CS 147

October 3rd, 2025

A5:

Low Fi Prototype

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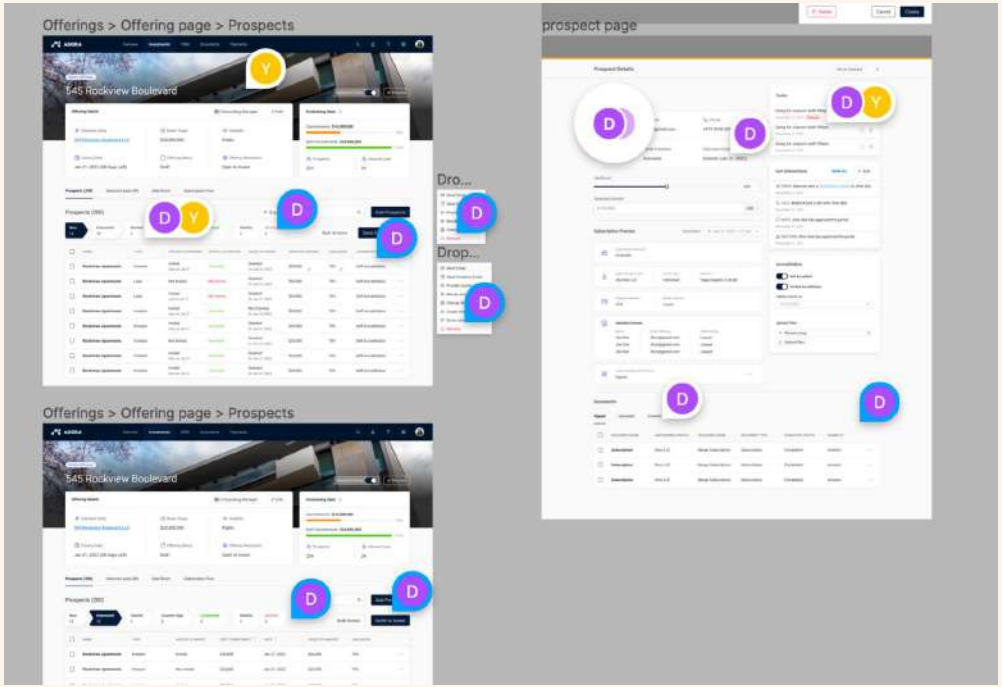
Communication in current design tools is disorganized

comment flows in current tools are:

text-based

overwhelming



disorganized

not transferable to to-dos

lacking revision history

Our solution synthesizes and organizes information

our platform
empowers users with **multi-modal** communication

Status quo	Clarus
text-based	multimodal: voice, video, and text support
disorganized	filtered by role, modality, element, etc.
overwhelming	synthesized with AI
not transferable to to-dos	transformed into role-specific to-do lists
lacking revision history	digestible and accessible documentation of edits and comments

Value Proposition

Seamless, flexible communication between founders and designers

Previous value prop “create together, instantly” was too broad and nonunique

Seamless, flexible communication between founders and designers

	Comments exist in isolation	Feedback is fragmented
Status Quo		
Our value add		
	Captures full context of feedback: tone, emotion, and detail.	Organized for realtime clarity and faster creative alignment

Seamless, flexible communication between founders and designers

Status Quo	Simultaneous Editing	Optimize for doing
Our value add	Shared understanding, communication clarity	Optimize for understanding: foundation of effective work

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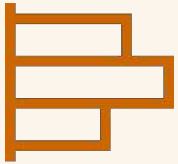

5. Testing Results

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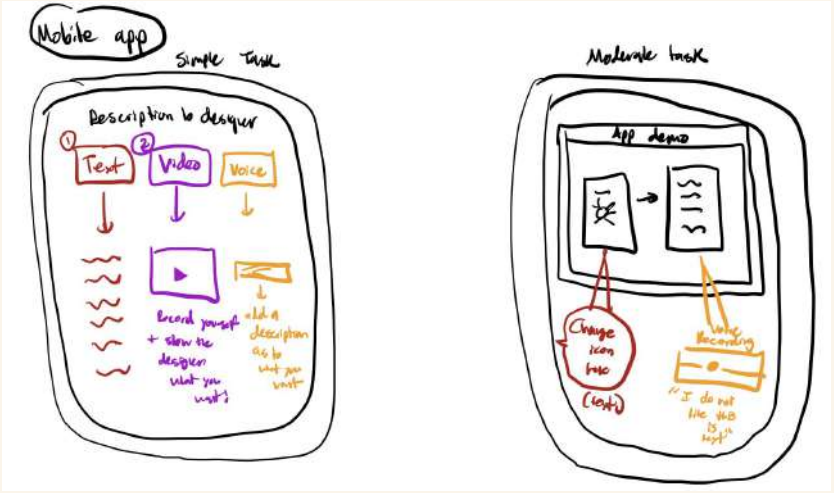
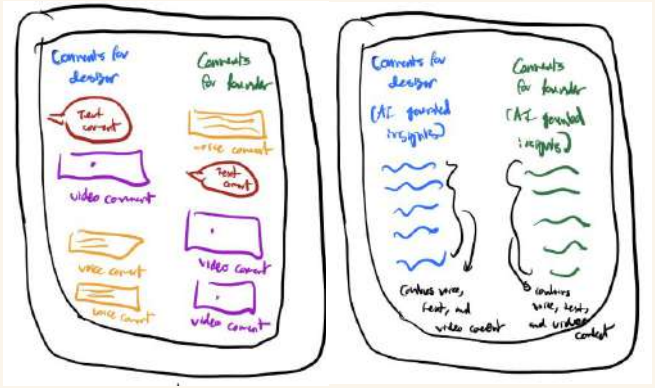
Sketching Explorations

Concept 1 – Mobile App

Commenting and Documentation

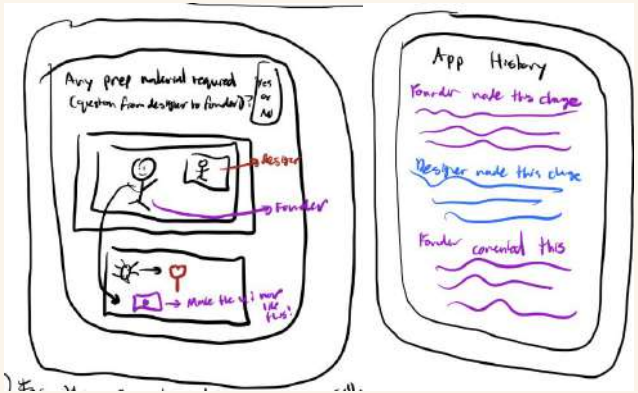


Multimodal feedback comments (video, audio/voice, and text)



Role and task based comment organization

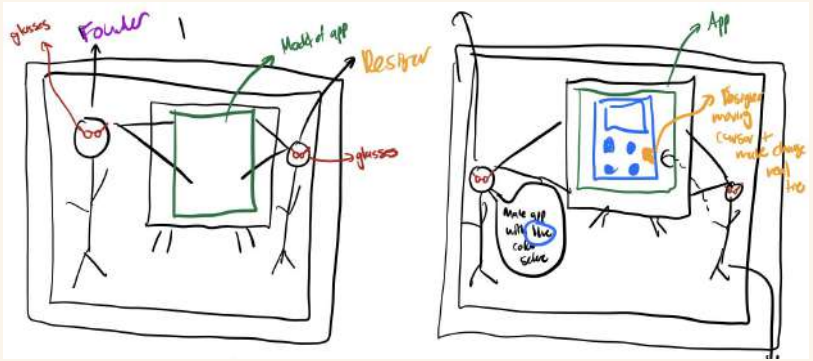
AI-powered insight summaries of comments



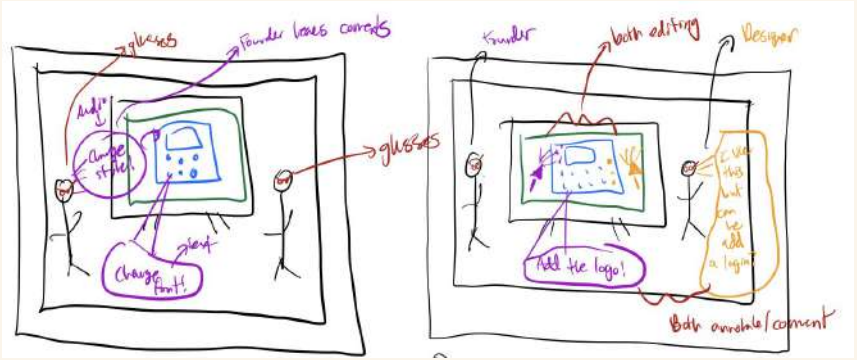
Real time video calls, commenting, and editing

