2025/26 IG2 Interactive Communication Systems

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A Day with Homo Sapiens

An Interactive Journey into Early Human Life



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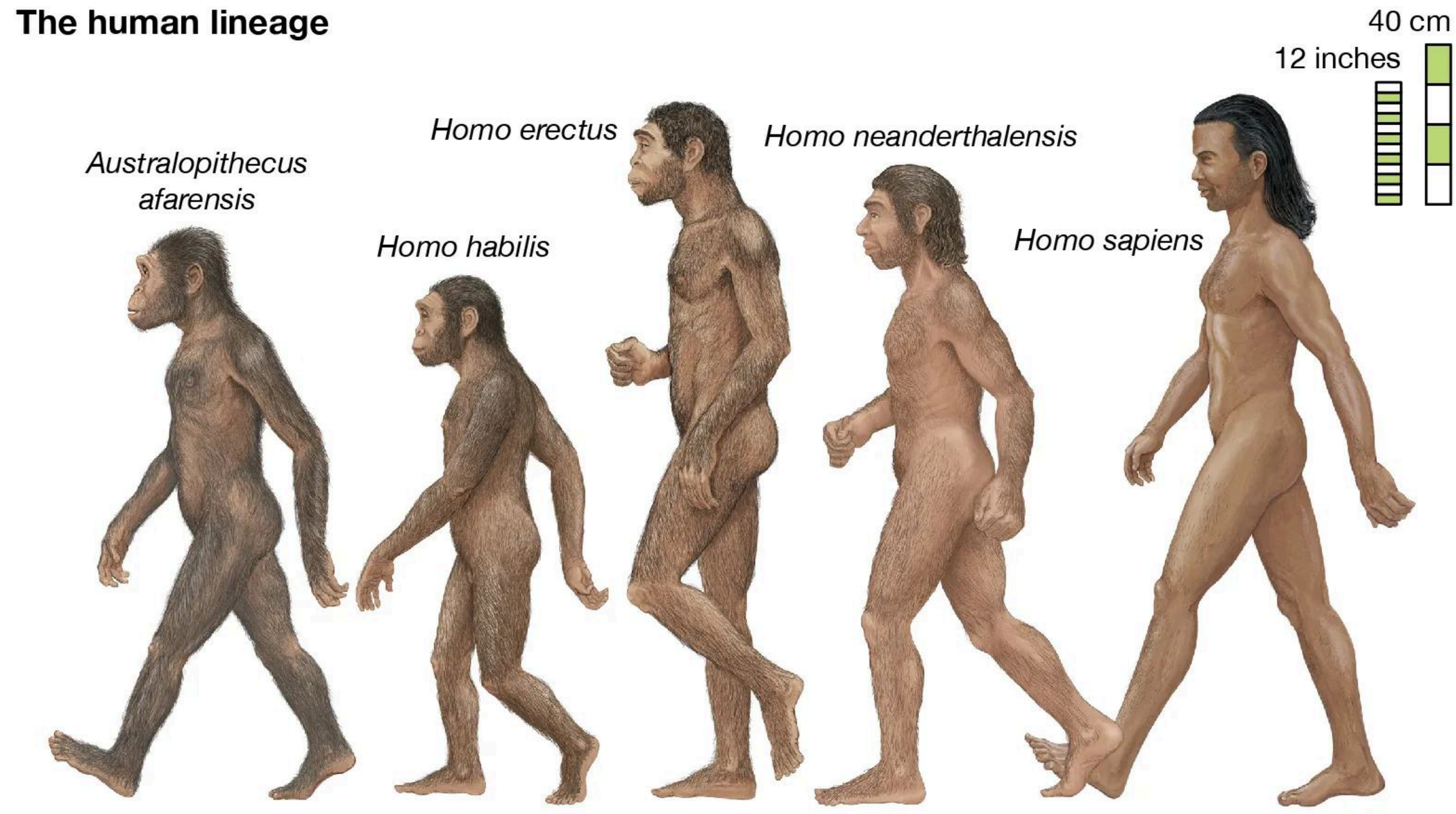
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01 Motivation

During the course Interactive Communication Systems, we were tasked with developing an interactive exhibit that actively engages visitors beyond simple screen-based interactions. The goal was to design an experience that sparks interest, encourages interaction in different ways and teaches visitors about, in the beginning, a randomly selected topic in a memorable and unique way.

Our final project, “A Day in the Life of Early Humans”, is an interactive exhibition that allows visitors to experience everyday moments of early human life through storytelling, physical interaction, and special experience. Rather than relying on traditional touchscreens, the exhibit has a distinctive haptic, spatial, and visual interaction to create a more interesting learning environment.

