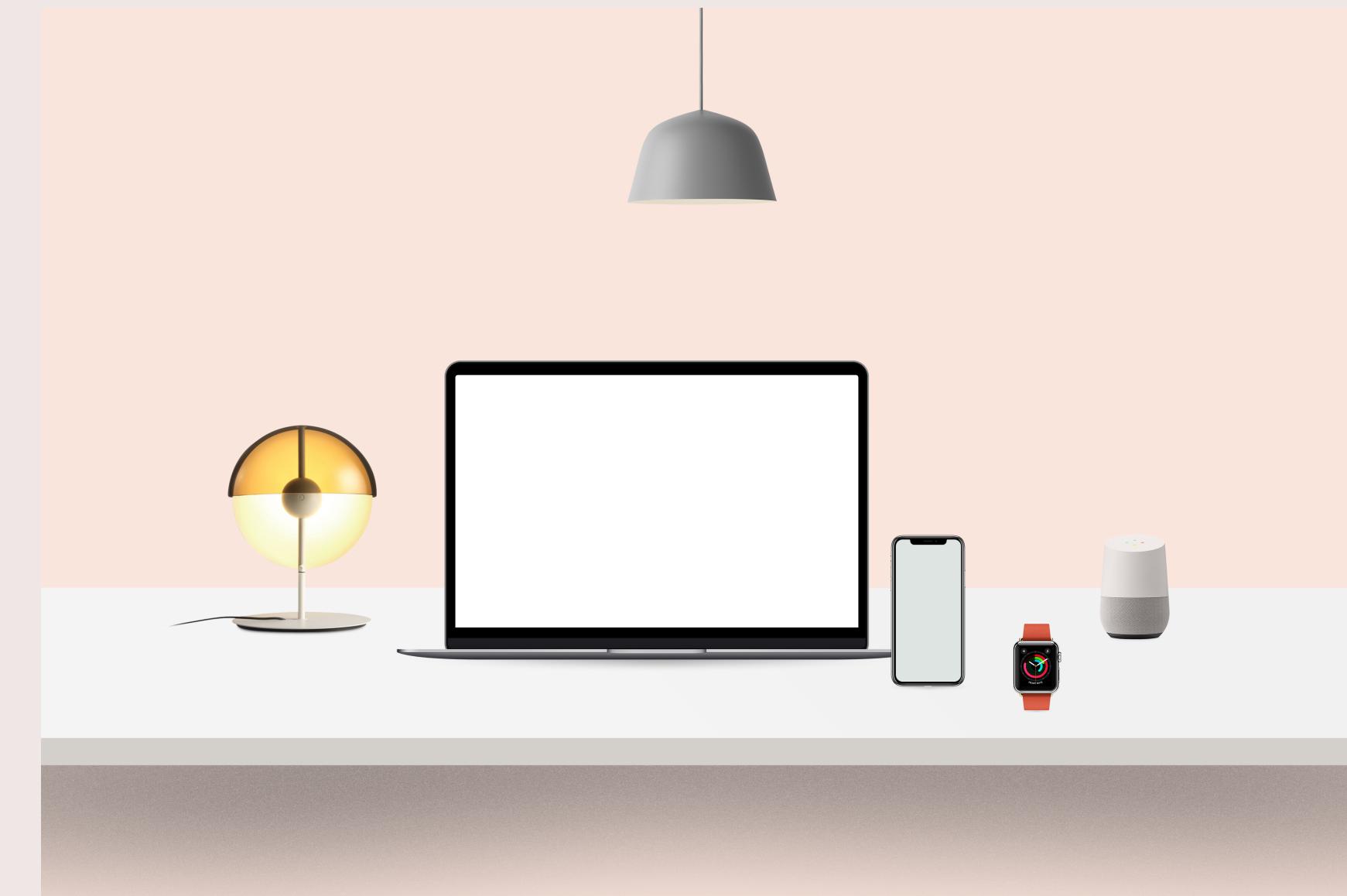
<http://lsilva.net/>

Digital Food Journaling

- People can track their food intake for several reasons:
 - Managing Weight
 - Managing a disease (e.g., diabetes)
 - Identifying intolerances
 - Making better food choices
- Food Journaling can be demanding

ModEat for Digital Food Journaling

- ModEat as a Technology probe
 - Supporting multiple devices
 - Supporting multiple input types
- Study deployment with ModEat
 - 15 participants
 - 2 weeks



ModEat Web

Journal History Survey [Logout user3](#)

← Monday, March 16 →

09:05 PM

Description	Image
Korean pancakes with mayo, okonomi sauce, and fortune cookies	

08:56 PM

Description
WABA grill: salad, brown rice, chicken, beef, veggies (Monday 3/16 at noon)

Journal History Survey [Logout user5](#)

Tuesday, July 21

Welcome, user5

[NEW ENTRY](#)