Version history to see ownership

Concept 2 – VR App

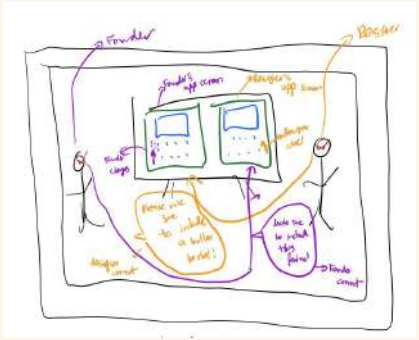


Collaborative real time design of the founder's vision



Real time feedback and iteration through commenting

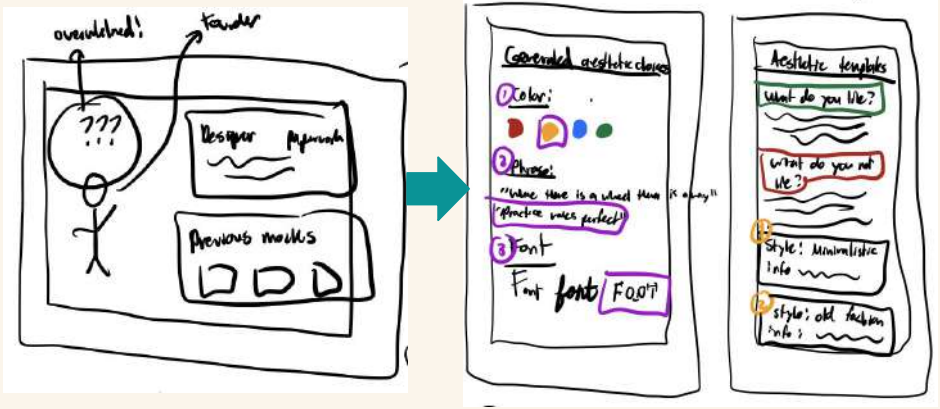
Supports editing by multiple users on the same screen



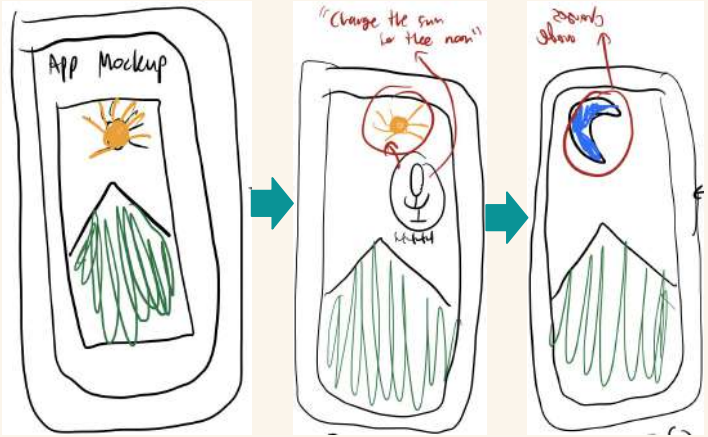
Supports editing by multiple users on different screens

Concept 3 – Mobile App

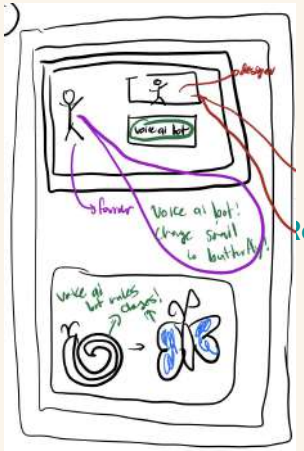
Voice to Visual AI Solution



AI driven design suggestions, component, and template generators based on past preferences



Voice AI for UI editing and iteration



Real time voice AI for UI editing over calls

First Elimination: VR has low accessibility

We chose to continue with **mobile solutions** because of limitations with VR

Only **27%** of US adults have used VR due to lack of accessibility

89% of VR apps **cannot be used** by those who have disabilities

Source: AR Insider, ACM

First Elimination: VR has high costs and complexity

We chose to continue with **mobile solutions** because of limitations with VR

$25,000 **per user** in industry settings for hardware, software, and support

Over **50%** of users **find cost and setup complexity** to be major practical obstacles

Source: Worldviz, G2

Mobile apps are more accessible

More than **78%** of the global population uses mobile apps.

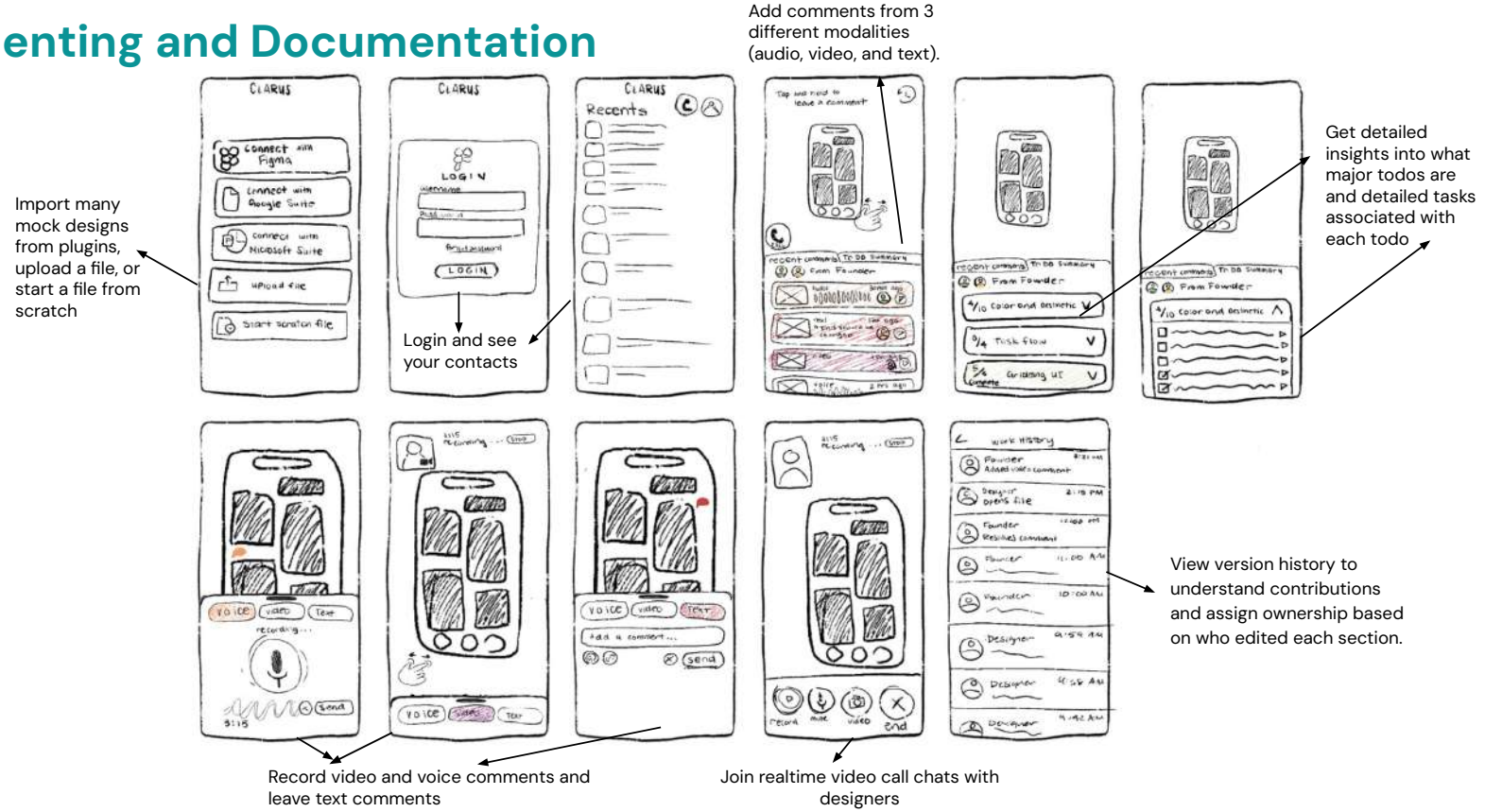
Users in the United States access on average **39** different apps monthly.