The human lineage



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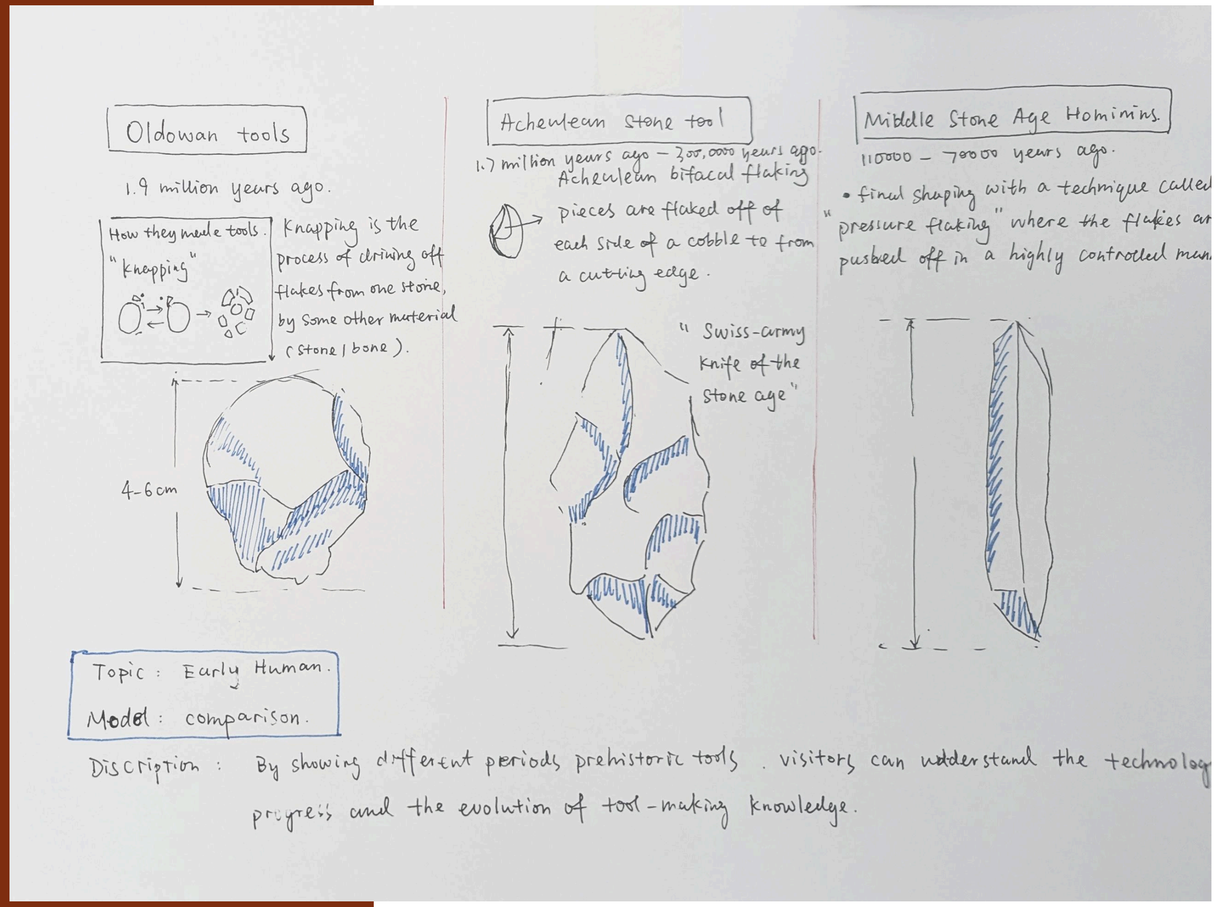


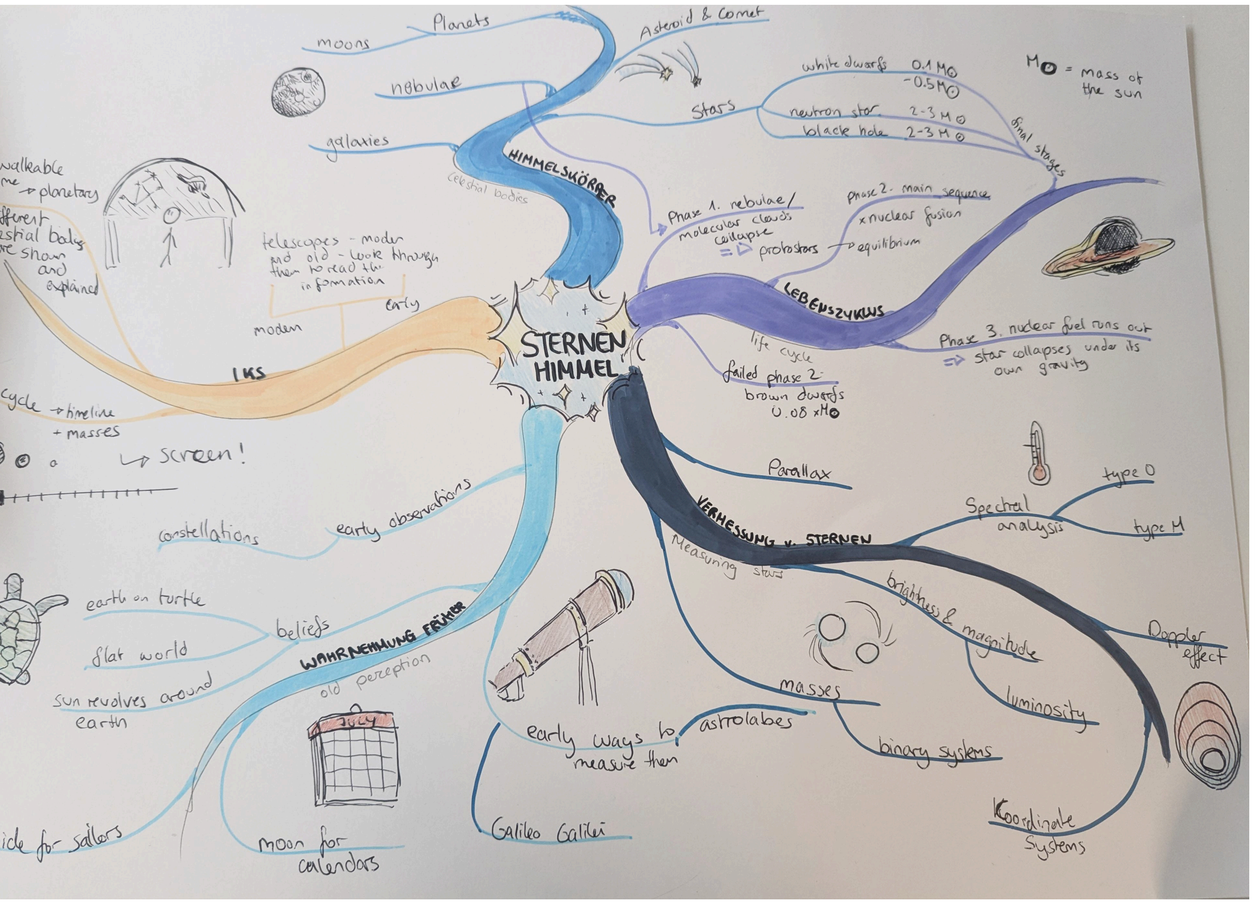
Our project began with the observation that humanity’s past remains deeply connected to the present. Recent archaeological discoveries, such as wooden and stone tools found in Greece, although these findings date back hundreds of thousands of years, continue to tell stories about ingenuity, social life, and the evolution of human culture. All topics that still inspire us today, as many aspects of our lives and the lives of the first humans are still the same: art, creativity, community and the will to survive.
This empathy for our ancestors led us to explore how their everyday lives could be brought closer to modern audiences, especially younger visitors, and to show the similarities and contrasts of such. We wanted them not only to learn about the past but also to relate to it through an immersive experience.

