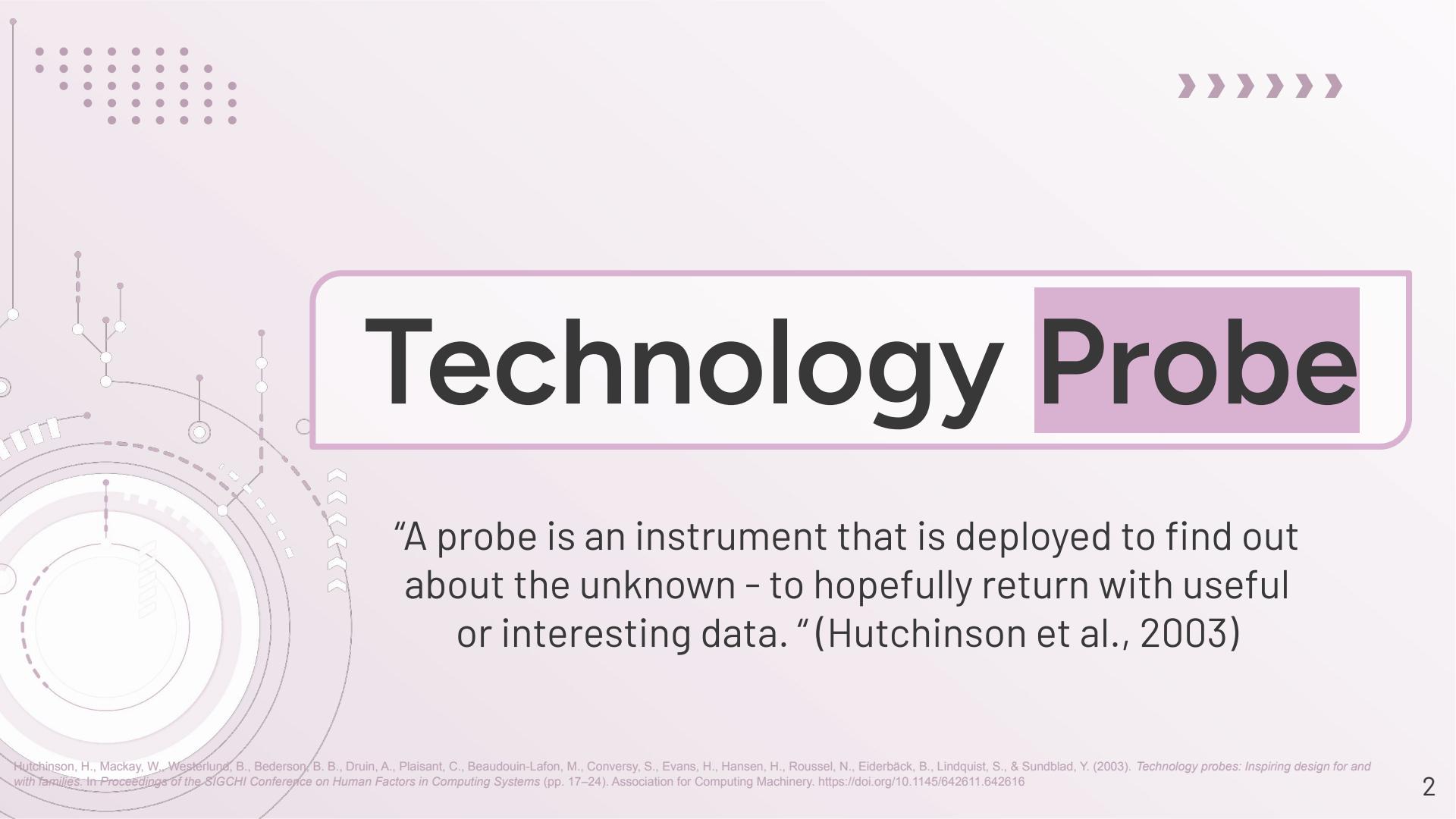


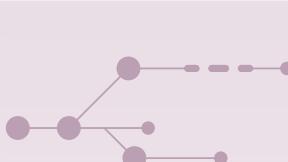
Beyond **GCal**: Evaluating an LLM-Based Conversational System for Supporting Time and Task Management in College Students