Source: SQ Magazine, Tekrevol

Realization Explorations

Key Screens 1

Commenting and Documentation



Pros and Cons

Commenting and Documentation

Pros

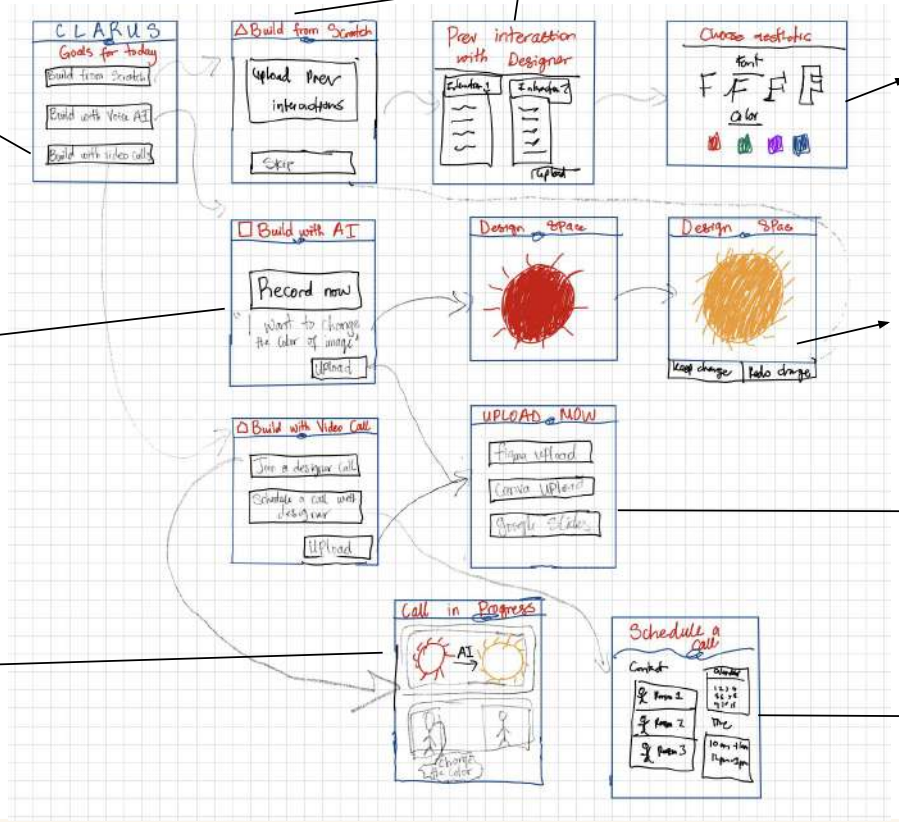
- Synthesizes **large volumes of feedback** for efficient iteration
- **AI is supplemental** rather than essential to the design process

Cons

- **Privacy concerns** regarding voice notes with sensitive information
- **AI reliability** is a concern when generating todos for users

Key Screens 2

Voice to Visual AI Solution



Pros and Cons

Voice to Visual AI Solution

Pros

- **Better visualization** through immediate changes
- **Shortens** timeline of **iteration** process

Cons

- **Over reliance on AI** limiting creative expression
- User education needed to **learn how to use voice AI**

Designers are scared they will be replaced with AI

Ethical Concerns: Perspectives of Designers on AI

62% of designers express concerns that **AI inhibits empathy and exploration** in design (Digital Silk, Killer Innovations)

41% of design professionals are **at risk of being replaced** with AI (Superside)

Founders do not want AI to do design work for them

Autonomy and Creativity: Perspectives from Founders on AI

From our interviews with founders:

"**Tools should not design for me** but help me communicate with designers" Sam in A1

"AI makes **boring and generic looking** designs" Steven in A1

"I **don't think design can be fully automated** by AI - I don't want someone else choosing my clothes" Mike in A1

We Chose:

Commenting and Documentation

Why Our Solution?

Different commenting modes give teams flexibility in using their preferred mode of communication

text

voice

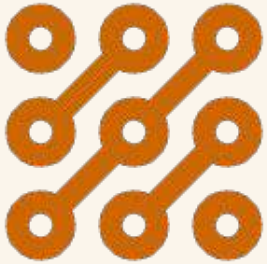
video

Motivating insight: “Even though I **preferred certain modes** of communication, **all of them had their own pros and cons**” Thomas from A2

Our approach keeps notes organized, synthesized, and easily retrievable

Why Our Solution?

centralized

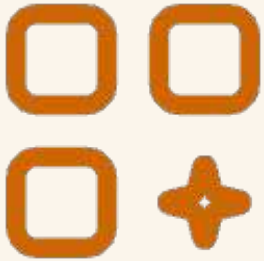


connected

Motivating insight: “Communicating on Slack about design is hard because there are **too many channels and too many people**” Samantha from A1

AI summarization helps translate feedback into action

Why Our Solution?



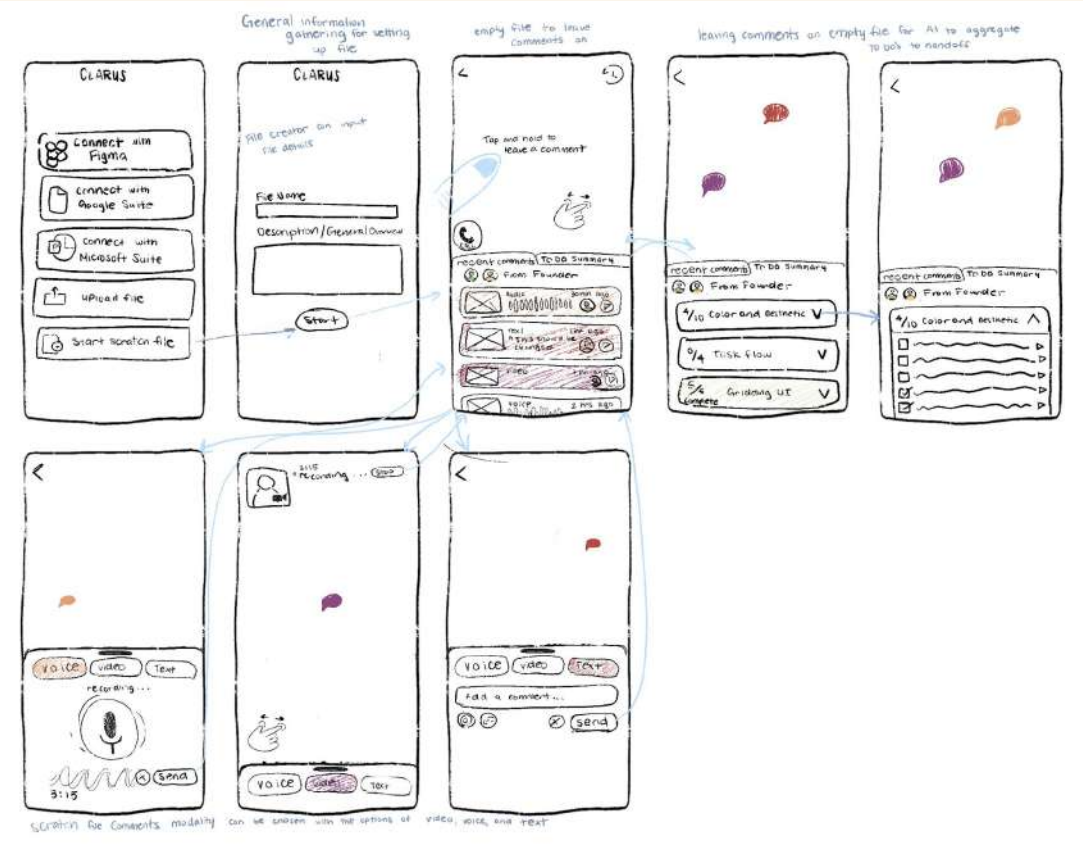
minimally invasive AI features

Motivating insight: “I am **wasting a lot of time explaining technical details to designers** who don’t understand systems” Alex from A1