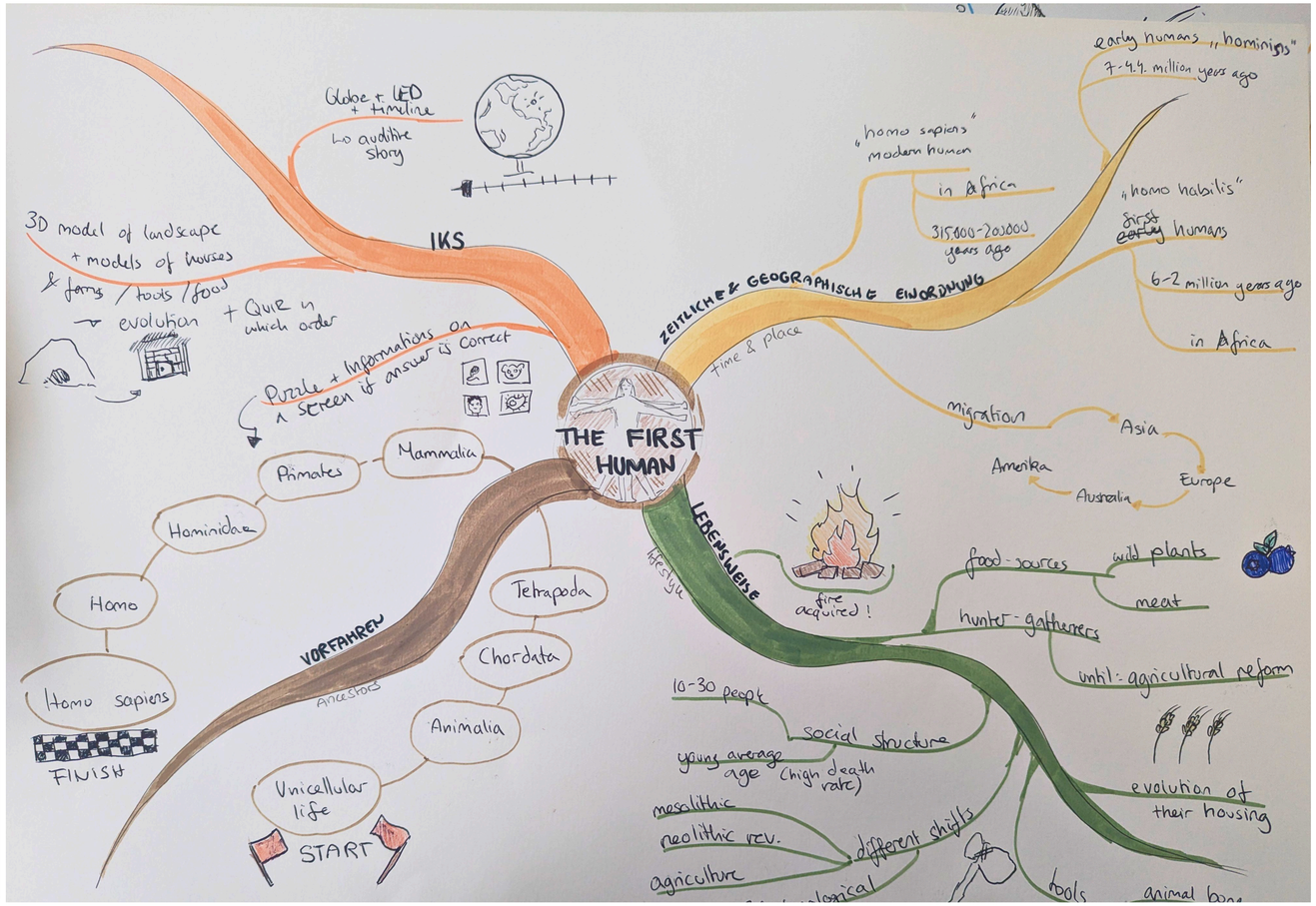
02 Concept

2.1 Topic Selection

At the start of the project, we considered two possible directions: an exhibit about the southern night sky or one about early humans. We ultimately chose early human life because it allowed us to work with a variety of physical elements. We had a lot of ideas for design interactions that work with touch and movement and not with just a screen.




STERNEN HIMMEL
HIMMELSKÖRPER
moons
Planets
nebulae
galaxies
Asteroid & Comet
stars
white dwarfs 0.1 M⊙ - 0.5 M⊙
neutron star 2-3 M⊙
black hole 2-3 M⊙
final stages
M⊙ = mass of the sun
celestial bodies
LEBENSZYKLUS
Phase 1. nebulae / molecular clouds collapse ⇒ protostars
phase 2. main sequence × nuclear fusion → equilibrium
Phase 3. nuclear fuel runs out ⇒ star collapses under its own gravity
life cycle
failed phase 2: brown dwarfs 0.08 xM⊙
VERMESSUNG v. STERNEN
Measuring stars
Parallax
Spectral analysis
type O
type M
brightness & magnitude
Doppler effect
luminosity
masses
binary systems
Koordinate Systems
early ways to measure them
astrolabes
Galileo Galilei
telescopes - modern and old - look through them to read the information
modern
early
IKS
walkable → planetary
different celestial bodies are shown and explained
cycle + timeline + masses
↳ screen!
constellations
early observations
WAHRNEHMUNG FRÜHER
old perception
earth on turtle
beliefs
flat world
sun revolves around earth
ide for sailors
moon for calendars


THE FIRST HUMAN
IKS
Globe + LED + timeline
↳ audible story
3D model of landscape + models of horses & forms / tools / food → evolution + QUIZ in which order
Puzzle + informations on screen if answer is correct
ZEITLICHE & GEOGRAPHISCHE EINORDNUNG
time & place
early humans „hominins"
7-4.4. million years ago
„homo sapiens" „modern human"
in Africa
315.000-200.000 years ago
„homo habilis"
first ~~early~~ humans
6-2 million years ago
in Africa
migration
Asia
Amerika
Europe
Australia
VORFAHREN
ancestors
Mammalia
Primates
Hominidae
Homo
Homo sapiens
FINISH
Tetrapoda
Chordata
Animalia
Unicellular life
START
LEBENSWEISE
lifestyle
fire acquired!
food-sources
wild plants
meat
hunter-gatherers
until: agricultural reform
10-30 people
social structure
young average age (high death rate)
evolution of their housing
mesolithic
neolithic rev.
agriculture
different shifts
tools
animal bon

2.2 Research and Target Audience

Our first task was to research extensively and divide our topic into several key subthemes that peaked our interest the most.

