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Balanced AR Glasses System Between Text and Image Information Helps People Get a better Reading Skill

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Fine Arts in Visual Communication Design

Approval Committee: Adam Smith, Mike Strobert

School of Design

College of Art and Science

Rochester Institute of Technology
December 2022

Abstract

Nowadays, people prefer browsing images and videos on their phones rather than reading a book (Thain 2018). Even if they decide to read something, they are still heavily distracted by electronic devices. In my thesis, I'm trying to balance the visual and text information and help people to stay more focused while reading. My solution: Focus is an AR glasses system that recognizes the contents users are viewing and records users' reading and image browsing time. And users have to earn image/video time by reading the text. The glasses block images/videos if they run out of image time.

Keywords

UI/UX Design, Interaction Design, AR, Augment Reality, Reading

Problem and Solution Statement

Why don't people want to read books anymore? I believe one of the major reasons is that people spend too much time on image-heavy APPs on smartphones. Nowadays, almost everyone uses a smartphone. They use social media APPs to connect with others. More and more image-based social media apps are showing up, such as Instagram, Snapchat, and Pinterest (Feng et al. 2019, 44). Users are getting used to dealing with image/video-based information more often.

Those image-based social media apps are mostly imaging with only one line of text information. Text is secondary to the image posted. And users choose who to follow based mostly on what they see, not the person's background, which gradually changed users' habits, making them more comfortable processing image and video information. The habits cause many problems. People prefer watching a video rather than reading a book. Even if they decide to read something, they are still heavily distracted by electronic devices (Soroya and Ameen 2020, 563). Moreover, the habit of preferring visual information makes them lack patience when dealing with text, making it hard to focus on reading and minds keep wandering.

To solve this problem and help people get the ability to read back, I want to design an AR Glasses system that balances the forms of information users receive and helps users more focus while reading. The system will record users reading and image browsing time. Users need to earn image browsing time by reading (Adaval, Saluja, and Jiang 2018, 54).

Design Process

I used to love reading books, but nowadays I find myself reading less and less. Even if I decide to read, I have a hard time focusing on the text I'm reading. I'm heavily distracted by electronic products around me, such as my phone, laptop, and iPad. I felt more comfortable dealing with visual information like images or videos (Li and Xie 2019, 8).

To confirm this problem exists, I interviewed a couple of my friends who all had similar problems to mine. Some of them used to like reading and found themselves reading less and less, and some of them barely read books from the beginning (Rahmat, Rahman, and Hassan 2018). The people who used to like reading believe that too many distractions keep them from reading a book. And they are more willing to browse on image-heavy social APPs such as Instagram and Tik Tok.

I also did some online research to further the problem. According to TGI consumer research from Kantar Media, only 51% of adults in the UK read at least one book in 2019, which means this is a decrease from 56% in the prior year, and almost half of adults in the UK didn't read a single book in a year (Kozlowski 2020). The situation isn't any better in the US. According to an article in Maclean's magazine by Jonathon

Gatehouse, only 28% of Americans read 11 or more books in a year, and 28% proudly admit to not reading even once (Kozlowski 2020).

I was initially going to design a mobile APP that helps people with their reading problems. However, based on my competitive analysis, there are a lot of different reading APPs on mobile devices. They don't seem to have solved the problem. I realized that people could switch to other social apps anytime they wish. And even if the App is monitoring their activities, people can still choose to delete or ignore the APP. My solution needs to be something people can't easily get rid of and can monitor what people view at any time. And from my own experience and interview with my friends, I learned that if you are forced to do something positive. It gradually becomes your habit, and you realize that you actually benefit from that habit. So AR glasses naturally came to my mind because AR glasses can monitor what users are viewing all day and block information that doesn't need to be seen by users (Ku et al. 2019, 632).

The final solution I came up with was an AR glasses system that recognizes the content users view on mobile devices or other platforms. It records users reading and image browsing time (Szajna et al. 2020, 3623). It will remind users of the AR glasses. Users have a fixed image/video browsing time and daily reading goals. The glasses block images/videos if they run out of image time. If they want extra browsing time, they have to earn it by finishing reading goals. The daily reading goal is divided into 4 small goals; finishing each goal will get users some browsing time. Users can also check how they are doing on their previous reading goals on the calendar function. And many users mentioned they were having difficulty focusing during reading; they often lose track of which line of text they read. So I added an eye-tracking function, and the already read text will be highlighted to remind users where they are at their reading (Valliappan et al. 2020, 10).