Key Task Flows

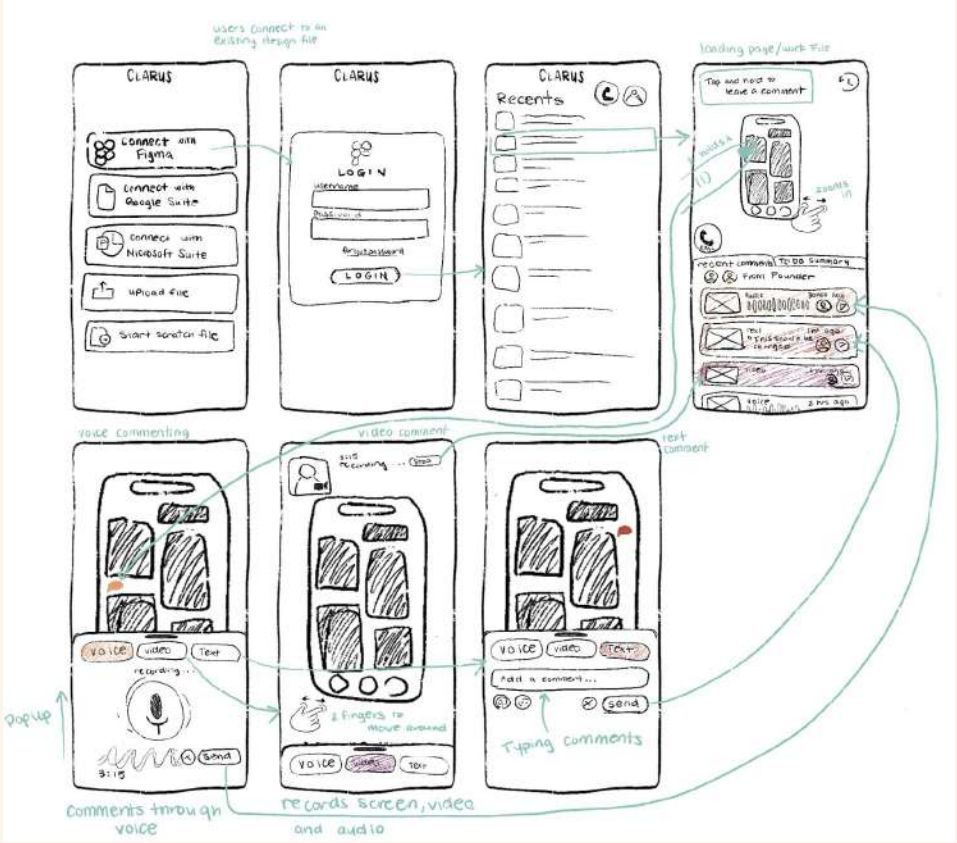
Simple Task

Design and leave comments on a scratch file



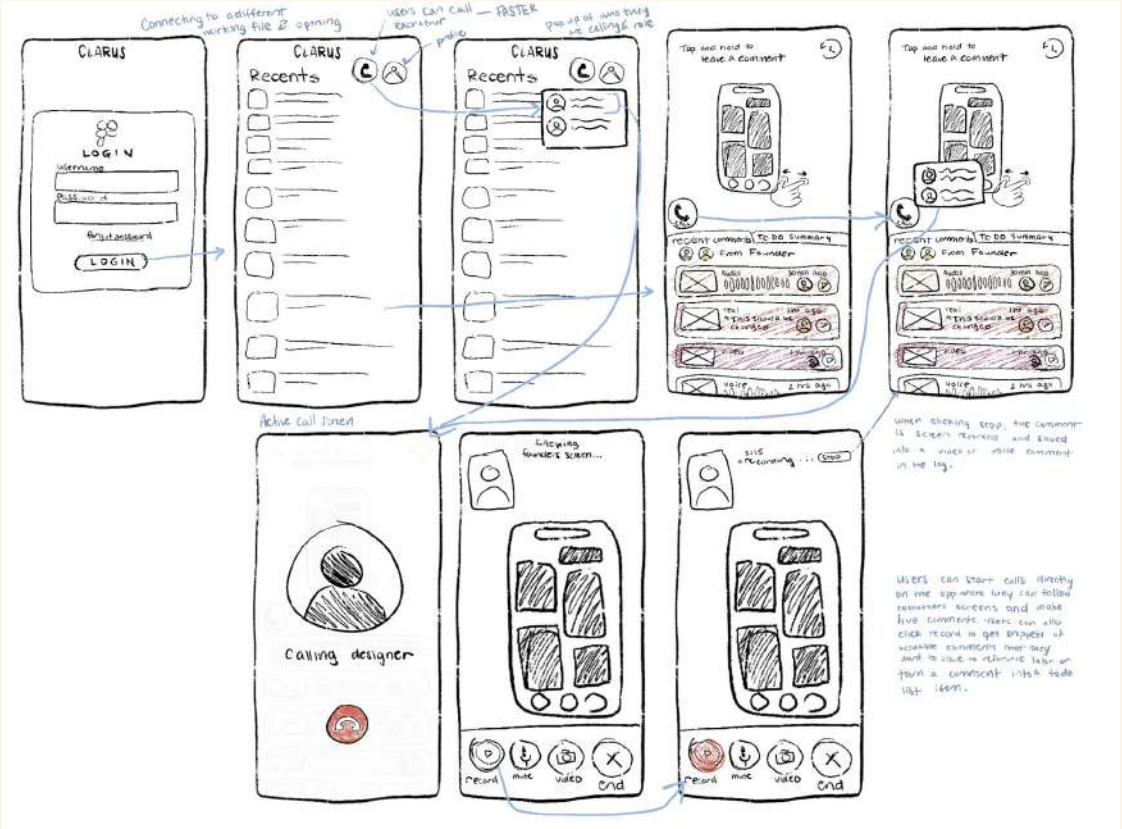
Simple Task

Leave asynchronous multimodal commenting on mockups



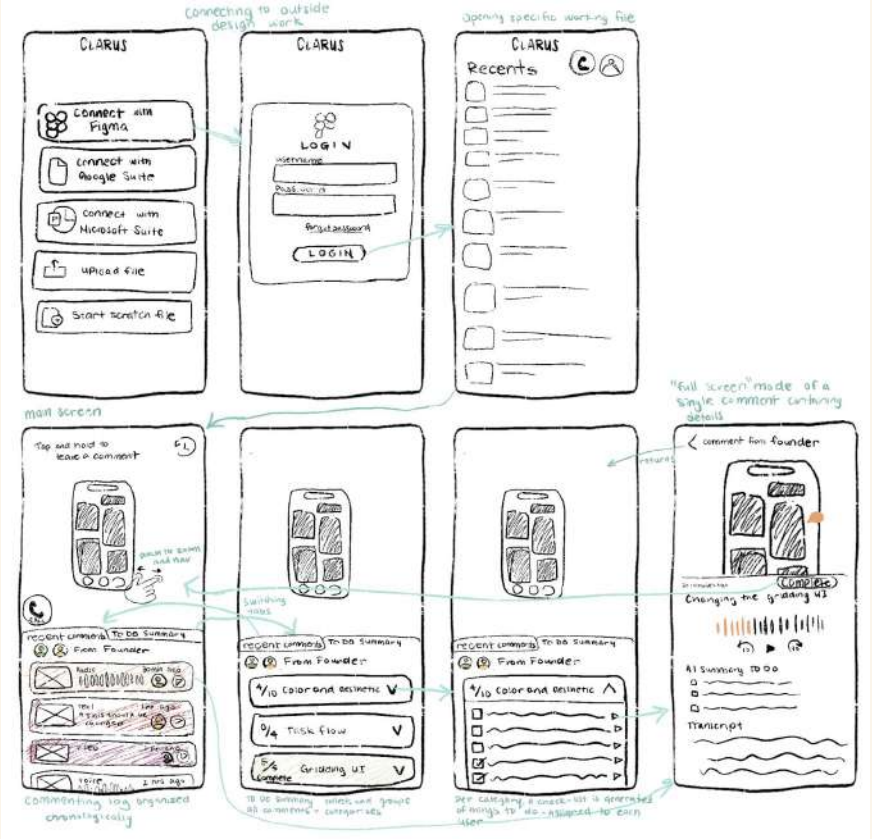
Moderate Task

Realtime calls with designers and live commenting using recordings



Complex Task

Use AI to generate todo categories and detailed checklists from comments



Complex Task

Check version history to see who owns what aspect of the mock up

Revising tasks by narrowing down to three tasks

Simple	Design and leave comments on a scratch file Leave asynchronous multimodal commenting on mockups
Moderate	Realtime calls with designers and live commenting using recordings
Complex	Use AI to generate todo categories and detailed checklists from comments Check version history to see who owns what aspect of the mock up

Revising tasks by narrowing down to three tasks

Simple

Design and leave comments on a scratch file

Leave asynchronous multimodal commenting on mockups

Choose one as both have a similar flow

Leave asynchronous multimodal commenting on mockups

Moderate

Realtime calls with designers and live commenting using recordings

Realtime calls with designers and live commenting using recordings

Complex

Use AI to generate todo categories and detailed checklists from comments

Check version history to see who owns what aspect of the mock up

Combine into one task flow

Use AI to generate todo categories from comments and view version history

Low-fi Prototype

Overview

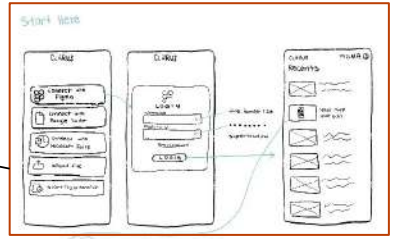
Environment

We tested the prototype in **areas of Stanford campus** where the participant preferred. **Compensation** was given by volunteering to be user tests and beta users for products.