While our initial audience was defined as just museum visitors, a broad group, we later narrowed down our focus to children and families. As we wanted to make the exhibit child-friendly. This decision influenced both our visual language and interaction design, making us focus on simpler interactions and creating a more childish-illustrative art style.

Toolmaking

For toolmaking, visitors can try making their own tools, understanding how early humans shaped and used materials.

Food and cooking

For food, visitors can smell and touch different spices or ingredients that were used for cooking and therefore creating a sensory experience.

Hunting and survival

For hunting, we imagined a simple game, such as can throwing, to simulate coordination and aiming.

Art and creativity

For art, visitors can follow cave drawing tutorials on their own drawing mats, experiencing early forms of visual expression.

Social behaviour and living situations

Visitors experience early human social life by gathering around a shared camp setting, learning about cooperation, communication, and communal living through collective activities.

2.3 Design Requirements

From our research and audience analysis, we defined the following core requirements for our exhibit:
The exhibition must be interactive and fun.

It should engage multiple senses, especially touch.

It should create an immersive atmosphere.

It should avoid reinforcing stereotypes of early humans.

It should move away from overused touchscreen-based interactions.

GAMIFICATION

INFORMATIVE

INTERACTIVE

LESS PREJUDICES

TARGET AUDIENCE

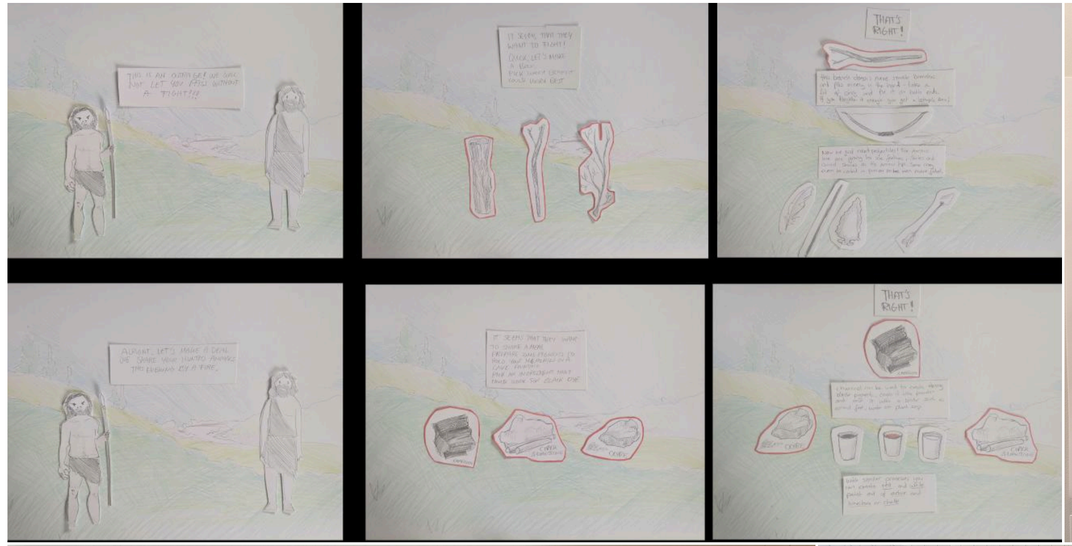
IMMERSIVE

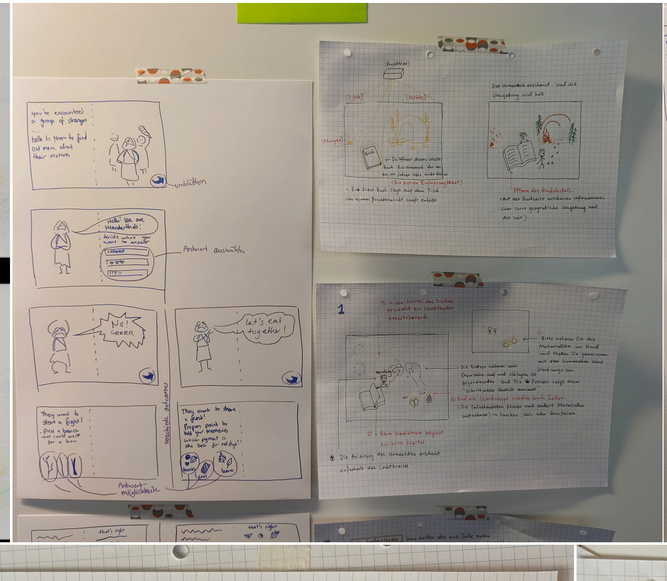
INNOVATIVE

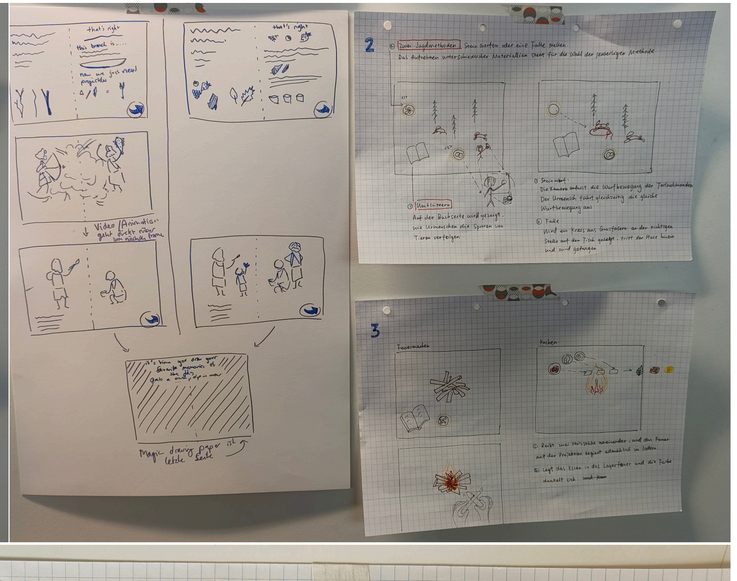
FUN

MULTIPLE SENSES

03 Content Structure







2

① Zwei Jagdmethoden: Stein werfen oder eine Falle stellen.
Das Aufnehmen unterschiedlicher Materialien steht für die Wahl der jeweiligen Methode.