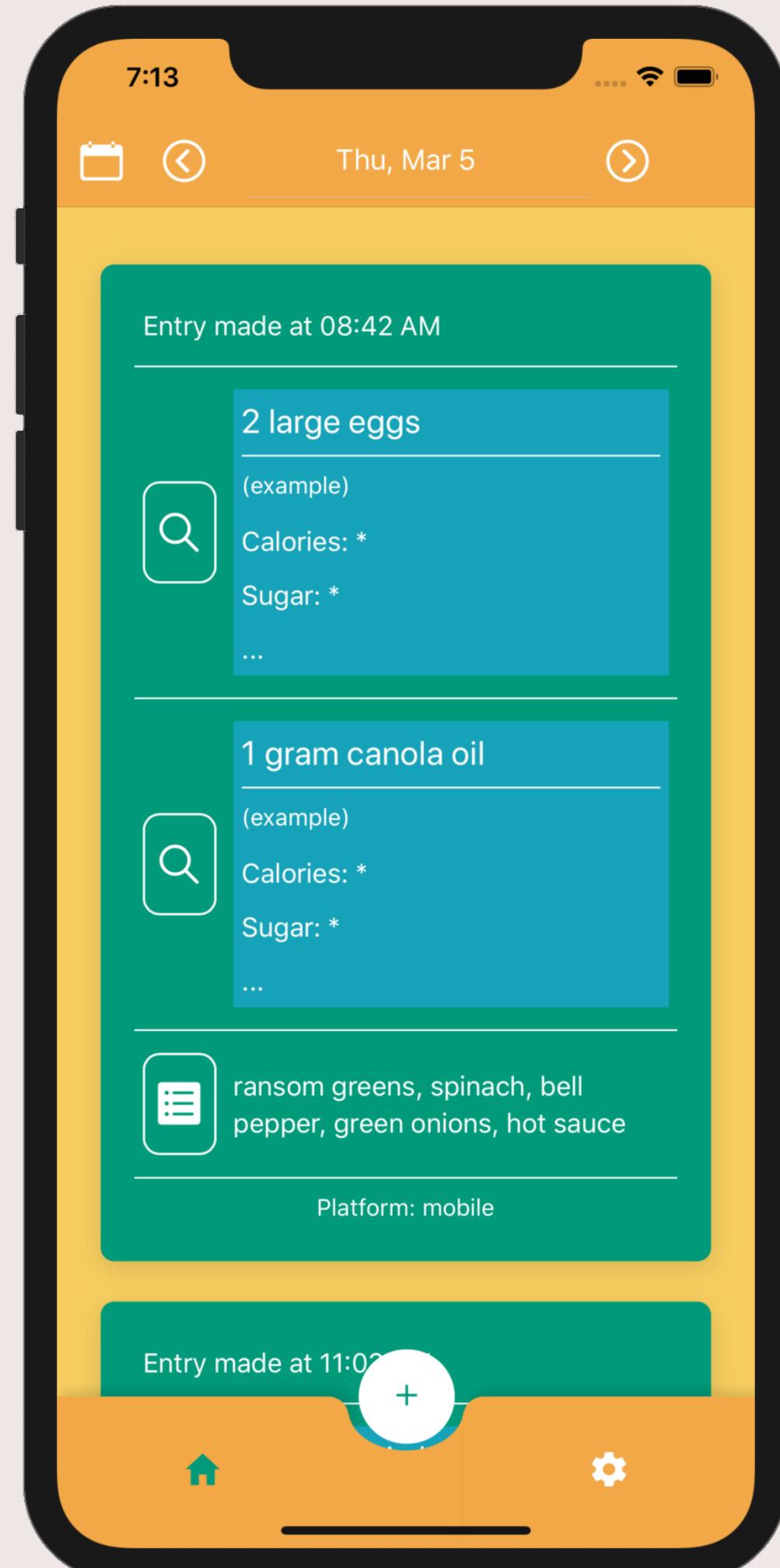
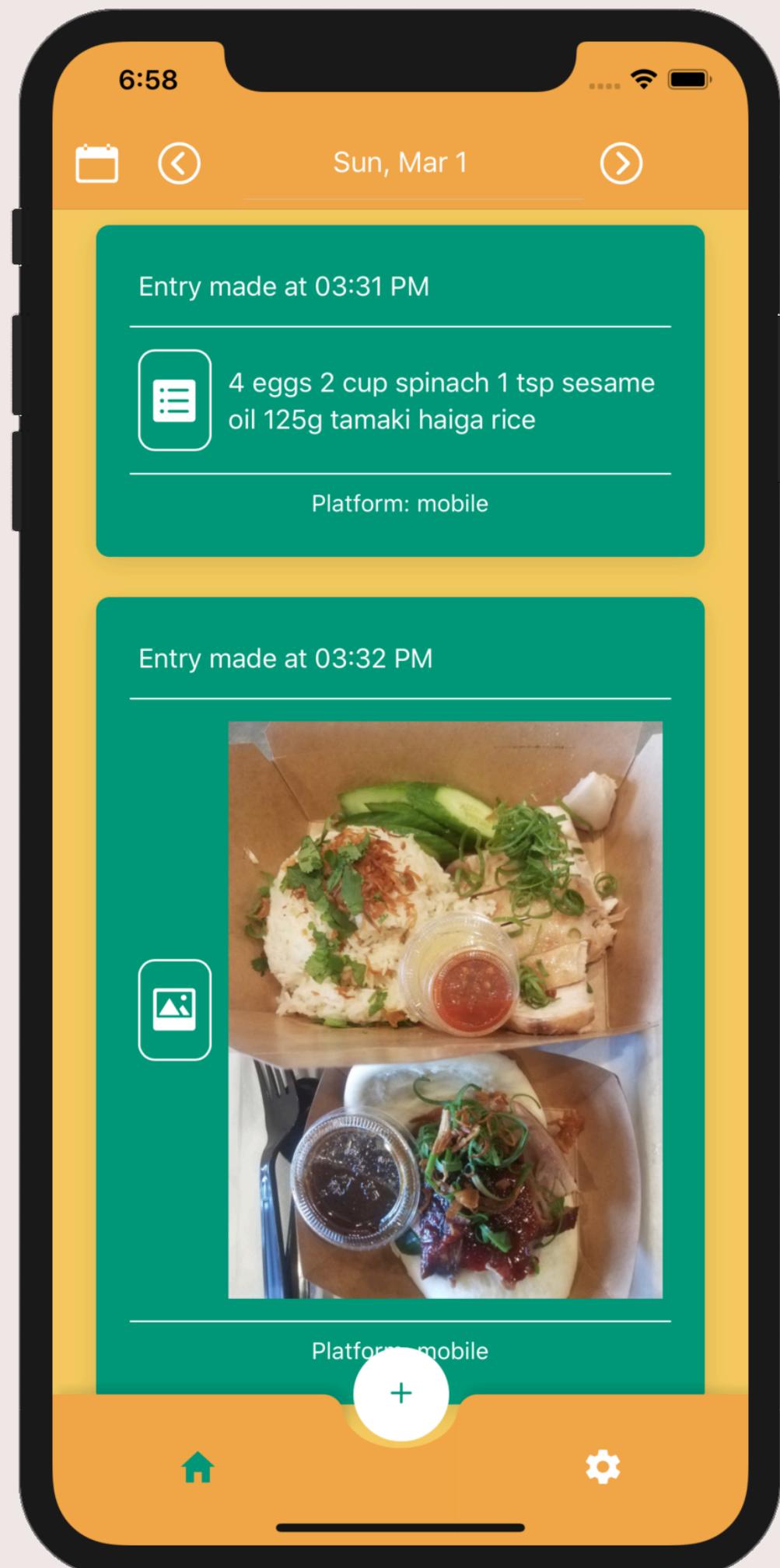
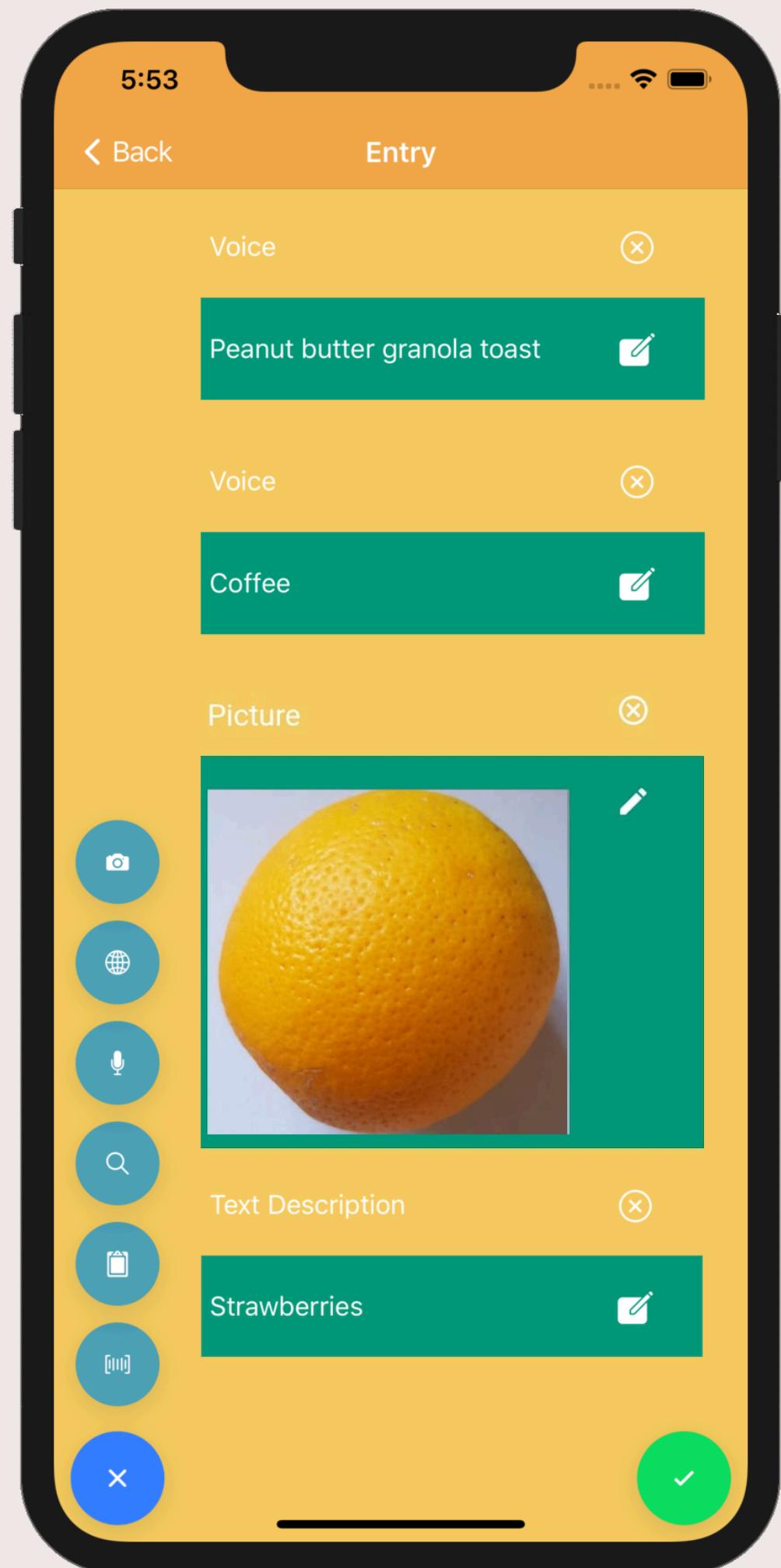
+ Description + Database Search + Image
+ URL + Voice + Barcode