Sophia, Wenhan & Maha

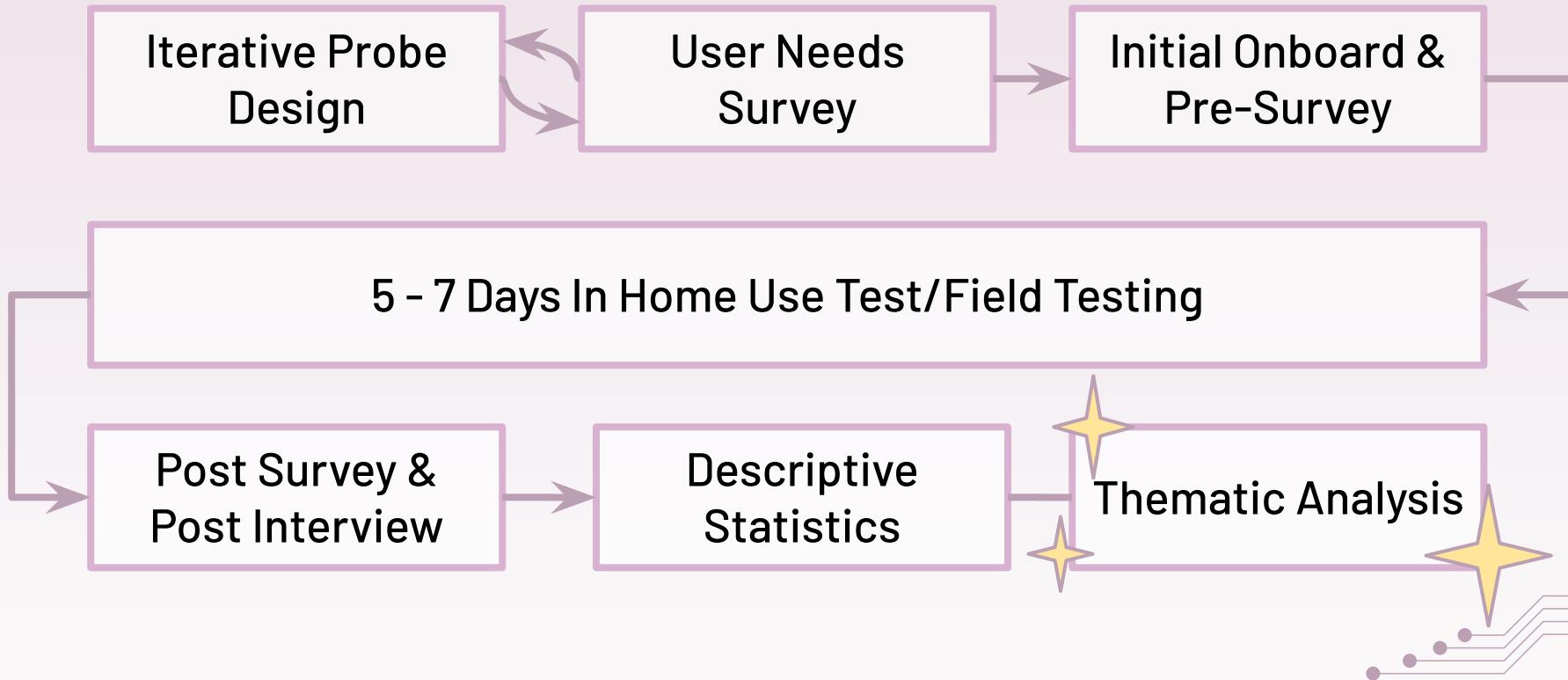


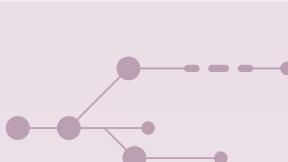
Technology Probe

"A probe is an instrument that is deployed to find out about the unknown – to hopefully return with useful or interesting data." (Hutchinson et al., 2003)