Conclusion

In summary, people are reading fewer and fewer books. For my thesis project, "Focus", the AR glasses system is to help people read more books and get a better reading habit. The system forces users to read to earn more phone browsing time until reading becomes a habit. It also has an eye-tracking function to help users focus on their current reading activities. The daily goal and calendar feature helps users to manage their reading schedule better. Overall, "Focus" solves reading problem and can be applied in education and personal areas.

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Focus.

Helps you focus on reading.

Designer Libo Jiang
Instructor Adam Smith, Mike Strobert
2021 VCD Thesis Showcase

An AR Glasses That Helps People Get a Better Reading Habit

Libo Jiang

Have you ...

Decided to read a book but had a hard time concentrating and were distracted by image-heavy APPs on your phone?

Problems

- People are reading fewer books.
- People are heavily distracted and have a hard time concentrating on text information.
- People’s reading habit is getting worse.

Context

- Reading is an essential ability in learning and working.
- Reading strengthens the brain and improves concentration.
- Reading Strengthens Analytical Skills and imagination.

Solutions

An AR Glasses that:

- Recognizes the content users are viewing, and record users reading and image browsing time. It will remind users on the AR glasses.
- Users have to earn image/video time by reading the text. Images/videos will be blocked by the glasses if they run out of image time.
- Users will be assigned a reading goal daily, and they can see how they are doing on previous daily reading goals.

Research

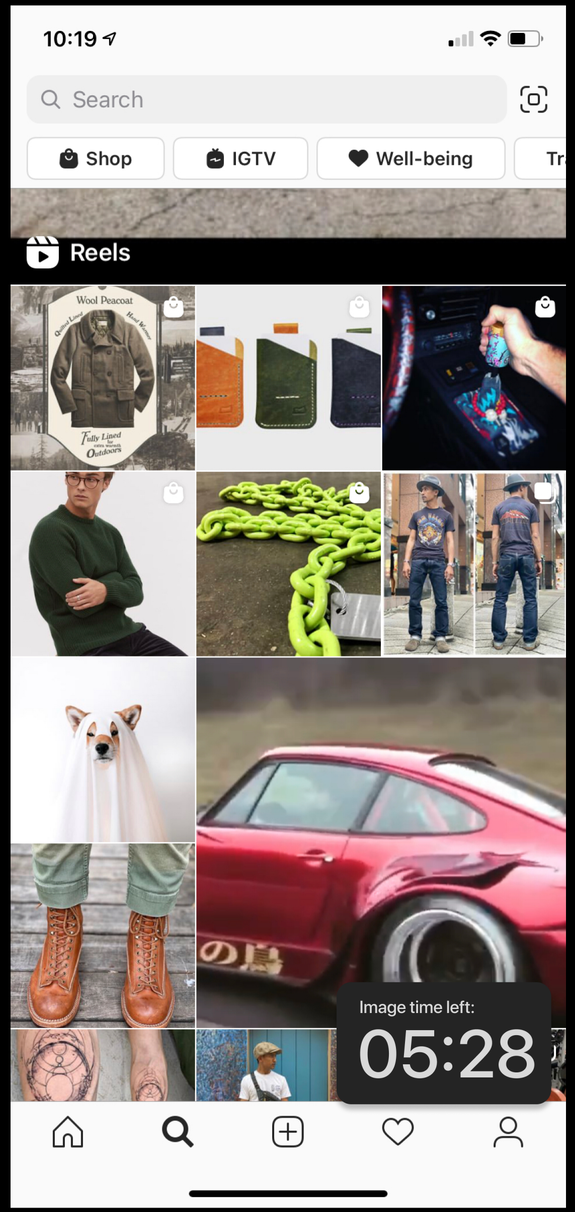
- 51% of adults in the UK read at least one book in the previous year. Not only is this a decrease from 56% in the prior year, but it also means half of the adults in the UK didn’t read a single book in a full 12 months.

- between 2003 and 2016, the amount of time that the average American devoted to reading for personal interest on a daily basis dropped from 0.36 hours to 0.29 hours.

- only 28% of Americans read 11 or more books in a year, and 28% proudly admit to not reading even once.