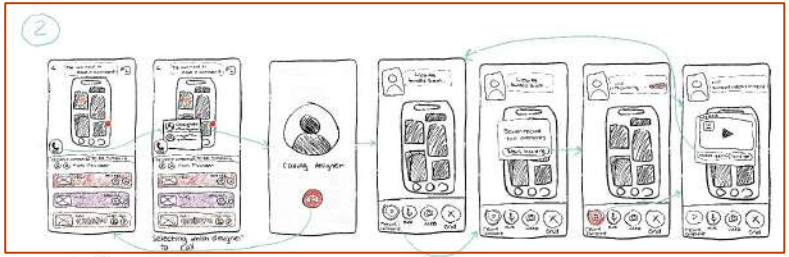
Apparatus

We created a **paper prototype** that manually responded to actions. We switched paper prototypes in front of our participants and **read from a script.**

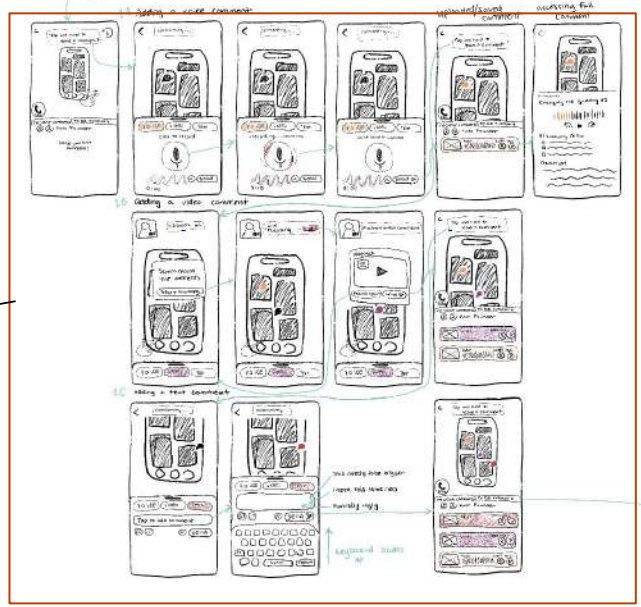
Construction: Features



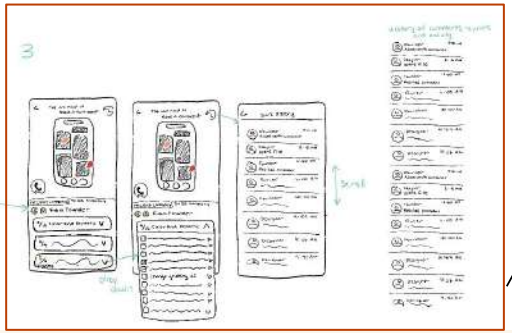
Home: Login and view previous mocks



2. Moderate Task: Realtime calls with designers and **live commenting** using recordings

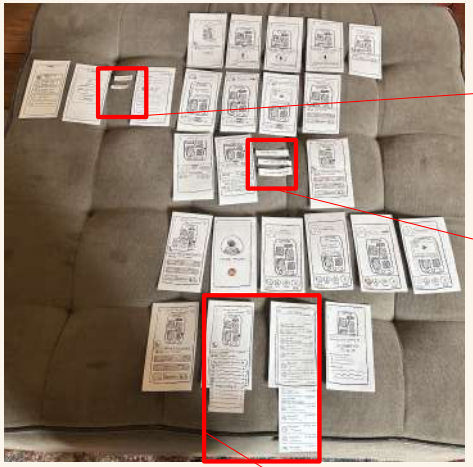


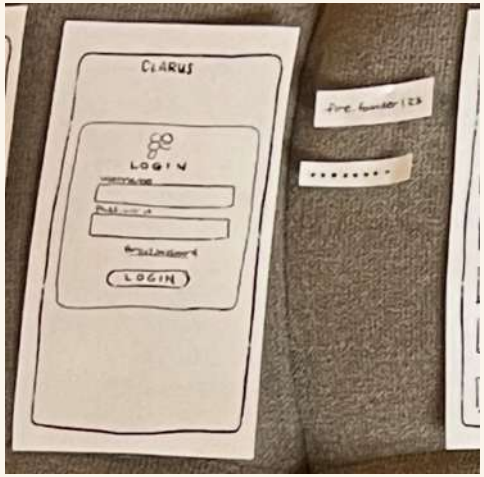
1. Simple Task: Leave **asynchronous multimodal commenting** on mockups



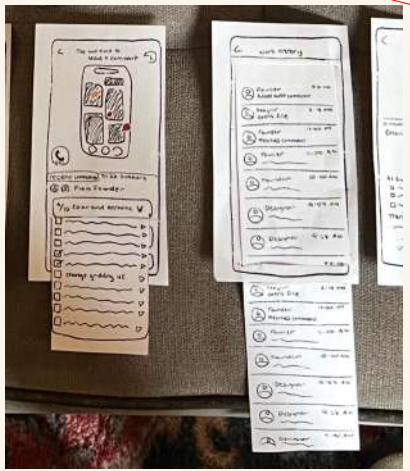
3. Complex Task: Use AI to **generate todo categories** from comments and view version history

Construction: Interactions

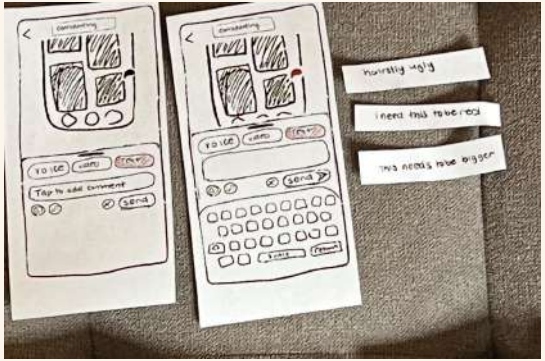




login flow:
username and
password fields



text inputs: typing
comments



scrolling: sliding paper

Procedure

Facilitator: Siya

Computer: Candace

Notetaker: Tyler

Documenter: Avey

Participants were recruited for their diversity

Sawyer
College Dropout
Nontechnical
Media Tech + YC
Pre Seed Startup (1-10 people)

Paul
Stanford Student
Technical
Dev Tool + YC
Seed Startup (1-10 people)

Jim
Professor at Stanford
Technical
Consumer
Pre Seed Startup (10-20 people)

Andrew
New Grad
Technical
HRTech + YC
Series A (20+ people)

Sally
2 years of tech experience
Technical
Medtech
Seed Startup (10-20 people)

Through our recruitment, we captured diversity in

- technicality
- experiences
- startup funding
- type of startup
- team size
- ethnicity

Goals and metrics were chosen to identify pain points

User Satisfaction

Average of relevance (1-10) and ease of use (1-10) for each task

Navigation Accuracy

Number of misclicks per task

Task Efficiency

Time taken to complete each task

Why these metrics?