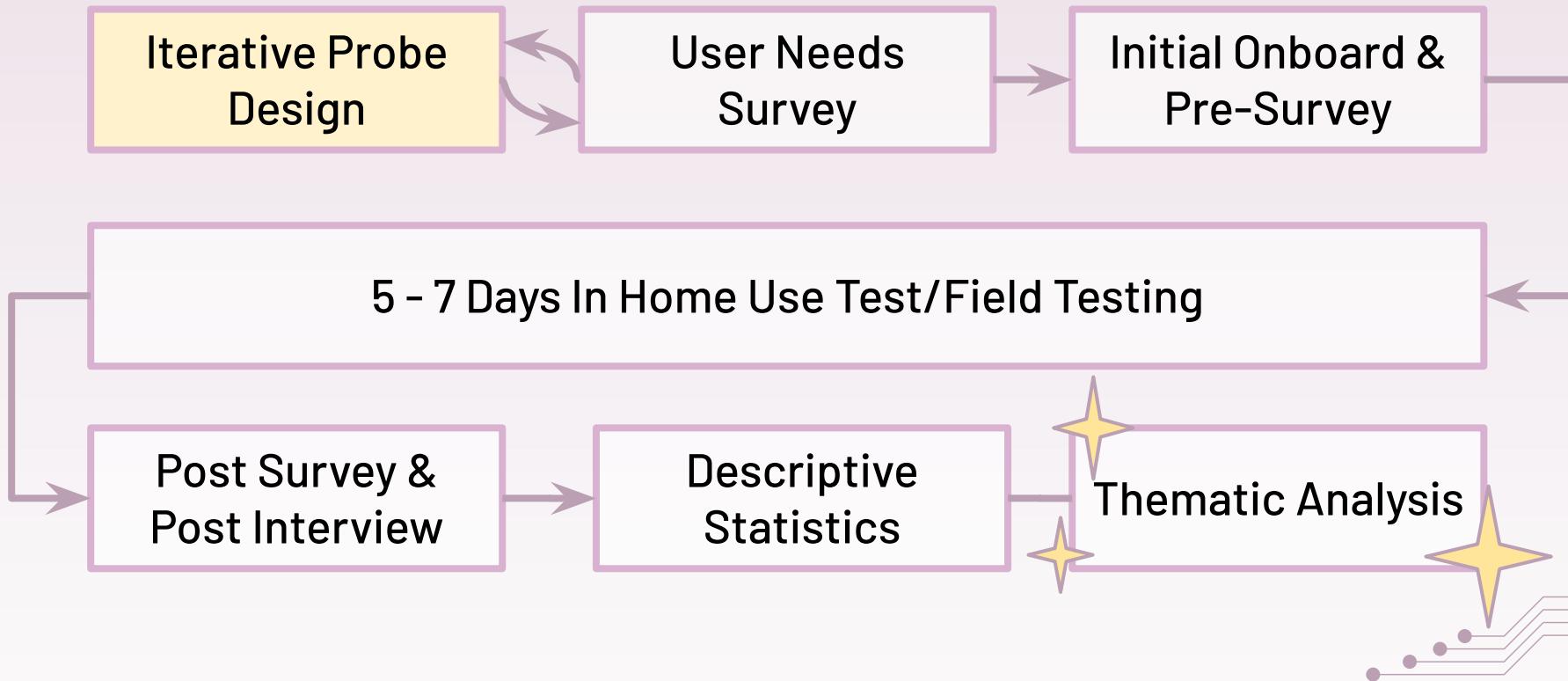


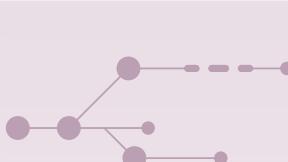
Methodology



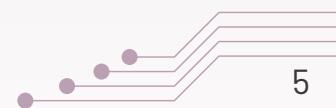
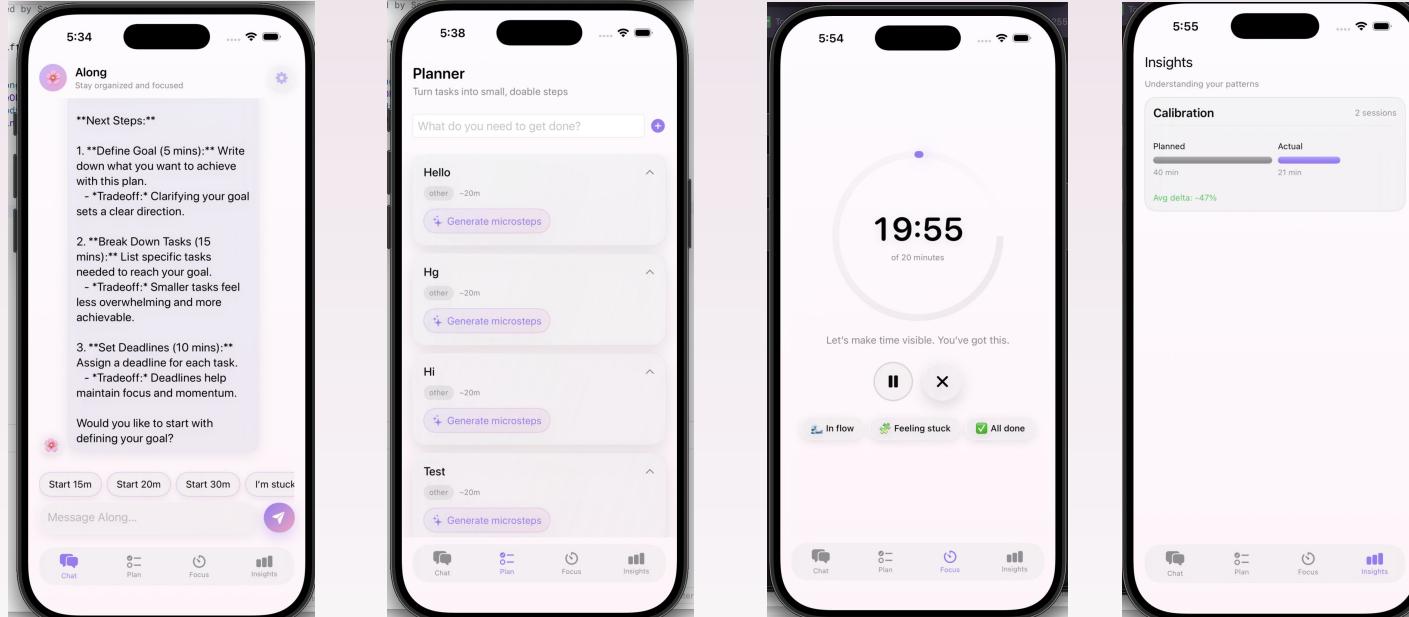