Today's Reading Goal: 1 hour
You've read for 23 min, completed 38%
MON
63 min
Tue
49 min
Wed
18 min
Thu
55 min
Fri
23 min

Text time
Image time
23 min
51 min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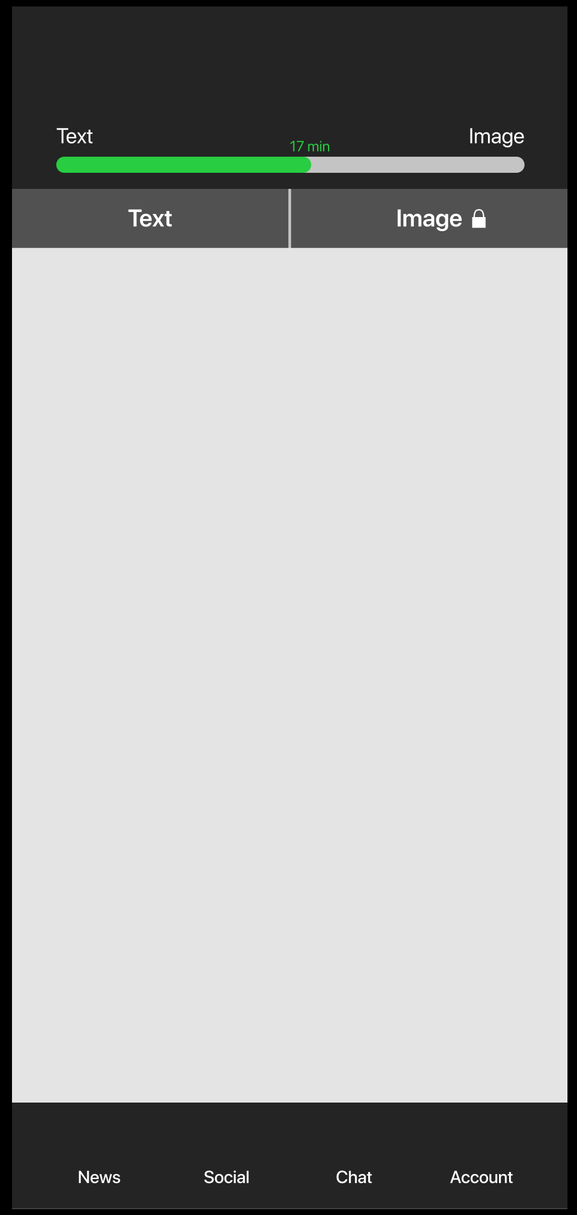
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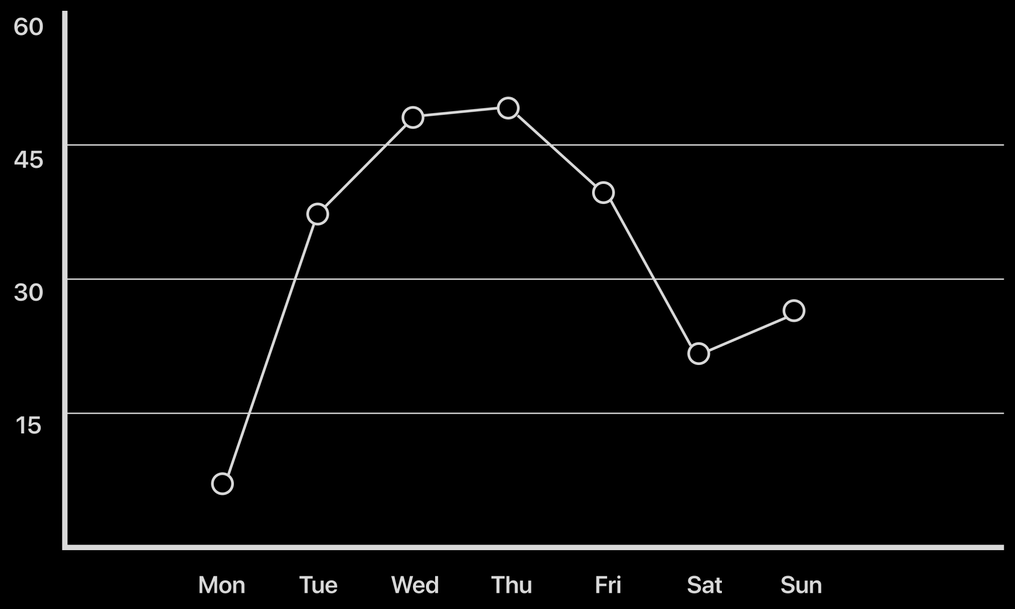
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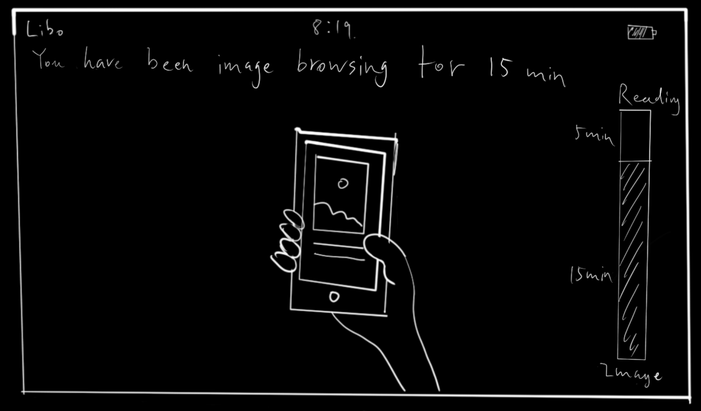
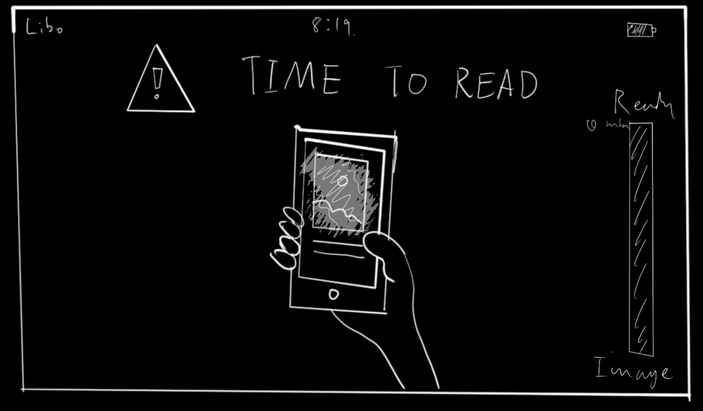
1.