[Cancel](#) [Save](#)

Image	Search
	1 slice of mushroom pizza (example) Calories: * Sugar: * Sodium: * ...

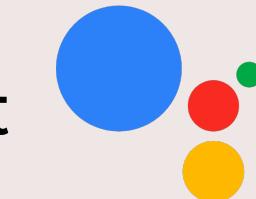
Description	URL
20 oz mountain dew	www.pizzaria.com

ModEat Mobile



ModEat Voice Assistant and Watch

Google Assistant



talk to food journal
Let's get the test version of Food Journal.
Welcome to the Food Journal Application.

read last entry
Last time you logged the following information: Frosted Mini wheat cereal

Journal egg salad sandwich and carrots
Are you sure about recording egg salad sandwich and carrots

yes
Thank you. egg salad sandwich and carrots has been recorded.

Amazon Alexa



start food journal

Welcome to the Food Journal Application.

read last entry

Last time you logged the following information: 2 slices of honey turkey breast

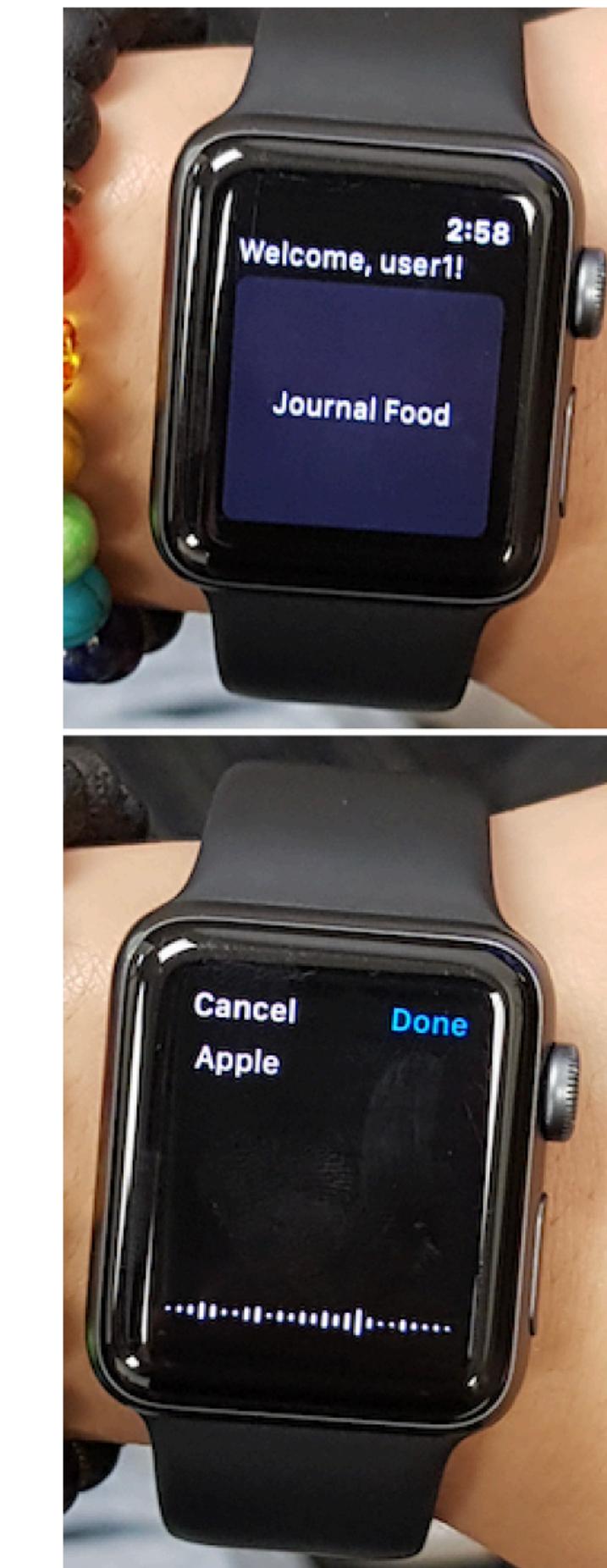
journal grilled provolone cheese and beef vegetable soup and mango

Are you sure about recording grilled provolone cheese and beef vegetable soup and mango

yes

Thank you. grilled provolone cheese and beef vegetable soup and mango has been recorded.