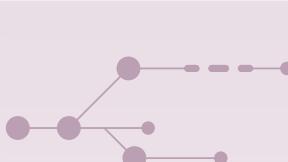
Methodology



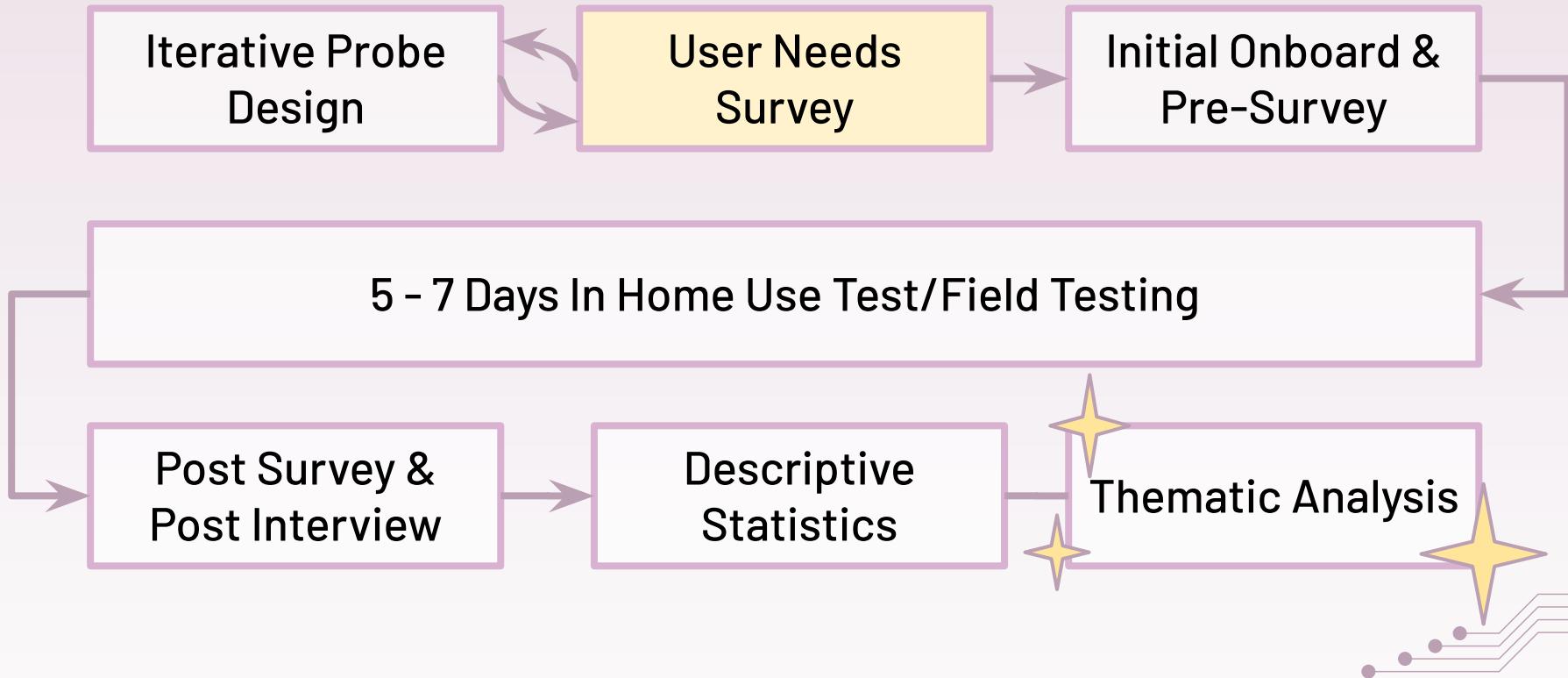


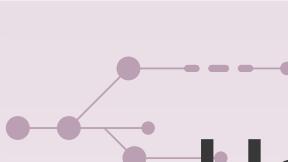
Mixed Fidelity Prototype





Methodology





User Needs Assessment Survey

One unified space

Manage deadlines, tasks and progress
Combat confusion and cognitive overload

Smarter planning to prioritize time

Deciding what's more urgent
Students struggle to judge task duration

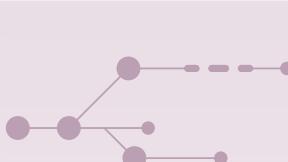
Visual structure of tasks