① Umblättern
Auf der Buchseite wird gezeigt, wie Urmenschen die Spuren von Tieren verfolgen.

① Stein werfen:
Die Kamera erfasst die Wurfbewegung der Teilnehmenden. Der Urmensch führt gleichzeitig die gleiche Wurfbewegung aus.

② Falle:
Wird ein Kreis aus Grasfasern an der richtigen Stelle auf den Tisch gelegt, tritt der Hase hinein und wird gefangen.

(Projektion)
(Tisch)
(Höhle)
(Morgen)
Buch
← Du öffnest dieses weiße Buch. Ein Urmensch, der vor 400.000 Jahren lebte, winkt dir zu.
(Ein kurzer Einführungstext).

• Ein klein Buch liegt auf dem Tisch, von einem Projektionlicht sanft erhellt.

Der Urmensch erscheint, und die Umgebung wird hell.

Öffnen des Buchdeckels.
(Auf der Buchseite erscheinen Informationen über seine geografische Umgebung und die Zeit).

Chapter 1
Making Tools

• You accidentally encounter two early humans who are making tools. Learn from them the techniques of crafting stone tools.

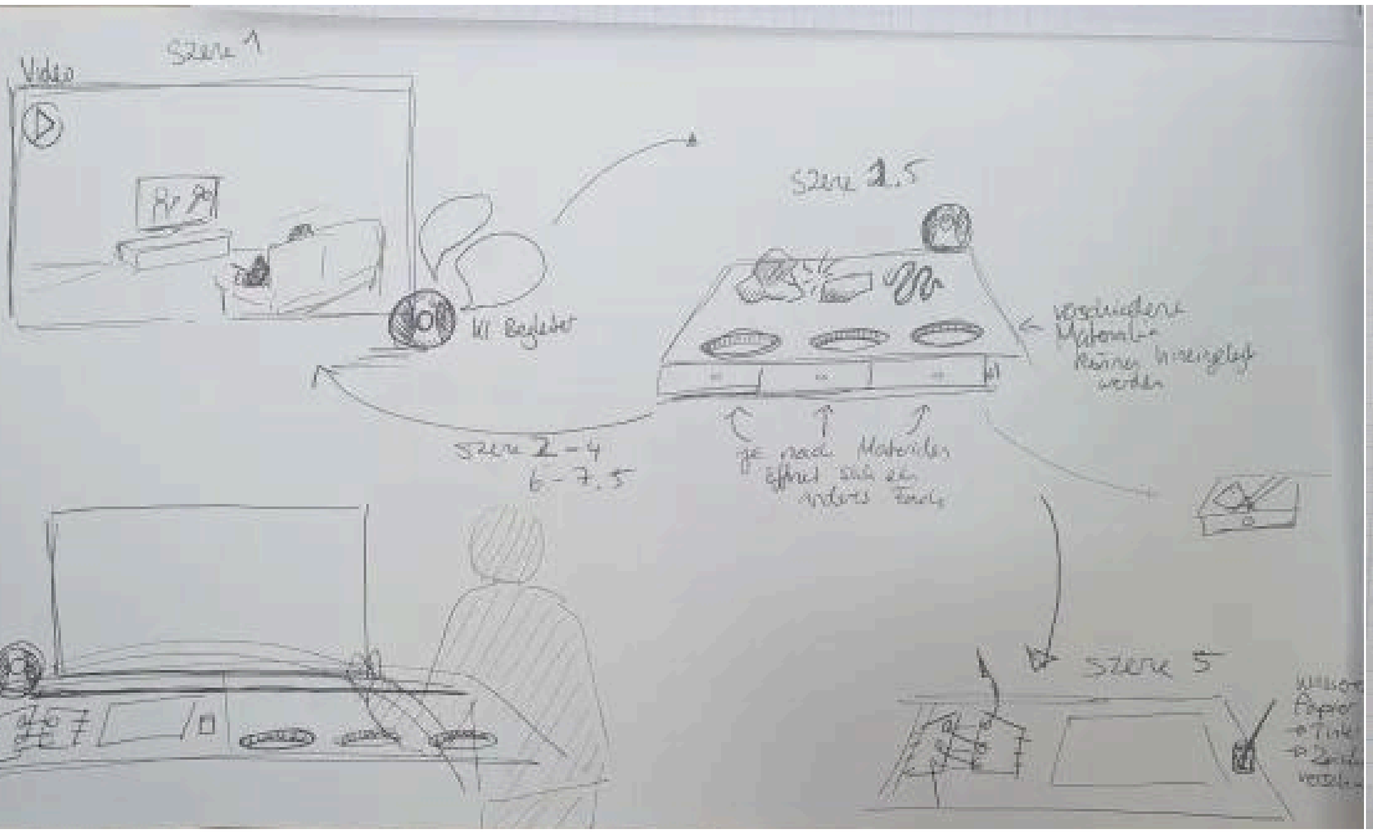
• Striking two stones against each other causes pieces to chip off, creating a sharp tip.

• Rubbing the roughly made stone tool against another stone makes it sharper.

3.1 Narrative Concept

Early prototypes explored individual aspects of early human life in only one way, such as toolmaking, food preparation, hunting and gathering, or cave painting. However, we soon realised that combining these elements into a single narrative would create a more coherent and engaging experience in which the visitor can learn about many aspects of early human life.

This led to the overarching concept “A Day in the Life of a Homo Sapiens”. Visitors follow an early human through the course of a day, being able to make decisions and live through the eyes of an early human over 40000 years ago. The exhibit is structured like a storybook with chapters, each one containing different information.


Szene 1
Video
Szene 1.5
Szene 2-4
6-7.5
Szene 5


< Einleitung >
< Übergang >
Zoom in
· Everything becomes blurred,
a transition,
entering a dream
die Zeitreise beginnt ...

3.2 Chapter Structure

The story is divided into several chapters that, as a whole, show a daily routine:

Wake Up: Preparing tools for the day ahead.
The Hunt: Entering the forest, checking traps, and hunting animals through a game-based interaction similar to Whac-A-Mole.
Strangers Ahead: Encountering Neanderthals and learning about social interaction between different human species.
Cooperate or Fight: Making a decision that affects the narrative outcome.
Night Celebration: Cooking, socialising by the campfire, making paints and being able to participate in one of the earliest forms of art.
This structure helps visitors understand early human life.

DIGITAL

Hello! we are ... it's time to make ... click on us to...