Apple Watch



Some Results of the Study with ModEat

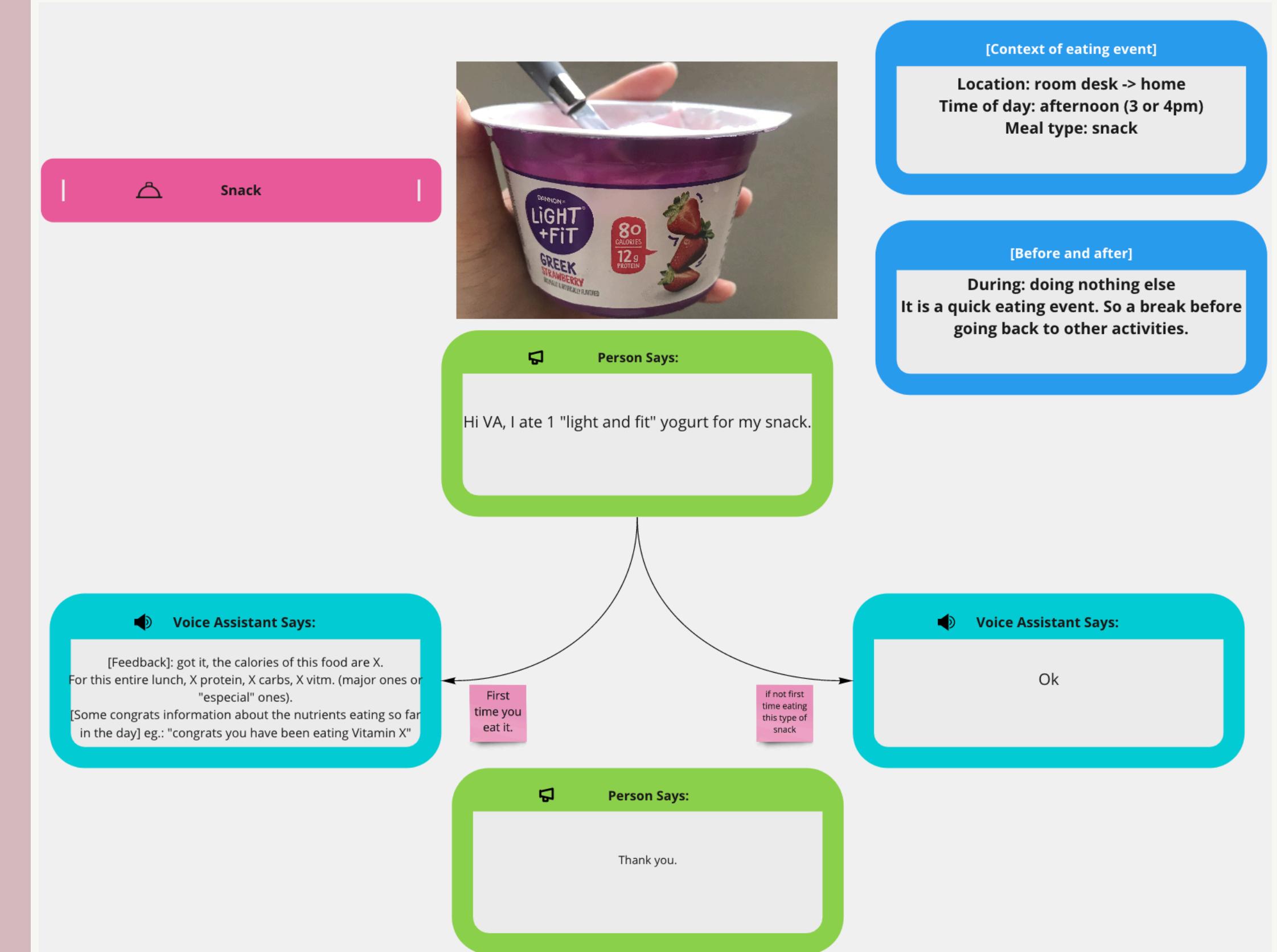
- People have personal device and goal preferences
- Situations can be constraining
- Combining inputs in some situations

Conversational Food Journaling with Voice Assistants

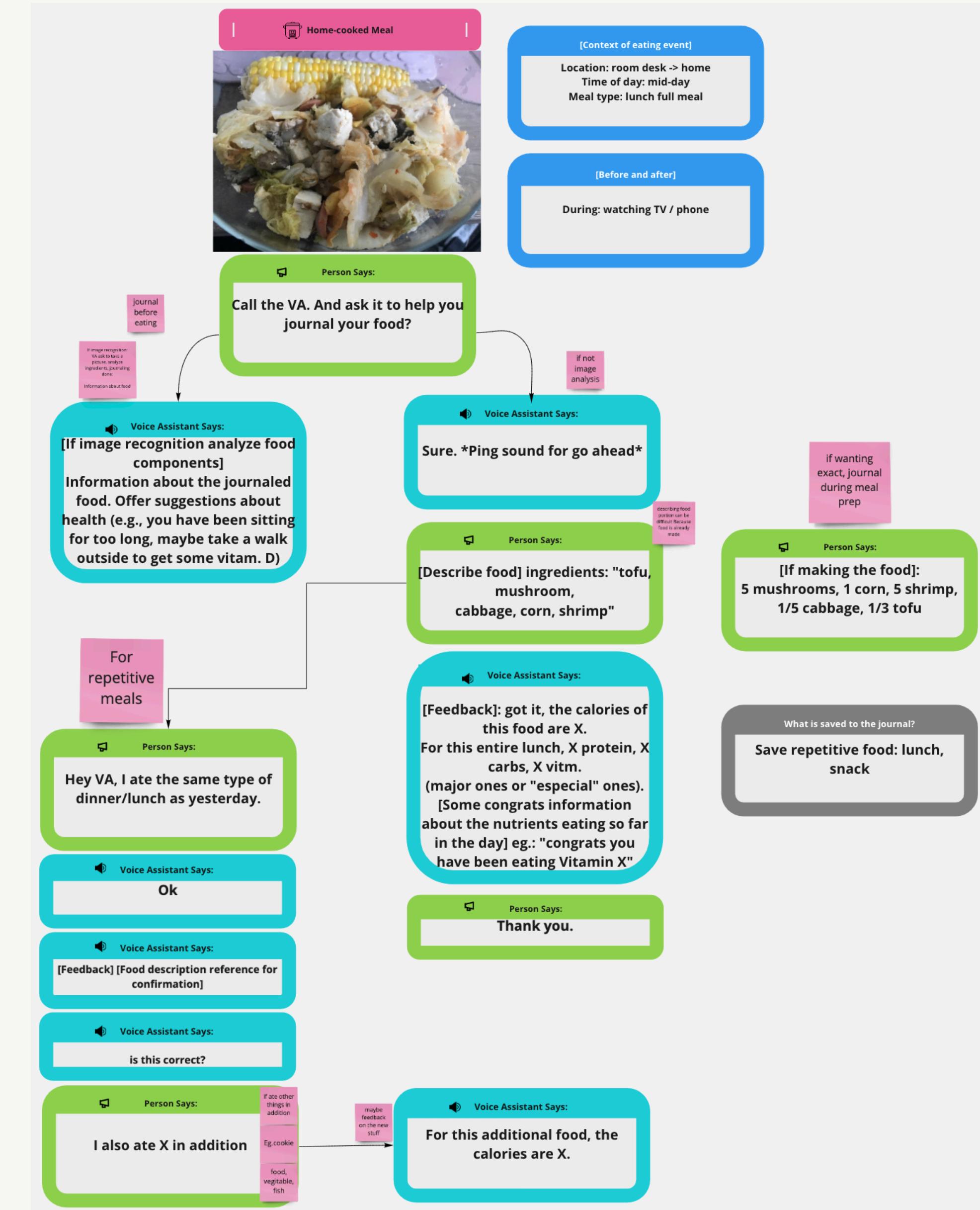
Co-design activities to map conversations

Voice Assistant deployment

Co-design Activities



Co-design Activities



Voice Assistant Deployment

ask foodytalk journal to save peanut butter sandwich

Q Your journal entry is peanut butter sandwich . Is that correct?

yes

Q Ok. I saved your journal entry, which has 323 estimated total calories.

ask foodytalk journal to save pepperoni pizza slice

Q Your journal entry is to save pepperoni pizza slice . Is that correct?

yes

Q Ok. I saved your journal entry, which has 313 estimated total calories.

ask foodytalk journal what has been my consumption for this week

Q You want to hear 2021-W10 food entries. Is that correct?