Viewing dashboards that are clear,
organized and not cluttered

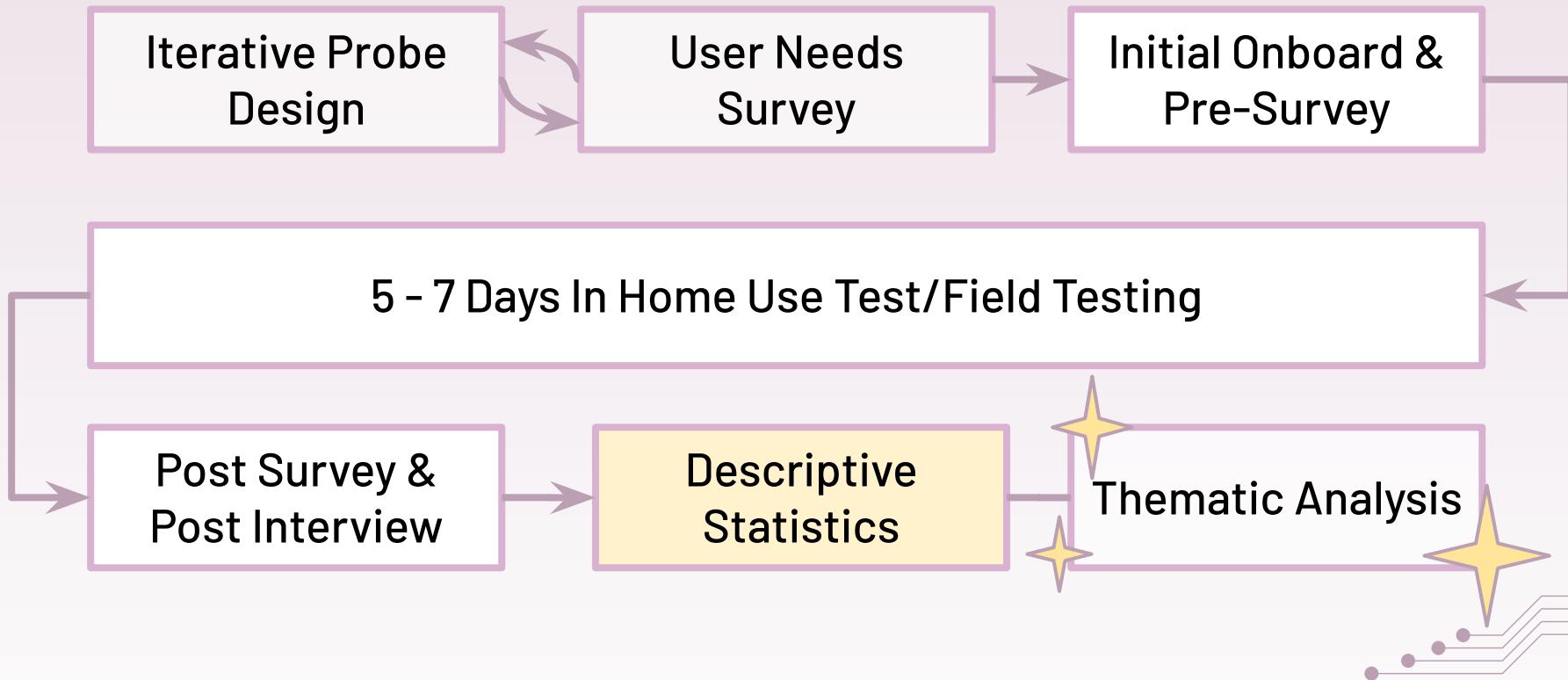
Motivation Challenges

Supportive tools that don't overwhelm users
Reduce emotional stress of starting a task
Progress should feel achievable





Methodology



Participant Info

15 Participants Onboarded

12 Participants' Post Study Data Analyzed

Stress & Overwhelm

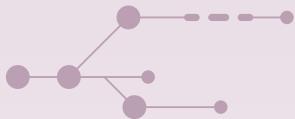
- High stress when thinking about tasks ($M = 4.40$)
- Planning often feels overwhelming ($M = 3.20$)