Remaining image time

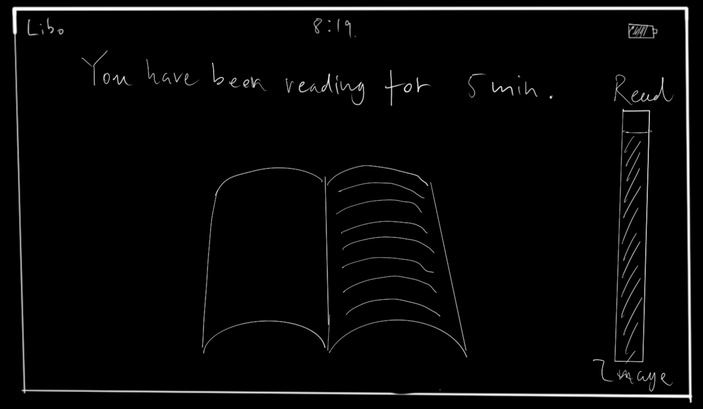
Reading task progress

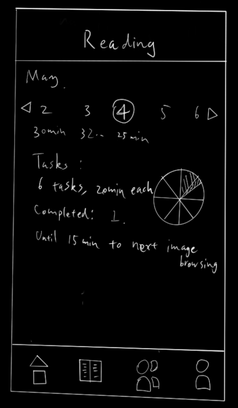
2.



Monitoring by mobile APP.

3.





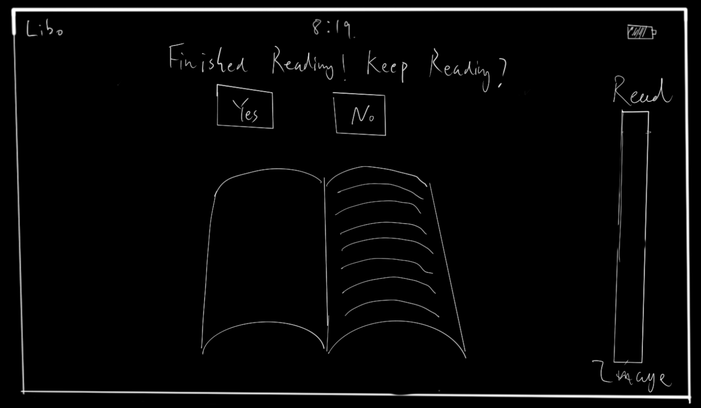
Reading

time progress { total / finished

Time left to unlock the Image Browsing

Daily reading (calendar)

4.



Persona 1: High School Teenager

I am a high school teenager, I like to hang out with friends. I use a lot of social APPs like Snapchat and Instagram. I've never read a whole book since 12. When I had reading assignments from English and writing classes. I found it difficult to read and the images and videos were far more interesting than the text. I was heavily distracted by all my social APPs. To help me get better at reading, my parents get me this APP and their AR glasses as suggested by my advisor.