INTERACTION WITH STONES?

as soon as the tools are done a video starts playing

look! there's ... we need to catch it! → try to hit ....

parallel

CHAPTER 3

Neandertals

→ DIALOGUE

Antwort möglich Reiter

je nach Antwort

coming together

you made new friends! why don't you...

War → victory

CHAPTER 4

celebrating

you won! ... wake down the you drew...

click on bed to end the day

DRAWING WALL LIGHTS UP

CHAPTER 1

Wake Up

You wake up and make tools to go hunting

CHAPTER 2

The Hunt

Going into the forest, checking traps and hunting rabbits

CHAPTER 3

Strangers ahead

Meeting the neanderthal and talking to them

CHAPTER 4

cooperate or Fight

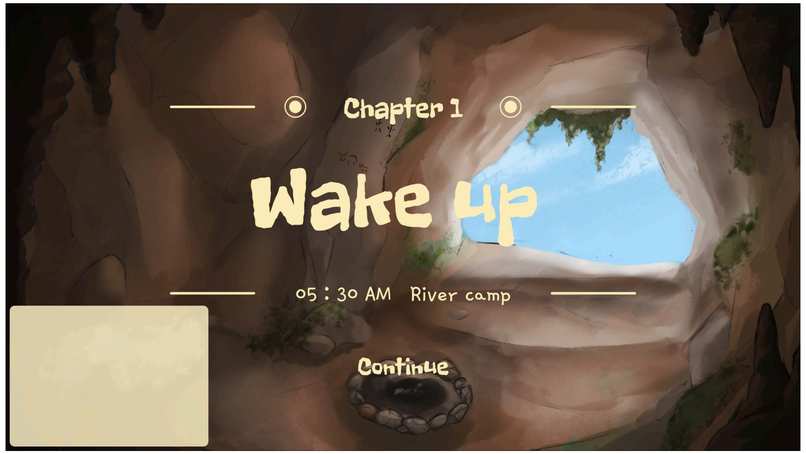
Deciding to fight or to talk it out

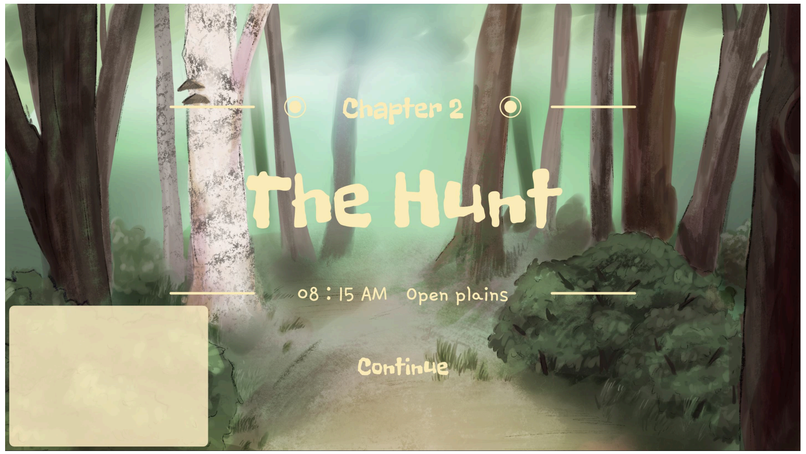
CHAPTER 5

Night Celebration

Celebrating the day, cooking and painting


A Day with
Homo Sapiens
An Interactive Journey into Early Human Life
Play


Chapter 1
Wake Up
05 : 30 AM River camp
Continue


Chapter 2
The Hunt
08 : 15 AM Open plains
Continue

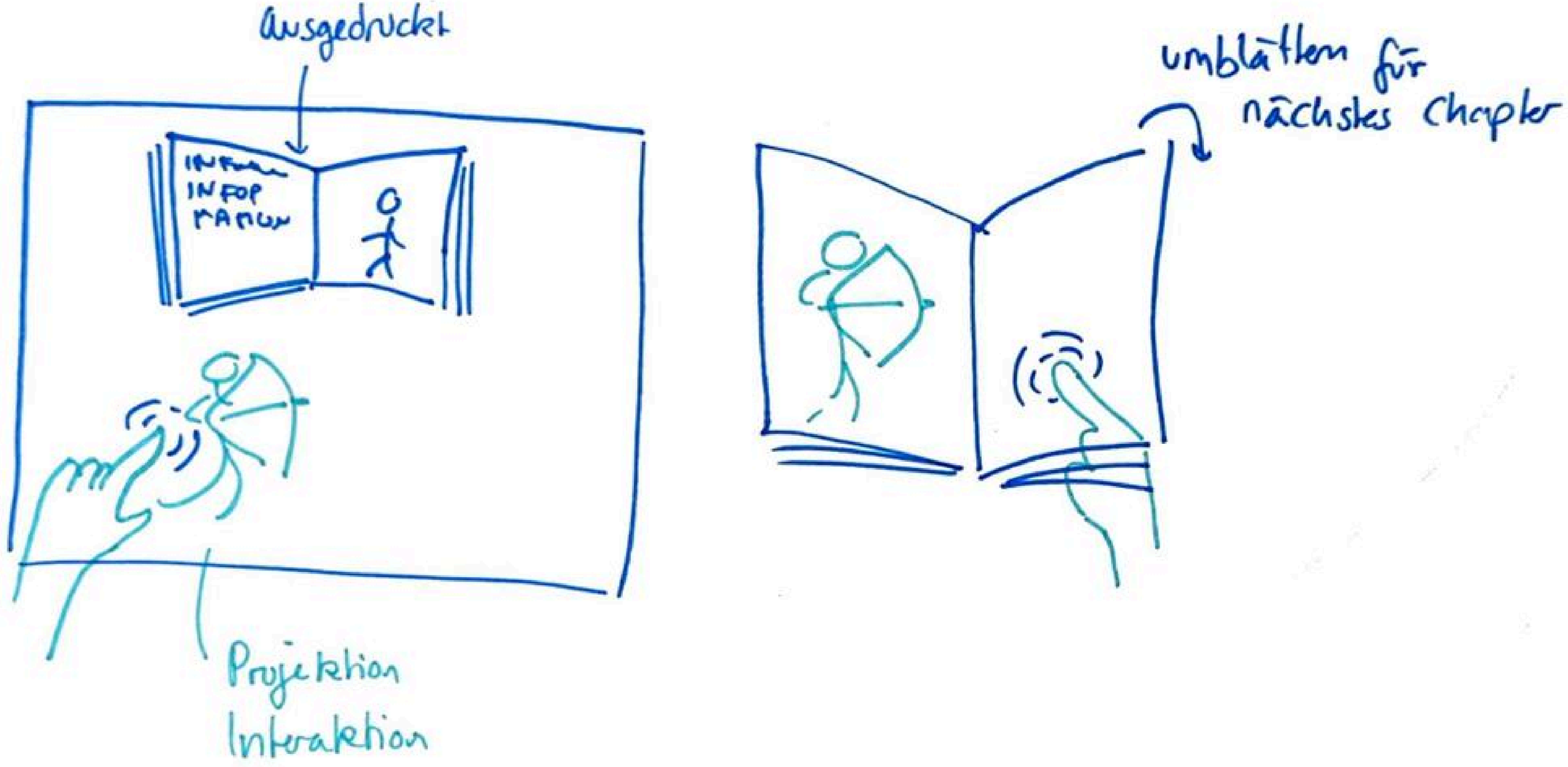

Chapter 3
Strangers Ahead
1 : 40 PM Rocky Valley
Continue


Chapter 4
Cooperate or Fight
5 : 10 PM Mountain pass
Continue


Chapter 5
Night Celebration
8 : 30 PM Cave camp
Continue

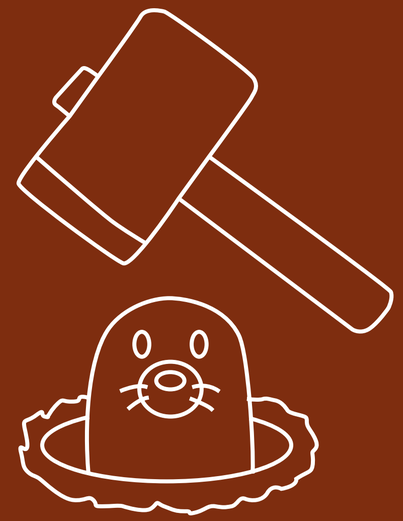
04 Interaction Design

Our interaction design focuses on active participation and touch. Each interaction is able to present the task at hand in a unique way. In the beginning we had lots of ideas on what types of interactions we should implement. In the early stages of the project, we planned a wide range of interaction types, including physical toolmaking by combining objects together, food exploration through smelling and combining ingredients, game-based hunting interactions such as throwing