Time Blindness & Initiation Difficulty

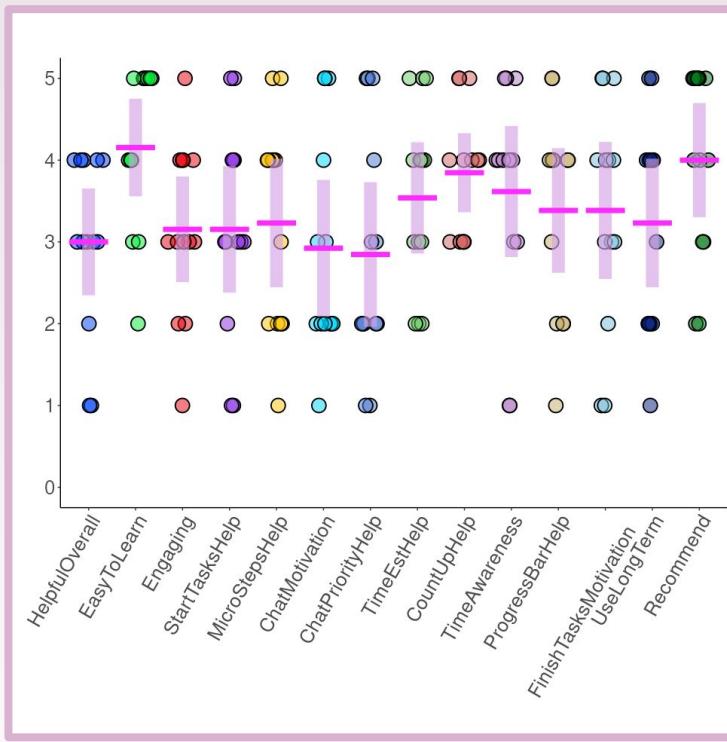
- Frequent delays starting or resuming tasks ($M_s \approx 3.5-3.7$)
- Difficulty breaking down large work ($M = 4.13$)
- Underestimate task duration; need time visualization ($M_s = 3.47 \& 4.07$)

Openness to Supportive AI

- Check-ins and micro-step guidance seen as helpful ($M \approx 3.6-3.7$)
- Strong desire for adaptive pacing ($M = 4.07$)
- Rely on tools but find them rigid ($M_s = 4.20 \& 3.87$)



Post-Study Survey

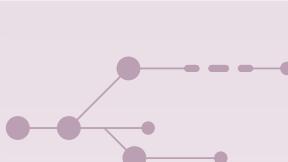


Participants found the probe:

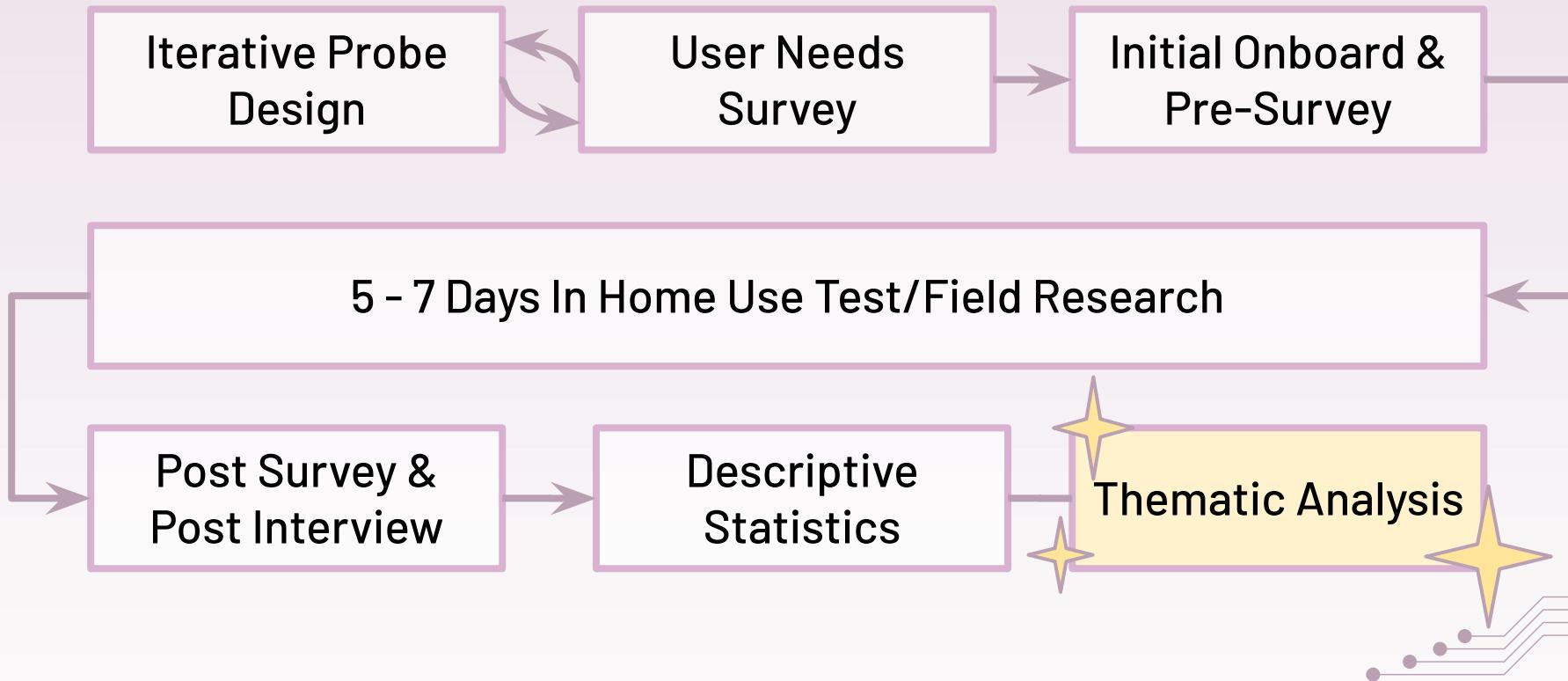
- **Easy to learn** ($M = 4.15$).
- **Time-related features** rated the highest ($Ms = 3.54-3.85$)
- **Initiation supports** (eg. micro-steps) rated as moderate ($Ms = 3.15-3.38$)
- **Chat-based features** rated as lowest ($Ms = 2.85-2.92$)