User Story

As a high school teenager, I need to do better on reading to finish my English and writing classes.

USECASE READING

1 Image Browsing

- System records the image time
- Reminds the how many image time have left

2 Reach the Image Limit

- Notification on Glasses
- Begin Reading Task
- Choose what to read

3 Reading

- APP monitoring reading time
- The glasses reminds users how long have read

4 Complete Reading Task

- Notification

5 Share Thoughts and Discuss with Friends

- Share
- Post
- Comment

6 Get Back to Image Browsing

7 Keep Reading

Persona 2: Person Who Used to Enjoy Reading

I used to read a lot of books and enjoy them. But I found that I didn’t read as much as I used to recently. Now I want to read more frequently and get my old reading habit back. But I’m having a hard time staying on my reading schedule and don’t have patience even if I’m reading.

User Story

As a person who used to enjoy reading, I need to read more frequently and get my reading habit back.

USECASE CALENDAR

1 Put On Glasses

- Homepage pops up

2 Homescreen

- User profile
- Calendar
- Setting
- Today's goal

3 Calendar

- Calendar that shows daily activity
- A summary chart

4 Choose to view a specific date

- Reading time
- Browsing time
- What did you read

5 Share result

- Share
- Post
- Comment

6 Begin browsing

7 Begin reading task

INTERFACE HOMEPAGE

Today:

Users can check their activities that day. The time they read and browse, and their daily goal.

Calendar:

The calendar function shows users' reading activities for the whole month, There are charts that show the summary of reading and browsing of this month.

INTERFACE BROWSING

Goals:

Showing today's reading goals and how the user is doing so far.

Calendar:

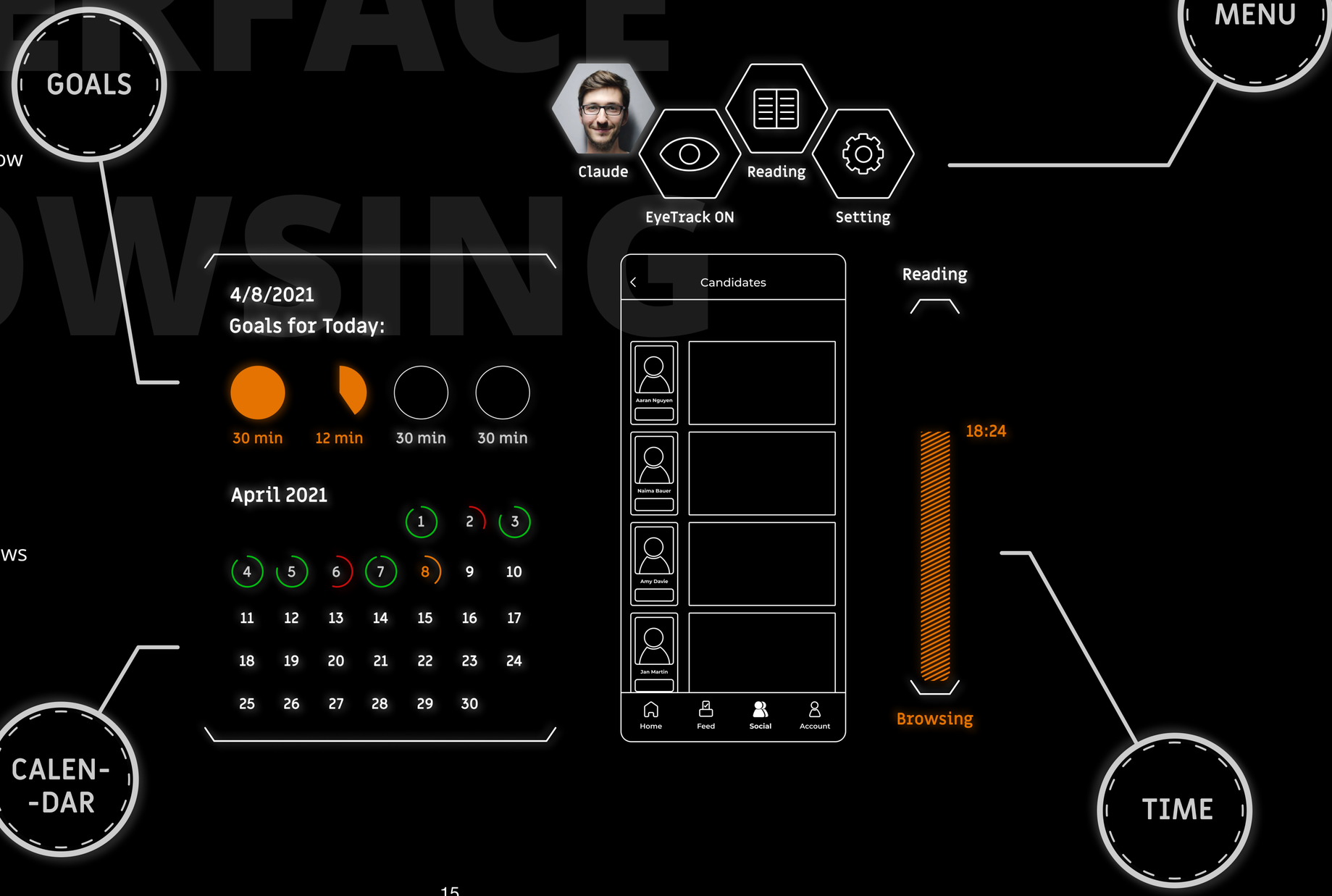
Showing how users are doing on previous daily reading goals.