- Captures how **pleasantly, accurately, and quickly** users can complete tasks using design
- Measures **core dimensions of usability** (satisfaction, effectiveness, and efficiency) helping us **identify pain points before high fidelity**

Testing Results

Sawyer wants the todos to be integrated into Notion

Incident	Severity
Simple: "I think the process was really intuitive and useful to me. I would love to do this in real life."	0
Simple: "I did not really understand how to leave a voice comment. It took me a couple seconds to understand."	2
Moderate: "It felt really intuitive to me. Would definitely use this feature over the first one"	0
Moderate: "I would have loved to choose between different comment modalities instead of just a video"	1
Moderate: "I accidentally ended the call instead of the recording because that is what was most intuitive to me"	2
Complex: Struggled to find the todo button - "is this where I am supposed to click?"	2
Complex: Got really excited and pulled out his phone saying "It would be really cool if you could integrate the todos into notion like this"	0

Paul wishes the tasks had more instruction

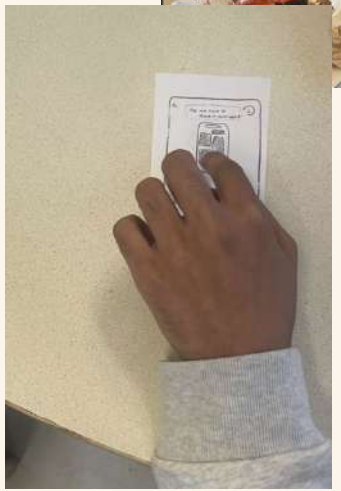
Incident	Severity
Simple: "I didn't understand the point of the video comment. Do you mean screen recording?"	2
Simple: "I wish the tap to leave a comment was more intuitive and I didn't need to read the instruction on the screen"	1
Moderate: After searching for a bit - "where do I click to record?"	3
Moderate: "I do not think I would use this feature much as I can just get on a Zoom call and talk to people"	3
Complex: "I really liked the todo list feature and think that it would be useful."	0
Complex: "What is the task again?" -> misclicked and went to the previous screen	1
Overall: "I wish this worked for websites as I think it would be a lot more relevant"	3

Jim thinks moderate task and buttons are unintuitive

Incident	Severity
Simple: After presenting both video and audio comments - "I really just want the text comment"	1
Simple: "I did not understand that I could click different parts of the screen to leave different comments"	3
Moderate: "I didn't understand what I was doing. Was I calling or commenting or both?"	4
Moderate: Preemptively says - "who am I calling? The author of the document?" On the next screen, the choice to choose designers is shown.	2
Complex: "The version history button is not intuitive to me and that is why I misclicked"	3
Complex: When talking about a specific task in todos - "I do not know if I should click on the checkbox or the dropdown arrow"	3
Overall feedback: "I think that this product could be used beyond just founders and designers"	0

Andrew wishes recording was more intuitive

Incident	Severity
Simple: "The microphone to begin and stop recording was a bit unintuitive for the voice comment"	2
Simple: "I don't understand why you would use a video comment. What does that mean?"	3
Moderate: Clicks the wrong button to stop recording - "shouldn't this button stop the recording?"	2
Moderate: "It would be great if I could have paused to stop the recording and resume later"	1
Moderate: Preemptively says "how do I choose which designer to call?"	2
Complex: "I think I understand what these arrows next to the todos do but I am not certain"	2
Complex: "Are these todos for me or the designer? I am unsure why I would want to see my designer's todos."	3



Sally found aspects unclear and cluttered

Incident	Severity
Simple: “I didn’t understand that I needed to click on the screen to add a comment to a specific part.”	3
Simple: “I don’t think the video comment feature was useful unless someone wanted to share a demo.”	2
Simple: “It would be useful if you could give more instruction into the features”	2
Moderate: “I don’t want to record a comment while on call with a designer. It might make more sense to record a summary comment instead.”	2
Moderate: “I did not even see the stop recording button!”	3
Complex: “When entering editing mode, change the background to visually indicate that editing is active.”	2
Complex: “The editing screen is a bit busy. Maybe split this into 2 screens.”	3

Different modalities are preferred by different people

User Satisfaction – average rank of relevance and ease of use

Participant	Simple	Moderate	Complex	Modality Comments
Sawyer	8	6	8	Preferred **voice and text**; unsure how to use videos or that they were for screen sharing.
Paul	7.5	5.5	9	Preferred **voice** (especially on the go), then video, then text (likes using a keyboard).
Jim	7	5.5	7	Prefers **text** as not a video or voice person
Andrew	5.5	4	6	Preferred **video** for easiest communication, text for standard use, and voice only for urgent situations.
Sally	6.5	6	7	**Voice** when rushed, text for regular comments; video rarely useful.
Average	**7**	**5.5**	**7.5**	

Usability Goal: User Satisfaction

Insights

- Participants' **modality preferences varied**
- **Moderate task** had the **least satisfaction**
- The **complex task scored slightly higher than simple** because of **higher relevance**
- **Relevance would increase** if product was a **web app**

Moderate task "had the "least intuitive flow" - Andrew

"AI summary is very useful" - Paul

Overall conclusion:

Users were **fairly satisfied with simple and complex tasks** but less so with the moderate one

Moderate task had the lowest navigation accuracy

Navigation Accuracy – number of misclicks per task

Participant	Simple	Moderate	Complex
Sawyer	1	3	2
Paul	2	1	1
Jim	2	4	3
Andrew	2	2	1
Sally	2	3	2
Average	**1.8**	**2.6**	**1.8**

Usability Goal: Navigation Accuracy

Insights

- Usability **varied** across users
- Simple and complex tasks had **fewer misclicks**
- The moderate task had the **lowest navigation accuracy**

"The simple task was a straightforward process" - Sawyer

On moderate task: "I do not think this is a very intuitive or useful task" - Jim

Overall conclusion:

All tasks showed **high navigation accuracy**, though the moderate task had the **most misclicks**.

Task efficiency varies with screen count and feedback

Task Efficiency – time taken to complete each task

Participant	Simple	Moderate	Complex
Sawyer	2 min 51 sec	1 min 31 sec	2 min 5 sec
Paul	2 min 49 sec	1 min 07 sec	2 min 10 sec
Jim	2 min 55 sec	1 min 40 sec	2 min 17 sec
Andrew	2 min 42 sec	1 min 57 sec	2 min 15 sec
Sally	3 min 15 sec	2 min 05 sec	2 min 20 sec
Average	**2 min 54 sec**	**1 min 40 sec**	**2 min 13 sec**

Usability Goal: Task Efficiency

Insights

- Users took **similar times** to complete the task
- Simple task took the longest: involved the most screens
- Moderate task took the least time **despite more misclicks and lower satisfaction**: involved fewer screens
- Complex task took a long time despite the low number of screens
    - Useful feedback delayed time, **potentially skewing results**

Overall conclusion:

Ranking by speed: 1. Moderate
2. Complex
3. Simple

Successes

Task Execution

Everyone completed the tasks with little to no assistance

User Satisfaction

70% on simple task

75% on complex task

Qualitative Reports

Testers were **interested in our solution** and **suggested ways to add features.**

Pain Points

Simple Task

Participants wished commenting instructions were a bit more clear and intuitive

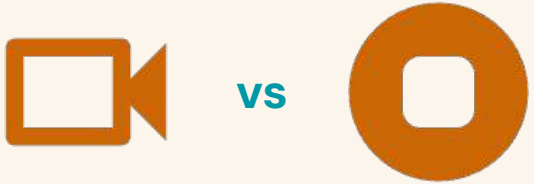
Moderate Task

Unintuitive to record AND leave a comment of the call during the call

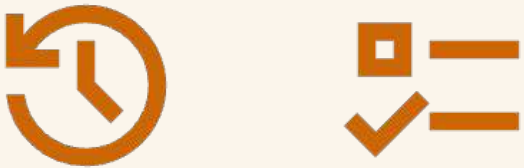
Complex Task

Participants struggled to locate buttons and thought some of the icons were confusing

"I didn't realize I could comment on different parts of the mockup UI"



Confusing UIs and icons



Discussion

Implications

Clarify key terminology

Wording for functions isn't obvious, suggesting the need for **more explicit language to reduce user confusion.**

Simplify interactions

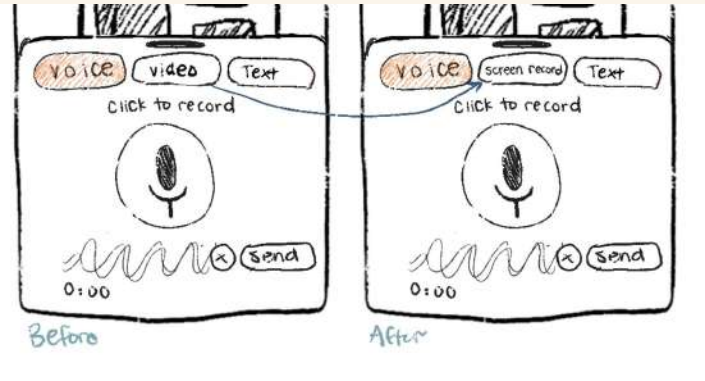
Users struggled with mixed commenting and video calling flows. Future designs should **greater distinct editing and commenting features.**

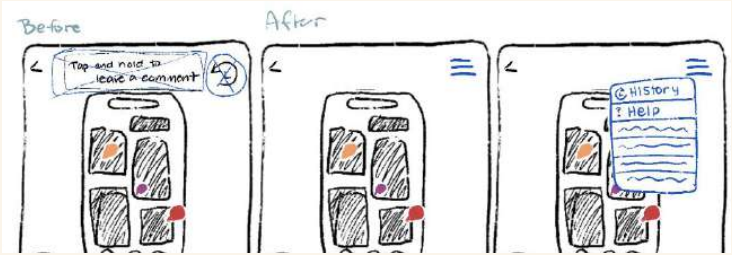
Improving affordance

Icons and button placements were unclear in calling features, indicating more intuitive visual cues to prompt intended action.