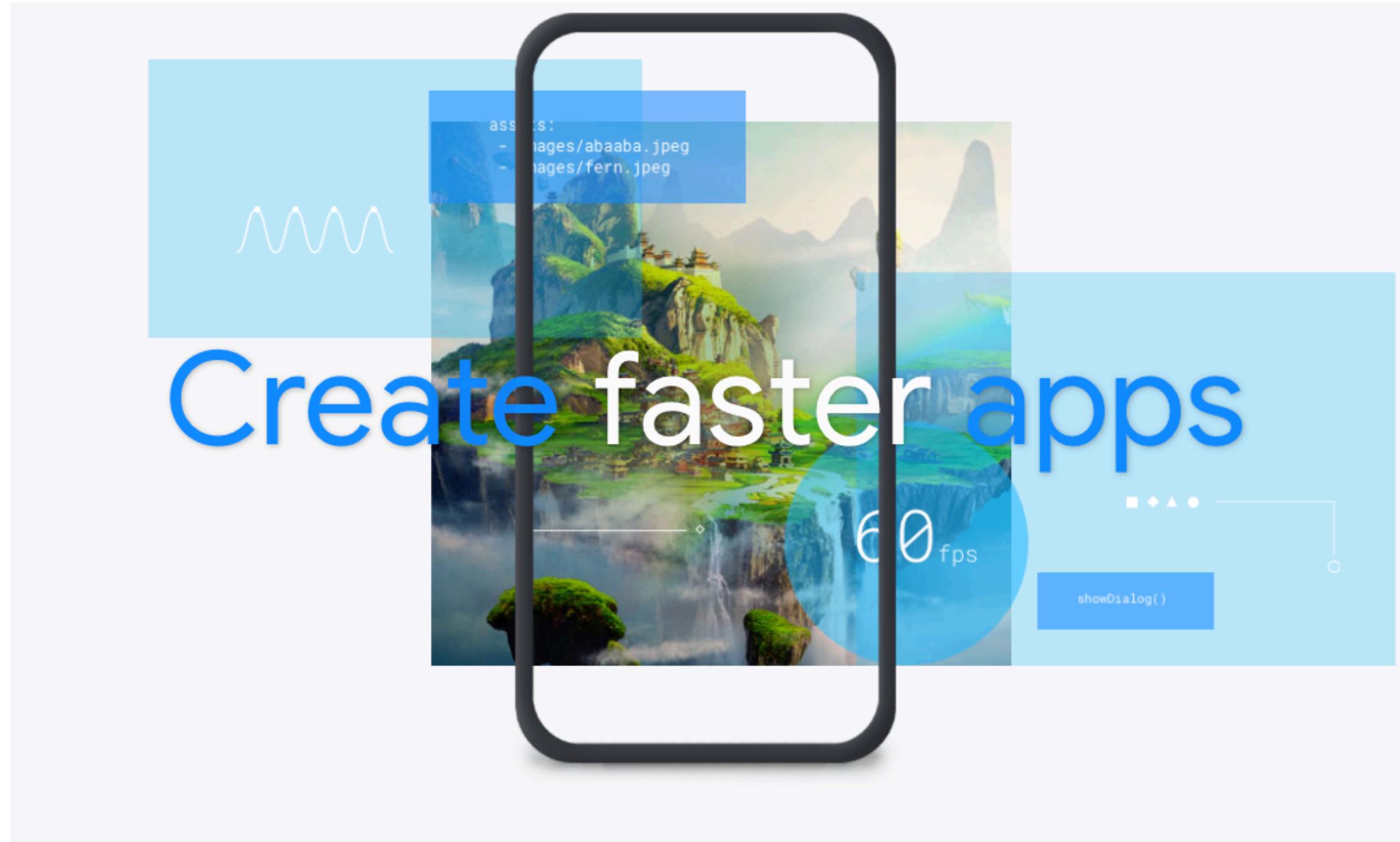
yes

Q You ate peanut butter sandwich, peanut butter sandwich, and pepperoni pizza. This has 958.3 estimated total calories.

Reflecting on 133

Technology changes quickly

Technology changes quickly



Made by **Google**

Flutter is Google's UI toolkit for building beautiful, natively compiled applications for [mobile](#), [web](#), and [desktop](#) from a single codebase.

[Get started](#)

[Watch video](#)

<https://flutter.dev/>

Take away messages from the course

Search before you build

- Do not reinvent the wheel!
- Use interfaces, algorithms, animations, etc. that have been created by other people



Build by example

- Learn from others
- Read source code on webpages, GitHub, StackOverflow
- Use the element inspector in your browser to see someone's design or implementation

The screenshot shows the developer tools of a web browser with the 'Elements' tab selected. The left pane displays the HTML structure of a page, including script tags for Google Fonts and Google Analytics, and a script for Google Tag Manager. The right pane shows the 'Styles' panel, which lists the CSS rules applied to the selected element. These rules come from 'tools.css' and the 'user agent stylesheet'. The 'body' element has a width of 100% and a height of 100%, with a font family of Helvetica, Arial, sans-serif. It also has margin and padding set to 0, and word-wrap set to break-word.