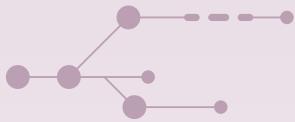
Participants reported that they are likely to **recommend a similar tool** ($M = 4.00$)



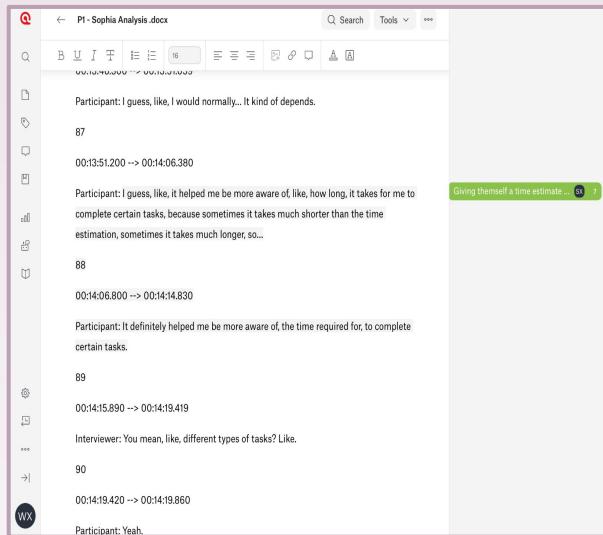


Methodology



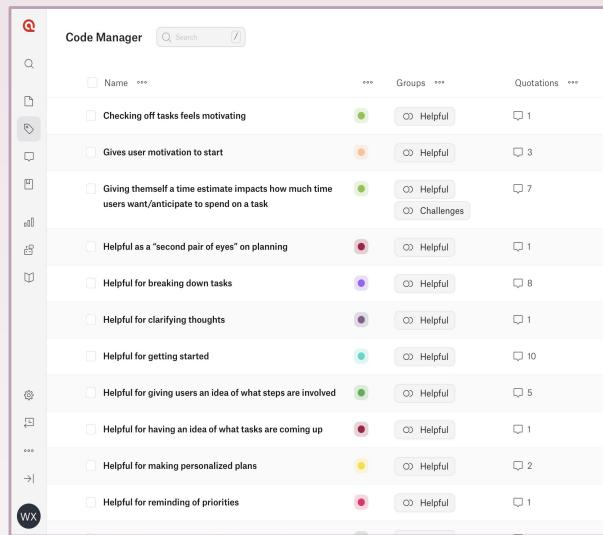


Thematic Analysis



Participant: I guess, like, I would normally... It kind of depends.
87
00:13:51.200 -> 00:14:06.380
Participant: I guess, like, it helped me be more aware of, like, how long, it takes for me to complete certain tasks, because sometimes it takes much shorter than the time estimation, sometimes it takes much longer, so...
88
00:14:06.800 -> 00:14:14.830
Participant: It definitely helped me be more aware of, the time required for, to complete certain tasks.
89
00:14:15.890 -> 00:14:19.419
Interviewer: You mean, like, different types of tasks? Like,
90
00:14:19.420 -> 00:14:19.860
Participant: Yeah.