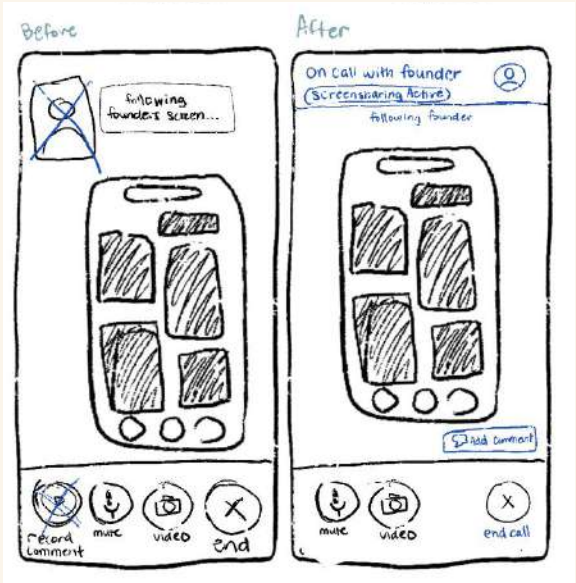
Design Changes

Renaming “video” to “screen recording” - less emphasis on showing face, more on showing designs





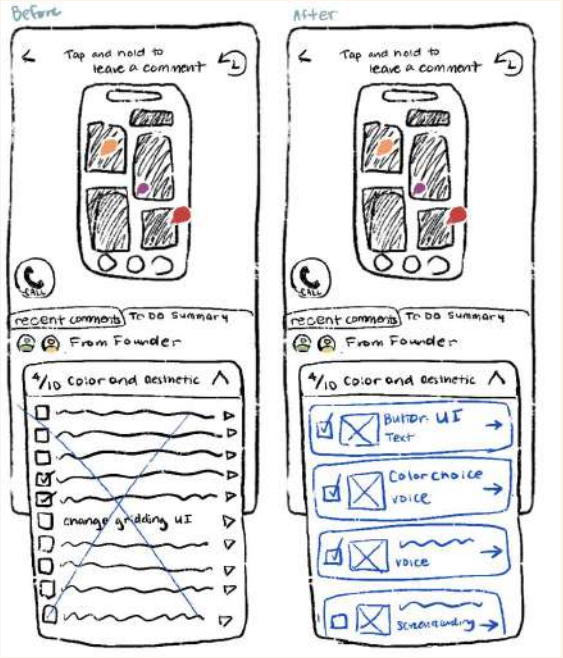
Decluttering: Creating menus for extra features (how-to, activity history, etc)

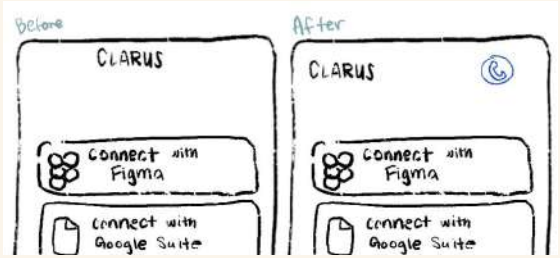


Calling: Adding commenting features as a button while on active calls

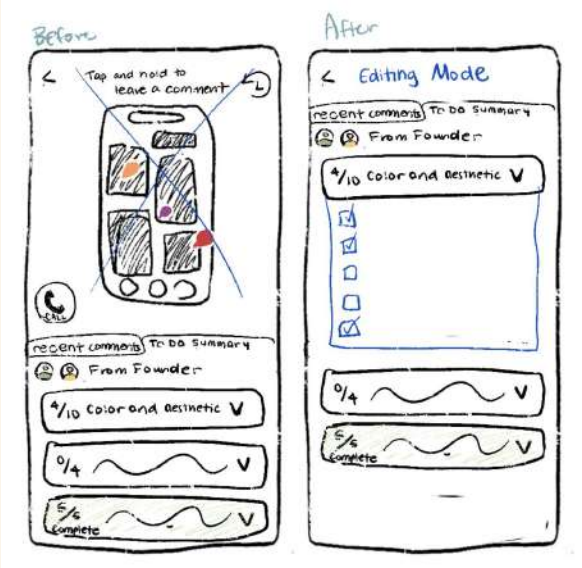
Design Changes

Removing arrows and making clearer clickable UI





Clearer calling flow: Introducing calling features earlier



Commenting vs Editing modes: Greater distinction of comment/edit tasks

What couldn’t testing reveal?

Metrics for user depth

- **User satisfaction** is **subjective and doesn’t reveal the *whys*** behind frustrations
- **Navigation accuracy** only counts misclicks but **not signs of confusion**
- **Task efficiency** may not be the best as **time may be spent understanding features and explaining thoughts**

AI and real application

- **Can’t test** the **reliability of AI features** like todo generation and comment analysis
- Features like **screen recording, voice notes, or video comments can’t be tested** for usability or clarity
- It **can’t simulate live video calls or real-time commenting,** so user reactions can’t be evaluated

Appendix

Problem and Solution

Problem

Founders feel like **communicating with designers** is a **long, exhausting process**—**requiring extensive preparation, length meetings, and lots of waiting, reading, and revisions before seeing results.**

Solution

Current design tools **lack effective communication**—when many collaborators work simultaneously, it **often leads to clutter and information overload for both designers and founders.** Our solution uses **AI-driven organization and multimodal feedback systems to reduce overload** and streamline collaboration.

Value Proposition

Seamless, flexible communication between founders and designers

- Captures full context of feedback — tone, emotion, and detail.
- Takes **feedback from fragmented to organized** for realtime clarity and faster creative alignment.
- Founders can share ideas naturally while designers receive **structured, actionable input** without long meetings.

Sanity Check:

- Clarus moves beyond simultaneous editing to emphasize **shared understanding and communication clarity.**
- Where other tools optimize for doing, Clarus optimizes for **understanding — the foundation of creating together effectively.**

Previous value prop “create together, instantly” was too broad and nonunique

Rationale

We chose to continue with **mobile solutions** because of limitations with VR

- **Low accessibility**
  - Only **27% of US adult** have **used VR** due to lack of accessibility (AR Insider)
  - **89% of VR apps can not be used** by those who have **disabilities** (ACM)

- **High costs and complexity**
  - **$25,000 per user in industry** settings for hardware, software, and support (Worldviz)
  - Over **50% of users find cost and setup complexity** to be major practical **obstacles** (G2)

Mobile apps are a lot more accessible as more than **78% of the global population uses mobile apps.** In fact, users in the United States **access on average 39 different apps monthly.** (SQ Magazine, Tekrevol)

Pros and Cons

Commenting and Documentation

Pros:

- gives options for communication methods: from experience prototypes, each communication modality has pros and cons
- synthesizes large volume of feedback for efficient iteration → in interviews, founders mentioned that aggregating feedback was overly time consuming
- documents revision history and user roles → from an ethics perspective, credits users for their work and provides transparency and ability to review the design process
- communication is central to the user experience → founders mentioned in interviews that status quo communication paradigms were insufficient
- AI is supplemental rather than essential to the design process → gives designers and founders more autonomy and AI integration is optional depending on organizational perspectives on AI usage

Cons:

- more naturally geared towards our feedback task, rather than generation and collaborative design
- not embedded within a design platform → could cause friction in the integration flow
- Slower Creative Flow – Heavy focus on documentation may interrupt fast-paced design iteration or discourage spontaneous creativity.
- Privacy concerns - voice notes may contain sensitive design and business information. Clear policies are essential
- Need to make sure AI is reliable to make necessary changes accurately and create priority todo lists