Menu:

Users can view their accountsand setting, they can also turn on/off the eye-tracking function. The menu shows what users are doing.

Time:

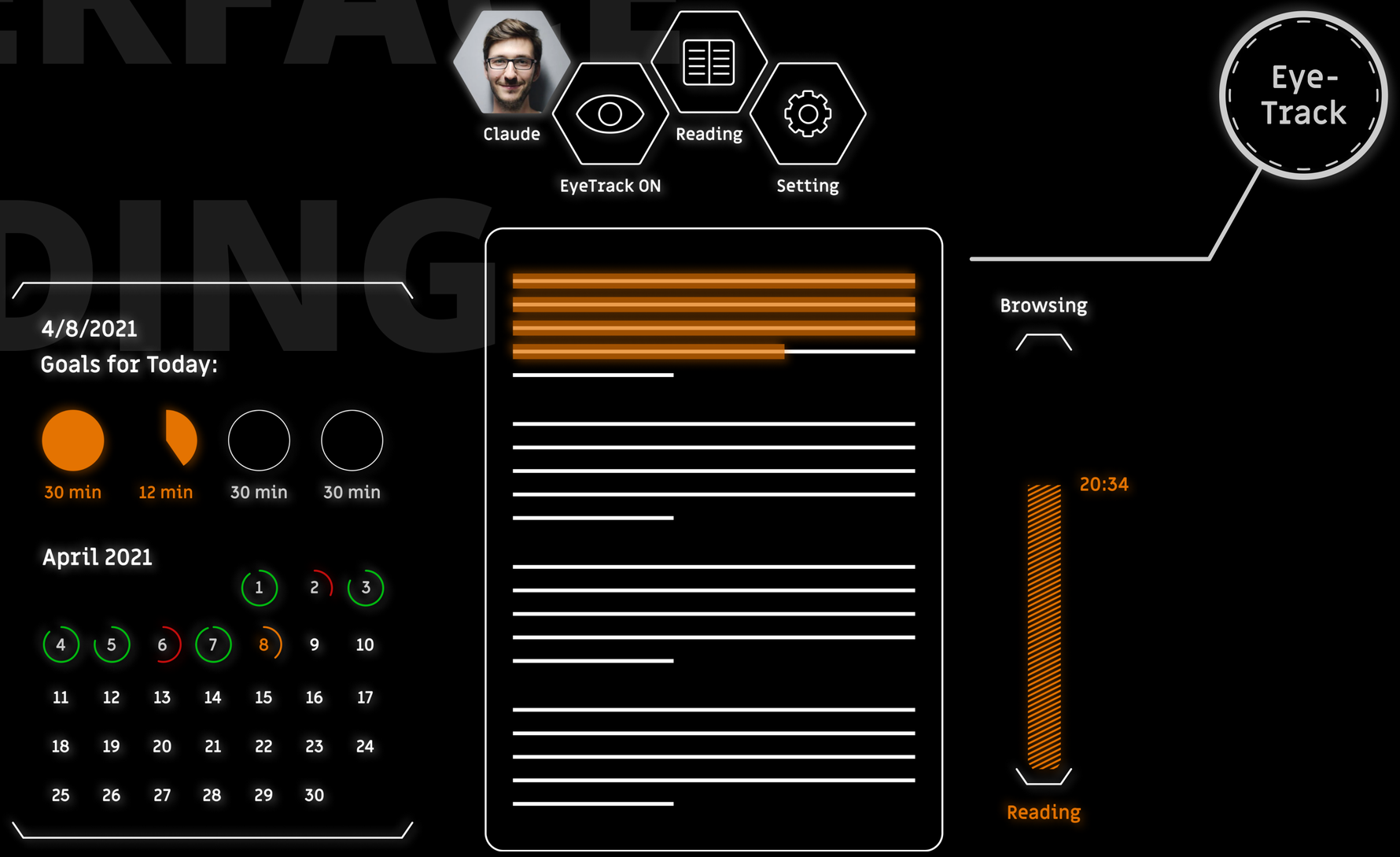
The time bar indicated how long users have been reading/ browsing.