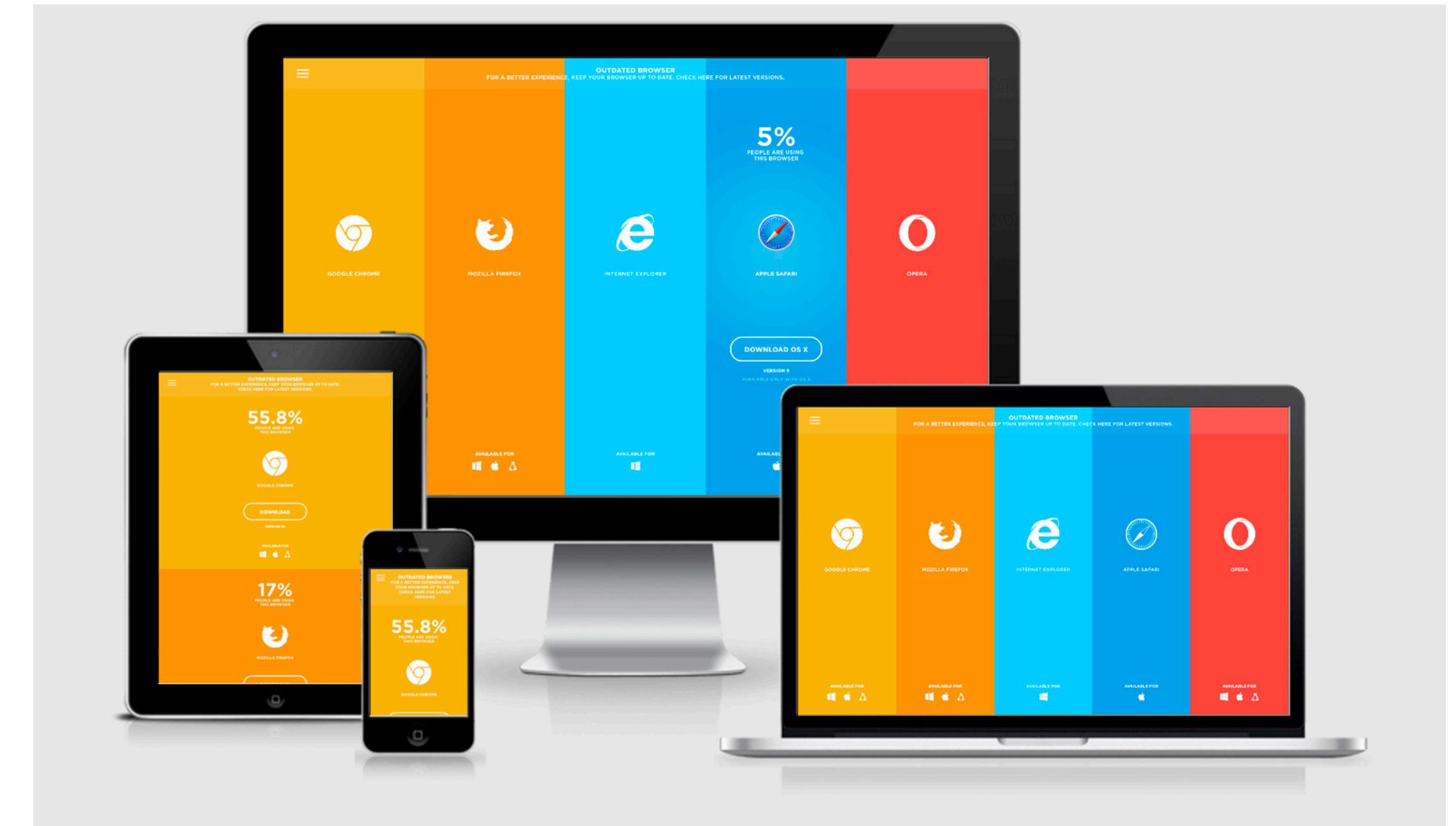
```
<!DOCTYPE html>
<html class="no-touch no-js mdl-js">
  <head>...</head>
  ...<body class="page--" itemscope itemtype="http://schema.org/WebSite"> == $0
    <div class="mdl-layout__container">...</div>
    <link href="https://fonts.googleapis.com/css?family=Roboto+Mono:400,700|Roboto:400,300,500,700,400italic,700italic" rel="stylesheet" type="text/css">
    <script type="text/javascript" async src="https://www.google-analytics.com/analytics.js"></script>
    <script async src="//www.googletagmanager.com/gtm.js?id=GTM-MB3LRF"></script>
    <script src="/static/js/material_design_lite_bundle.js"></script>
    <script>...</script>
    <!-- Google Tag Manager -->
    <noscript>...</noscript>
    <script>...</script>
    <!-- End Google Tag Manager -->
  </body>
</html>
```

html.no-touch.no-js.mdl-js body.page--

element.style {
}
body {
 width: 100%;
 min-height: 100%;
 font-family: Helvetica, Arial, sans-serif;
 margin: 0;
 padding: 0;
 word-wrap: break-word;
}
body {
 display: block;
 margin: 8px;
}
Inherited from html.no-touch.no-js.mdl-js
html {
 color: #rgba(0,0,0,.87);
 font-size: 1em;
 line-height: 1.4;
}
Pseudo ::selection element
::selection {

Build for accessibility

- Keep in mind who you are designing for!
- Make sure your app works for:
 - All users
 - All browsers
 - All devices



Build with caution

- Use version control!
- Test while you build
- Iteratively refine and debug



GitHub

Build on a solid foundation

- A new framework will come out next year
 - Or next month or next week
- But some fundamental principles unite them all
 - Separating interface from data and interaction, for example