Pros and Cons

Voice to Visual AI Solution

Pros:

- immediate changes and creation, better sense of visualization than traditional verbal feedback to visual edits paradigm
- shortens timeline of iteration process, saving founders' time
- communicate founder aesthetic preferences to designers → from interviews, founders are struggling to communicate this
- Goes beyond basic templates - many design tools in the status quo stick to templates and do not go beyond app. This idea really dives deep into aesthetic and iterative changes to revolutionize this area

Cons:

- tries to accomplish too much, could lead to subpar outputs for everything
- overreliance on AI → takes away autonomy, many founders thought AI was not creative enough for visuals
- AI implementation is not too feasible → would have to hardcode most of the user experience
- AI has access to most design related communication → could cause privacy issues with sensitive business info
- Lots of user education needed to learn about how to use voice ai and the app
- Loss of designer autonomy - designers may not approve of changes AI is making
- Ai may rely on making edits based on flow of voice instead of synthesizing changes → from experience prototype, founder's train of thought affected order in which things were drawn and priotizied

Constraints of AI

Voice to Visual AI relies on AI for all aspects of the app. This is not a desirable characteristic for designers and founders.

- **Data about designers and AI**
  - 62% of designers say that **designers express concerns that AI inhibits empathy and exploration** in design (Digital Silk, Killer Innovations)
  - 41% of **design professionals are at risk in being replaced** with AI (Superside)

- **Findings from interviews with founders**
  - "**Tools should not design for me** but help me communicate with designers" Sam in A1
  - "I **don't think design can be fully automated** by AI - I don't want someone else choosing my clothes" Mike in A1
  - "AI makes **boring and generic looking** designs" Steven in A1

Why Our Solution?

We chose **voice, video, and text commenting** to keep **feedback personal and clear.** Real collaboration requires **tone, emotion, and context—not just quick AI-generated notes.** These formats help teammates explain **ideas naturally and avoid miscommunication.**

While **AI** speeds up feedback, it often feels **detached.** Our approach keeps people involved, making **feedback feel like a conversation** rather than a transaction: **human, thoughtful, and connected.**

- **Insights from interviewees**
  - "I am **wasting a lot of time explaining technical details to designers** who don't understand systems" Alex from A1
  - "Communicating on Slack about design is hard because there are **too many channels and too many people**" Samantha from A1
  - "Even though I **preferred certain modes** of communication, **all of them had their own pros and cons**" Thomas from A2

Observations

Observations from Sawyer:

- In simple task, the **participant overall enjoyed the process** but got a bit stuck in video commenting.
- In moderate task, the **participant enjoyed the task.** Would have liked to commented using different modalities.
- In complex task, **struggled to find the todo button. Enjoyed the task and requested a feature integration with notion** to help with organization

Observations from Paul:

- In simple task, the **participant did not understand the video comment functionality** and thinks it should be rephrased as “screen recording”
- In moderate task, the participant thought **the flow was not that intuitive and needed an onboarding flow.**
  - Thought it made sense as a whole
- The user got **excited when using complex task, talking out loud more and voicing opinions** on how they would use this feature
- The participant wished the **product was a website**

Observations

Observations from Jim:

- In simple task, the **participant did not understand they could leave comments on different parts** of the screens
- In moderate task, the participant **did not understand the design flow at all.** They could not tell if they were in the call and/or leaving a comment
- In complex task, **some buttons were not as intuitive** (like to dos and version history)
- The participant **voiced his thoughts throughout all tasks**

Observations from Andrew:

- In simple task, the **participant did not understand how to begin and stop** the recording of the voice comment
- In moderate task, didn't understand **how to stop the recording and would have liked an addition of a pause button.**
- In complex task, **didn't think some of the icons in the todos were intuitive** (like the drop down).
- In moderate task, **didn't know why he was looking at the designer's todos.**

Observations

Observations from Sally:

- In simple task, the **participant thought the majority of tasks needed more description and instruction**
- In moderate task, the participant **did not understand why you would record a comment on a video call.**
- In complex task, **the participant thought the editing mode was a bit unclear and had clutter**

Sketching Pictures

Crazy 8s

Concept Sketches

Key Screens

Storyboarding

Low Fi Prototype Images

Testing Documents

Testing Procedures

Pictures of Participants During Testing

Testing Notes

- Logs were included in the presentation!

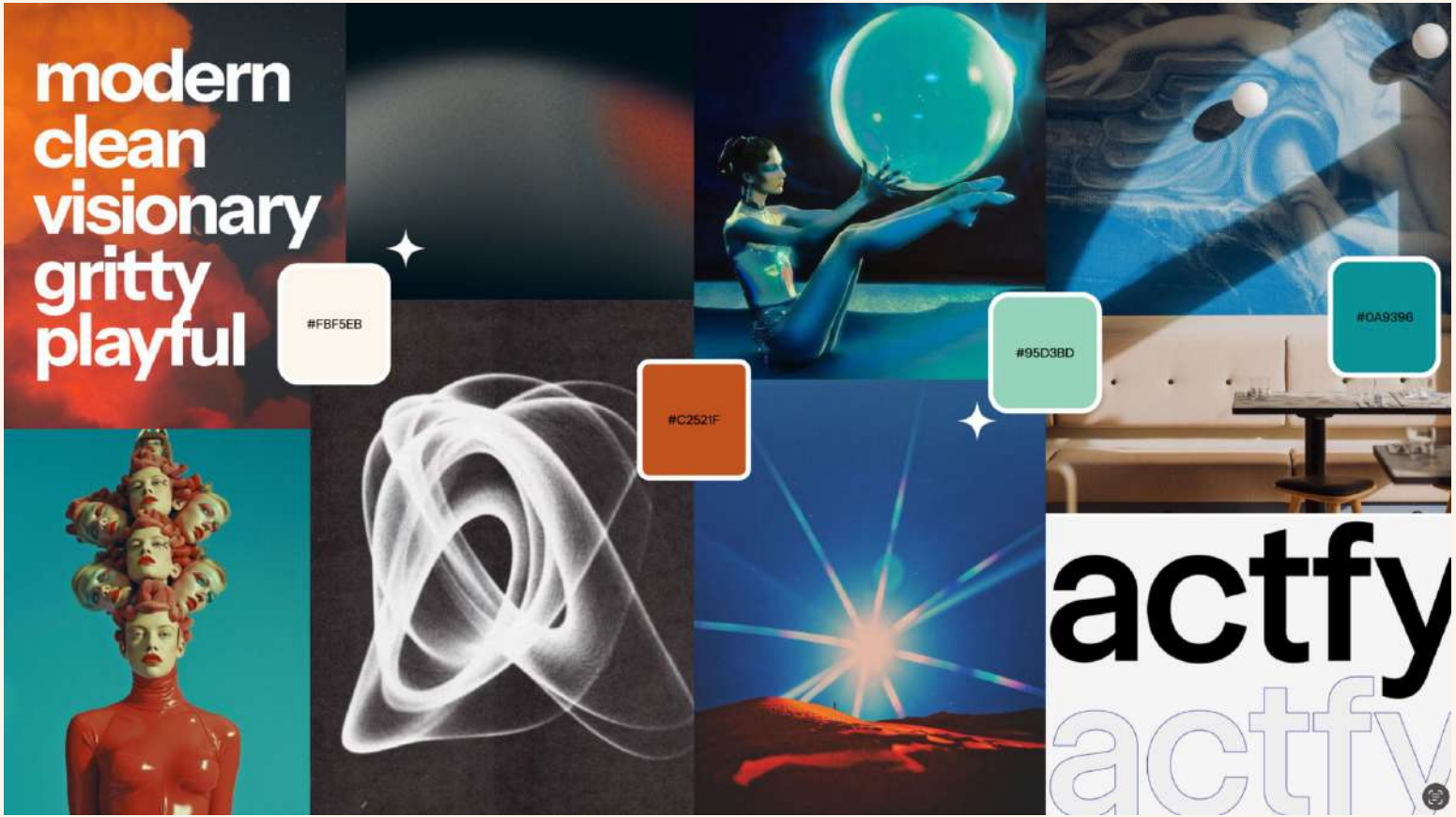
Other Deliverables

Sketching Report

Consent Forms

Brainstorming Document

Moodboard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