Step 1: Coding transcripts
(75 codes)



Name	Groups	Quotations
Checking off tasks feels motivating	Helpful	1
Gives user motivation to start	Helpful	3
Giving yourself a time estimate impacts how much time users want/anticipate to spend on a task	Helpful, Challenges	7
Helpful as a "second pair of eyes" on planning	Helpful	1
Helpful for breaking down tasks	Helpful	8
Helpful for clarifying thoughts	Helpful	1
Helpful for getting started	Helpful	10
Helpful for giving users an idea of what steps are involved	Helpful	5
Helpful for having an idea of what tasks are coming up	Helpful	1
Helpful for making personalized plans	Helpful	2
Helpful for reminding of priorities	Helpful	1

Step 2: Reviewing codes
collectively

Findings

Task Initiation

1. Seeing the entire breakdown of a task makes it feel less daunting and encourages participants to start on it
 - "I think the tool is really useful in, like, initiating, my starting of a task, because, And it's just very clear, like, what steps I should take to, achieve my goals, so it... I get... there's less uncertainty... So, yeah, I feel more motivated when I use the tool." (P13)
 - "...it's easier to imagine doing smaller, manageable tasks than, like, a bigger task, like completing a project or, writing an essay, so I think that definitely helped me to start certain things." (P1)
2. Micro-steps that are easy to take action on or start motivate participants to start on tasks they procrastinate with
 - "...it did help, so I was, like, more for, like, boring administration tasks. I would put a lot of, like... to break down what I needed to do, and then to get started, like, open laptop, start writing email kind of thing." (P15)
3. Entering information for a task forces participants to confront it
 - "it was really nice that, like, it kind of forced me to confront these things that I had, and, like, actually think about how long it would take... I don't like to think about things until I'm doing them, and I think because of that, like, approaching, like, really big blocks of time where I have to complete stuff could be really stressful." (P6)

Task Completion

1. Breaking down tasks into checkable micro-steps felt rewarding and motivating
 - "The most helpful part was definitely generating microtasks, because sometimes I don't want to, like, list out all the small tasks myself, and it will do it for you, and I can check them off for more motivation." (P8)
2. Giving time estimate for a task sometimes cause participants to avoid it or rush through it

Step 3: Discussing
emerging themes



Findings

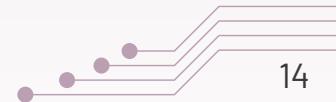
What was helpful, and what was not?



Task Initiation

- 1 Seeing the entire breakdown of a task made it feel less daunting
- 2 Micro-steps that are easy to take action on motivated participants to start
- 3 Simply putting in the task itself pushed participants to start actually thinking about it

9 out of 12 participants



Task Initiation

P6 -

“...it was really nice that it kind of **forced me to confront these things that I had, and actually think about how long it would take**...I don't like to think about things until I'm doing them, and I think because of that, approaching really big blocks of time where I have to complete stuff could be really stressful.”





Task Completion

1

Micro-steps that can be checked off felt rewarding and motivating

2

Having all the tasks and micro-steps laid out let participants switch to an easier one when they felt stuck.

6 out of 12 participants



Task Completion

P11 -

“...when I would do a task and I got stuck, I'll look at the options they offered, I'm like, hmm, which one is easy? Let me pick an easy one to do, and then **that would get me back into working on things instead of reaching for my phone** and be like, okay, I'm gonna take a break. So I think that did help me stay on track.”





Time Awareness / Calibration

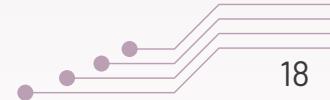
1

Giving time estimate helped participants gauge the workload and plan accordingly

2

Entering time estimate and comparing that with the actual time taken gave users a better sense of time

8 out of 12 participants



Time Awareness / Calibration

P1 -

“...it helped me be more aware of how long it takes for me to complete certain tasks, because sometimes it takes much shorter than the time estimation, sometimes it takes much longer, so it definitely **helped me be more aware of the time required to complete [different types of] tasks.**”





Challenges and Space for Improvement

Technical fixes:

- Chatbot assistant needs to be more intelligent in finding and scheduling time blocks for participants
- Micro-steps were too **specific** and/or too **generic** to be helpful

Design fixes:

- Tasks and schedules should be listed by days in a week, similar to GCal's weekly view
- Onboarding tutorial

Design Implications

Certain challenges are more **nuanced**
and don't have direct solutions...

Design Implications

01

Maintaining User's Sense of Autonomy and Control

02

Receiving Reflective AI Feedback as a "Second Pair of Eyes"

03

Improving Guidance for Effectively Interacting with the AI System

04

Reducing Effort and Cognitive Load Through Automation

05

Building a More Personalized and Integrated Experience

Design Implications

P13 -

*"I really want to **feel like I'm able to complete the task on my own**, despite there might be some nudges or help that I gained along the way, so I really hope that I can work with it not being a synchronized way, such that we **discuss and plan out something that really caters to my hope and wishes**, instead of having them suggest everything for me."*



Thank you!

We look forward to questions and comments :)