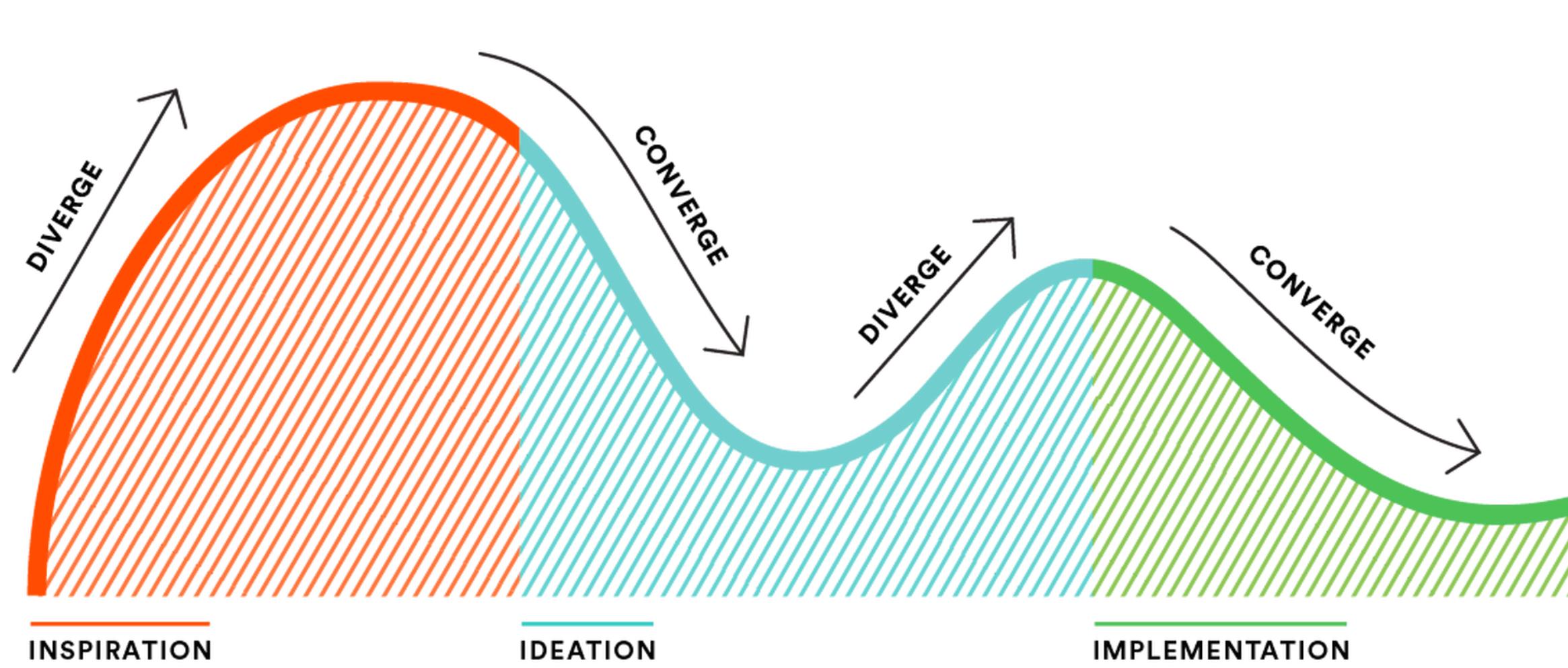


Take away messages

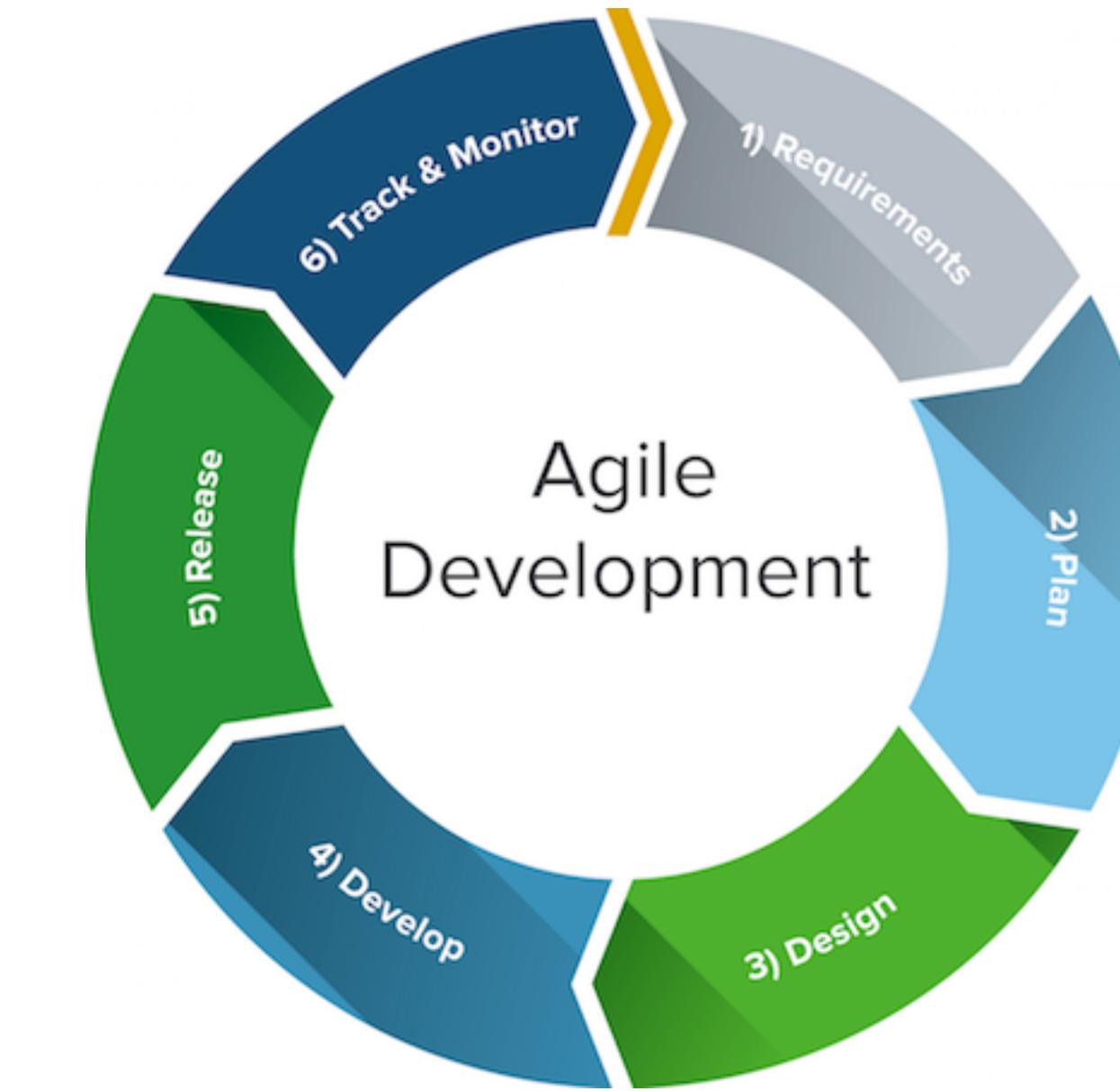
- Search before you build
- Build by example
- Build for accessibility
- Build with caution
- Build on a solid foundation