INTERFACE READING

Eye-track:

Traces users' eye movements to help users identify which line of text they are reading.



INTERFACE CALENDAR

SUMMARY:

Users can select a specific date to view and share the summary of activities they had on that day.

Calendar:

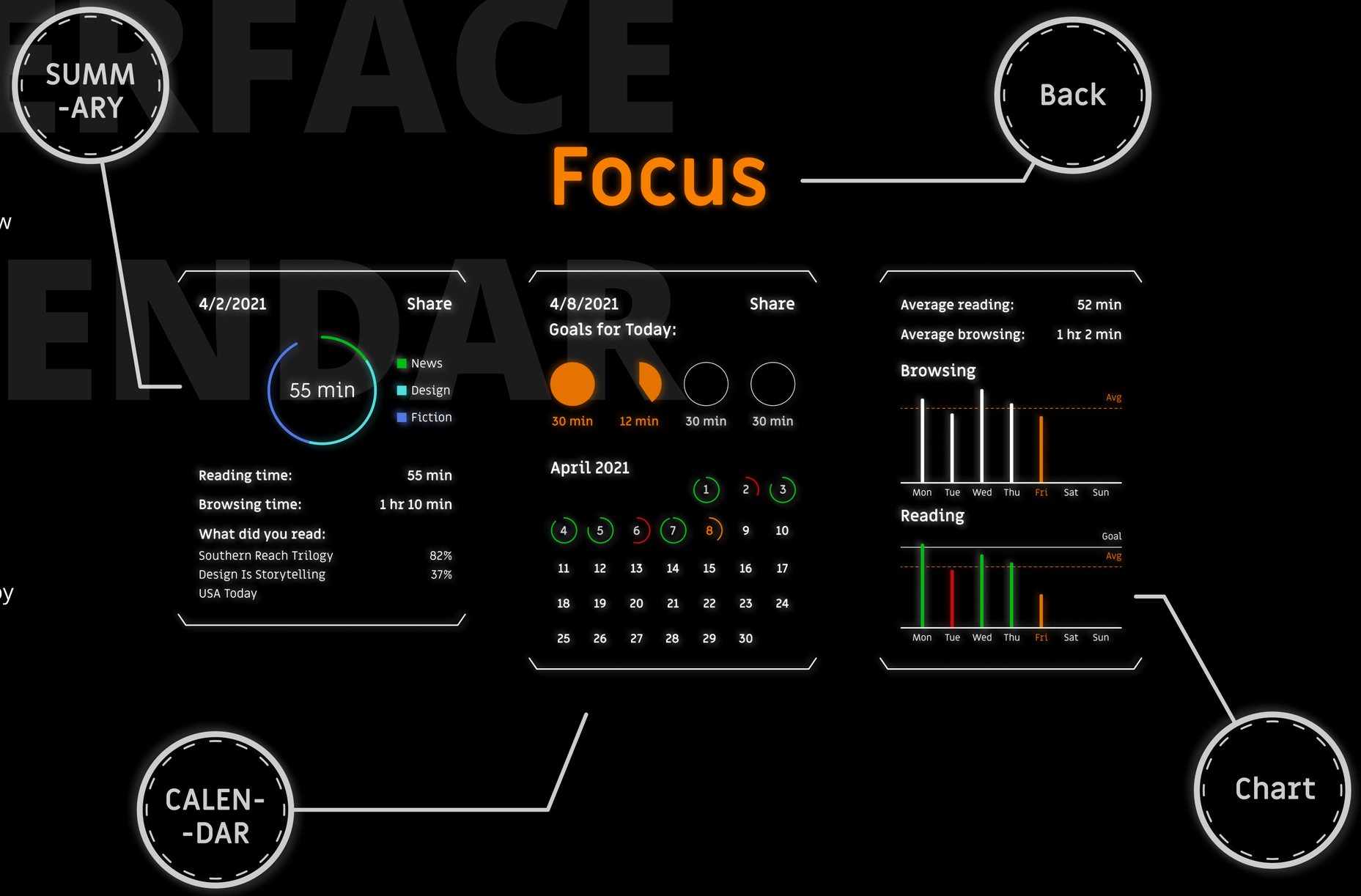
Showing how users are doing on previous daily reading goals.