objects or timing challenges, creative participation through cave painting and symbolic art, motion-based anatomy comparisons between modern humans and early human species, social decision-making encounters with other human groups, and book-based navigation that allowed visitors to progress through the story by physically turning pages and interacting with the narrative.

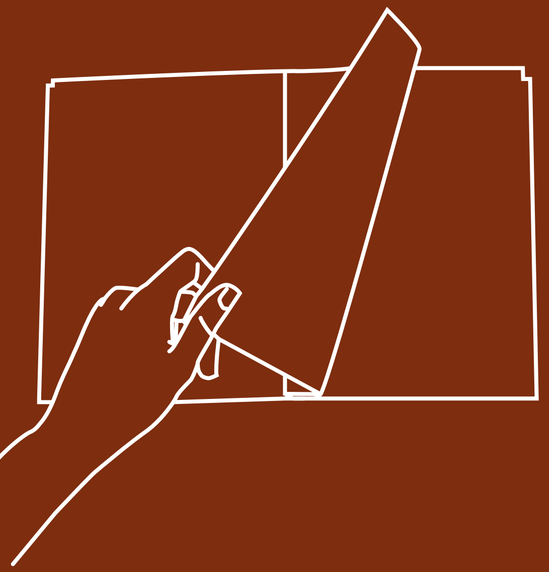

Ausgedruckt
umblättern für nächstes Chapter
Projektion
Interaktion



1. Physical Interaction



2. Games



3. Book Navigation



4. Spatial Interaction

4.1 Interaction Types

The final types of interaction are:

Physical Interaction: Visitors handle real stones to simulate toolmaking, which is underlined with an animation.

Games: Mini-games such as timing-based hunting interactions (e.g., Whac-A-Mole–style mechanics).

Book Navigation: A physical book serves as the narrative support. Turning pages changes chapters, while additional information is available for those who want to explore deeper without interrupting the story flow.

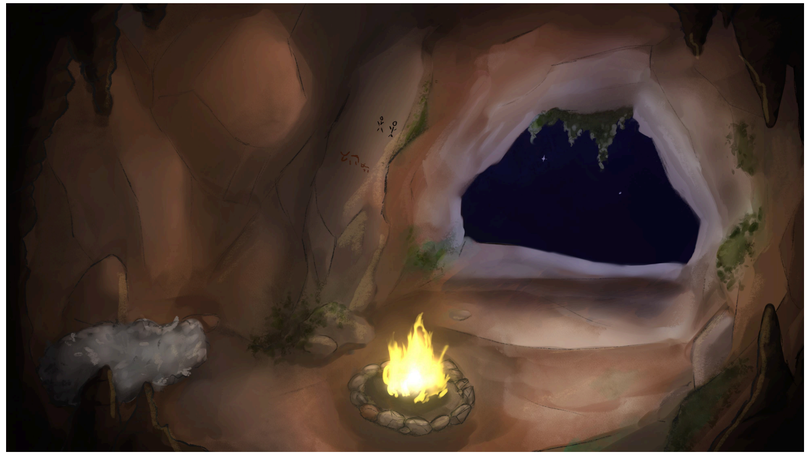
Spatial Interaction: Visitors interact with projected elements on a table or surface, guided by natural curiosity to touch objects that appear tangible.

05 Visual Language

To appeal to our target audience, we adopted an illustrative, child-friendly visual style inspired by children’s books and comics. The visual language combines:
A cartoony, friendly style, vibrant colours, clear shapes and soft backgrounds. The Homo sapiens characters are visually emphasised to maintain narrative focus, making the backgrounds not too distracting. In total, the project includes over 100 hand-drawn digital illustrations, including one animation. These visuals are the first thing a visitor will notice.