Applying this course in practice

Product design process

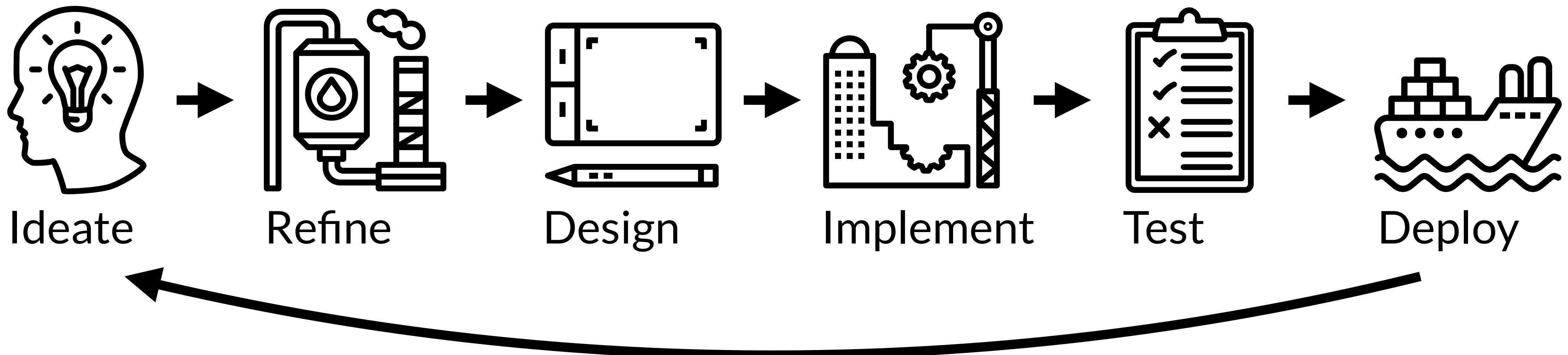


Human-Centered Design, IDEO



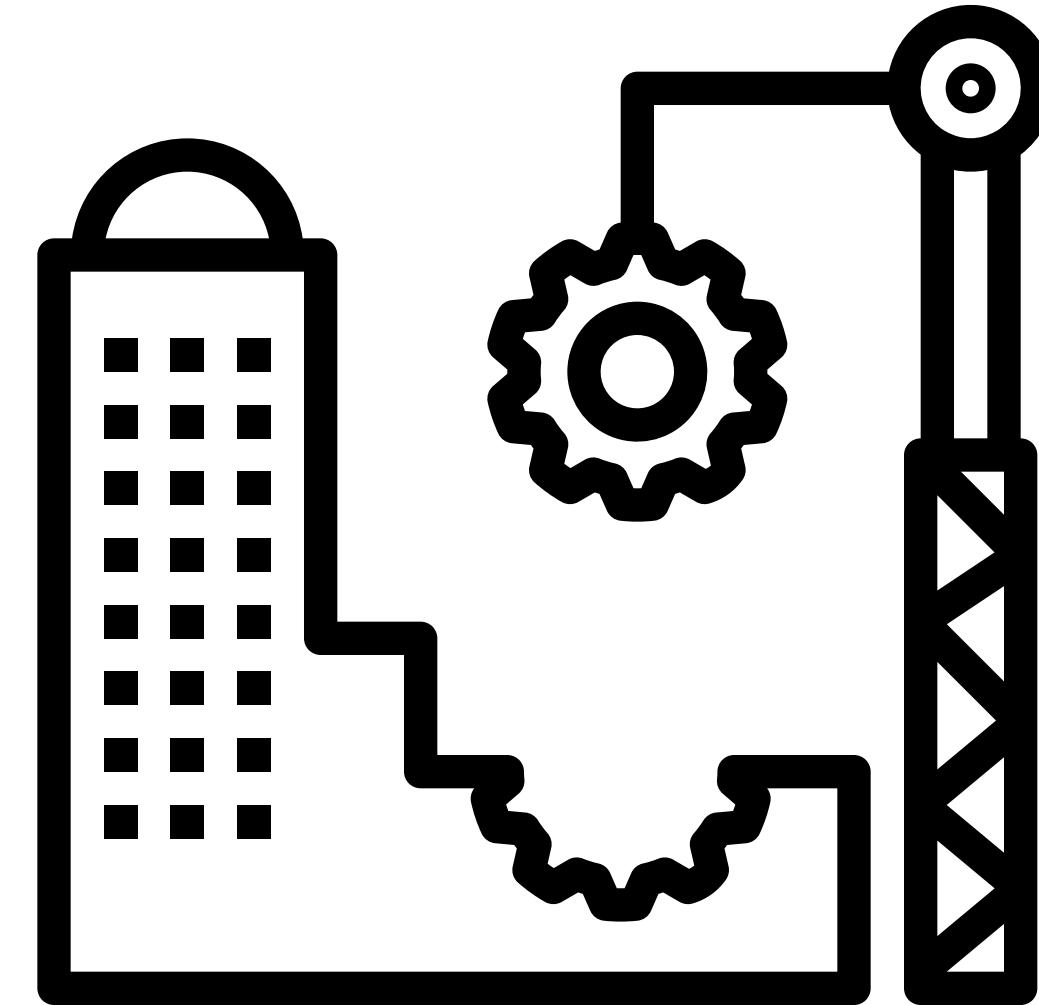
Agile Development, Agile Manifesto

Product design process, simplified



User interface implementation

- Has the power to turn ideas into reality
- Often dictates design decisions and timelines, for better or for worse
- Either you will be implementing, or you will need to communicate with your colleagues who are



**What job might you get
when you graduate?**

Some job options

- User experience designer
- User experience researcher
- Front-end software engineer
- Back-end software engineer
- Academic researcher (graduate student)
- Software consultant
- Something unrelated to technology
- ... others?

If you're going into UX, you can now...

- Follow principles of web, mobile, AR design
 - Responsive design! Error prevention! Give clear instruction!
- Be conversational in web and mobile programming
 - Be able to understand what tasks are easy and what are hard
 - And understand when a developer is BSing you about how long something will take
- Style a webpage
 - Use CSS and SASS to change a design and even add animations

Front-end software engineering...

- Build a webpage in plain HTML
 - Make it responsive with Bootstrap
- Use a framework to build a richer application
 - Angular for a web frontend
 - Ionic for a mobile frontend
- Style a webpage
 - Use CSS and SASS to change a design and even add animations

Back-end software engineering...

- Build a web server
 - Allow it to respond to requests from a front-end interface
 - Allow it to make requests to APIs made by other developers
- Follow authentication and authorization protocols
 - Enable users to sign on
- Use a database
 - Data can persist between sessions

Academic research...

- Explain some key problems in a couple of areas
 - Ubiquitous computing
 - Human performance
 - Mixed reality design
 - Conversational interfaces
 - Wearable computing
 - Augmented and virtual reality

Software consultancy...

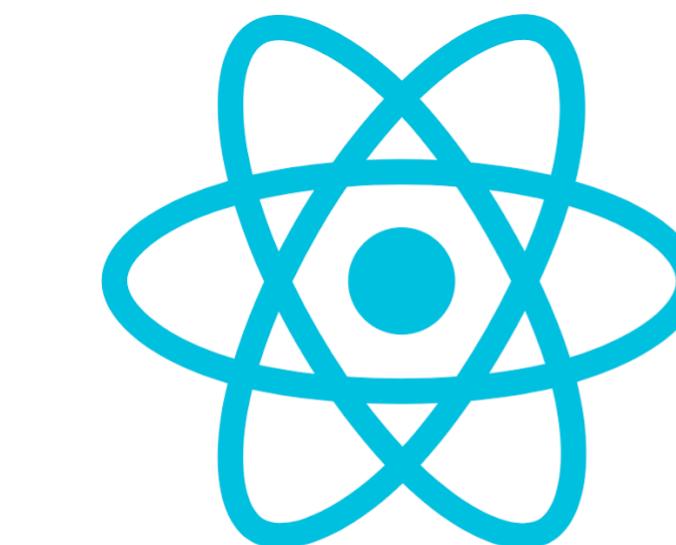
- Process and analyze data
 - Retrieve it from an API
 - Parse and process it to answer your question
- Visualize data
 - Use an appropriate tool for the task

Something unrelated...

- Make a portfolio to show off your skills
 - Selling yourself is key
- Judge new devices and apps that come along
 - Is this solving a real problem?
 - Is this well designed?

What is interface implementation today?

Often HTML, CSS, and JavaScript



React JS

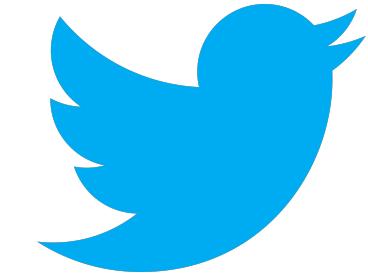


Assignments

- A1: Personal web portfolio



- A2: Programming on the web



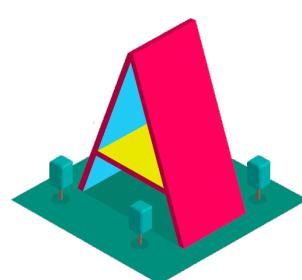
- A3: Web frameworks



- A4: Mobile development



- A5: Beyond Web & Mobile



Other skills

- Git and GitHub
- Package management in npm
- SASS
- Visualization in Vega-Lite

Question



What framework or language did you find the most challenging to pick up?

- A HTML and CSS
- B JavaScript and TypeScript
- C Angular
- D Ionic
- E Platforms beyond web & mobile

Question



What framework or language did you find the most rewarding to learn to use?

- A HTML and CSS
- B JavaScript and TypeScript
- C Angular
- D Ionic
- E Platforms beyond web & mobile

Congratulations!

- We said this class would be challenging
- You have risen to the challenge and worked hard (and still are)
- You have created impressive work as a result

**It's been an honor
to be able to teach you.**

**I look forward to seeing
what you do next!**

Today's goals

By the end of today, you should be able to...

- Describe how Jo and Lucas concepts from IN4MATX 133 in their research and practice
- Summarize what you learned in IN4MATX 133
- Describe the relevance of the topics to different disciplines in industry
- Fill out the course evaluation!

IN4MATX 133: User Interface Software

Lecture 18:
Wrap-Up

Professor Daniel A. Epstein
TA Eunkyung Jo
TA Lucas de Melo Silva