Back:

Users can go back to the homepage by clicking the Focus logo.

Chart:

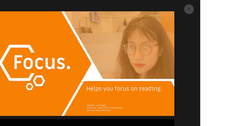
Users can view the summary of the current month in the chart.



Conclusion

In summary, people are reading fewer and fewer books. For my thesis project, “Focus”, the AR glasses system is to help people read more books and get a better reading habit. The system forces users to read to earn more phone browsing time until reading becomes a habit. It also has an eye-tracking function to help users focus on their current reading activities. The daily goal and calendar feature helps users to manage their reading schedule better. Overall, “Focus” solves reading problem and can be applied in education and personal areas.

Graduate Thesis: Focus

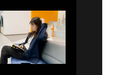


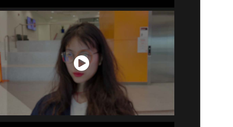
A Mobile APP With a Controlled AR Glasses That Helps People Get a Better Reading Habit

Lizzie Zeng

Have you ...

Devoted to long sessions and had a hard time concentrating on the text you wanted to finish? Heavy shifts on your phone?





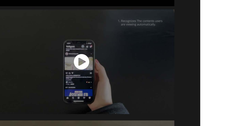
Problems

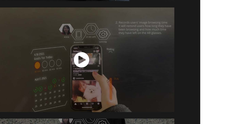
- People are reading fewer books.
- People are frequently distracted and have a hard time concentrating text information.
- People's reading habit is getting worse.

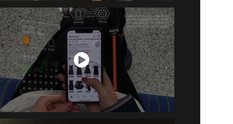
Solutions

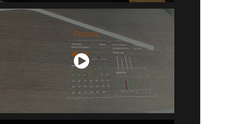
An AR Glasses that:

- Equipped with eyeball control and viewing, and sound cases inputting and image browsing time, it will remind users to do the glasses.
- Users know in eye's image status time by reading the text. Unappreciative will be blocked by the glasses if they run out of image time.
- Users will be assigned a reading goal daily, and they can see how they are doing on previous daily reading goals.









Research

- 51% of adults in the US read at least one book in the previous year. Yet only 5% is a decrease from 50% in the prior year, but it also means half of the adults in the US don't read a single book in a full 12 months.
- Between 2002 and 2016, the amount of time that the average American devoted to reading for personal enjoyment fell by more than a quarter (from 17 minutes to 12).
- Only 28% of Millennials report that they read for pleasure on a daily basis.

Context

- Reading is an essential ability in learning and working.
- Reading strengthens the brain and improves concentration.
- Reading Strengthens Analytical Skills and Imagination.

Persona 1: High School Teenager

I was a high school teenager. I like to hang out with friends. I ask a lot of about APPs like Snapchat and Instagram. I like to watch movies and TV shows. I like to read books, but I don't read books very often because I feel it is difficult for me read and images and videos seems far more interesting than the text. I was friendly, distracted by all the notifications. It is hard for me get better at reading. My parents get me this APP and their AR glasses as suggested by my teacher.

User Story

As a high school teenager, I need to do better on reading to finish my English and working classes.

Persona 2: Person Who Used to Enjoy Reading

I used to read a lot of books and enjoy them. But I found that I didn't read as much as I used to recently. Now I read books very infrequently. I feel it is difficult for me to focus on the text. I miss the reading habit since ending up the reading schedule and don't have patience more of the reading.

User Story

As a person who used to enjoy reading, I need to read more frequently and get my reading habit back.

Conclusion

In summary, people are reading fewer and fewer books. For my thesis project, "Focus", the AR glasses system tracks the amount of time users read and gives users a reminder to take a break. The system also helps users form a better reading habit by using a reward system. Moreover, Focus helps the people reading exercise more and focus on their current reading activities. The daily goal and calendar features helps users to manage their reading schedule better. Overall, "Focus" creates reading problem and can be applied in education and personal areas.

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Map Concept
Web

APP Design: Quick Ride
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