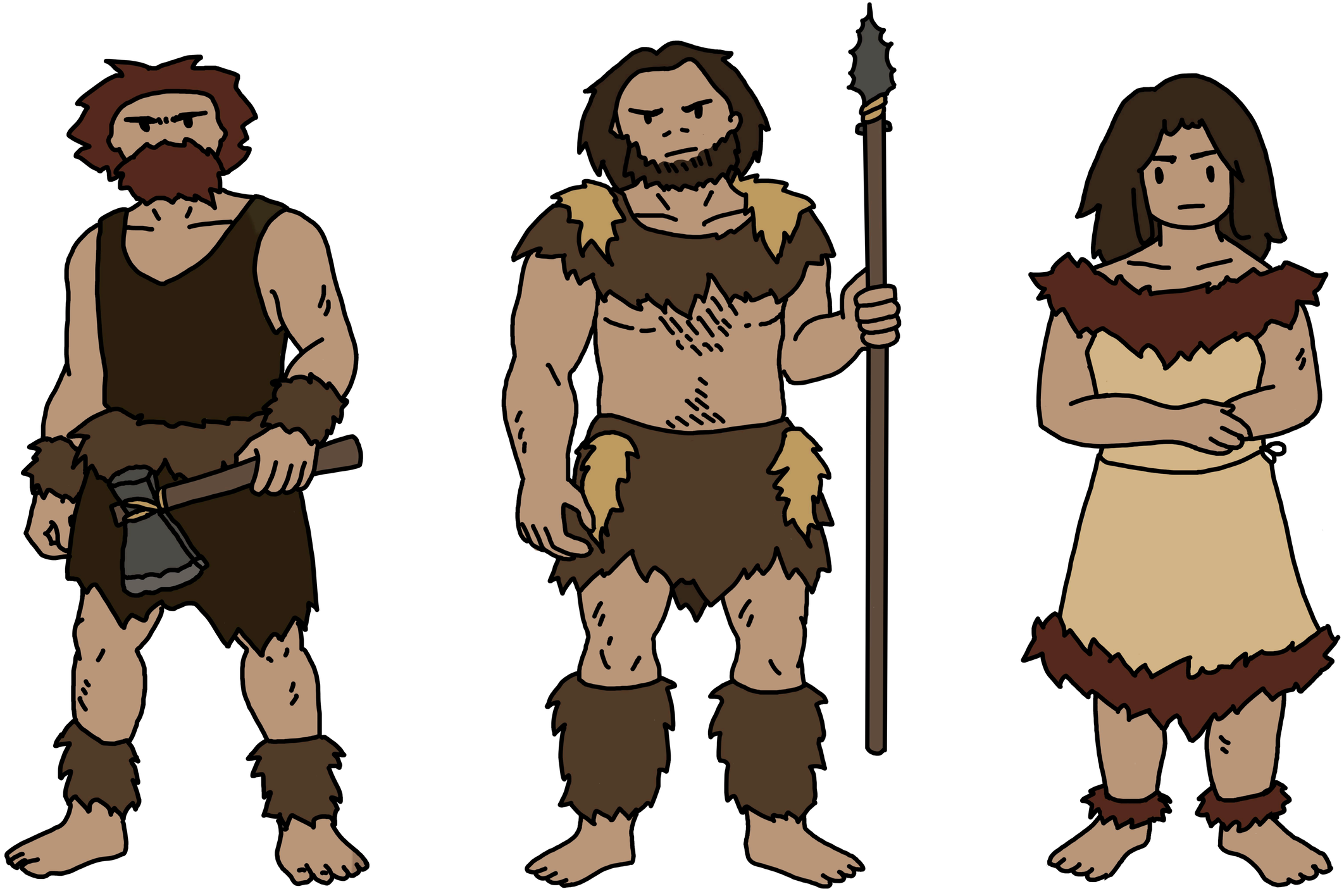








































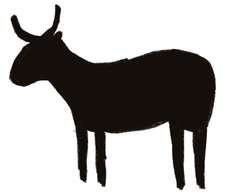


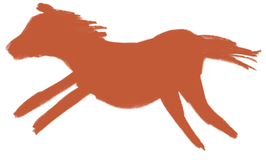










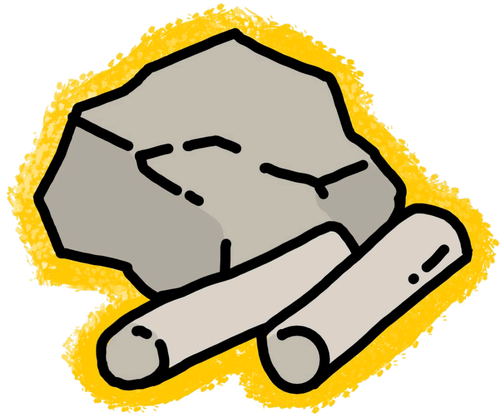


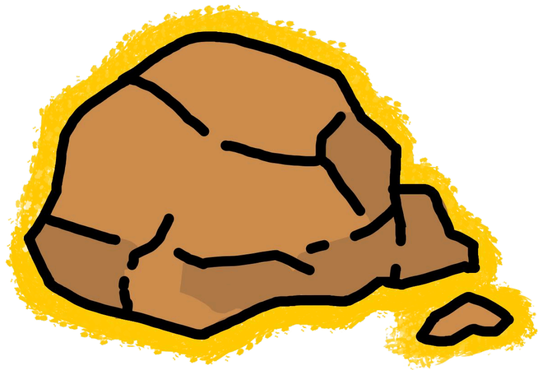


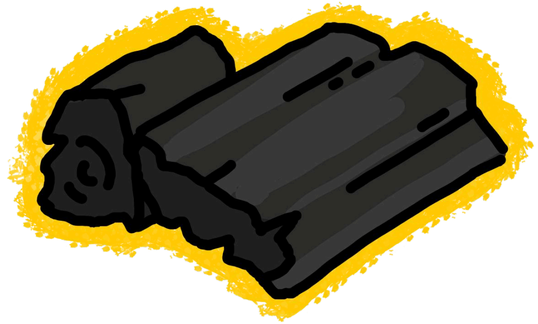


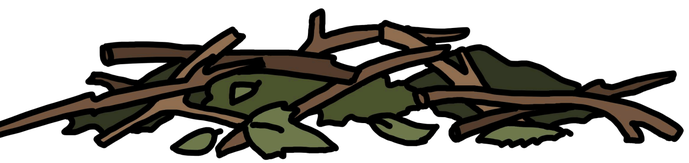


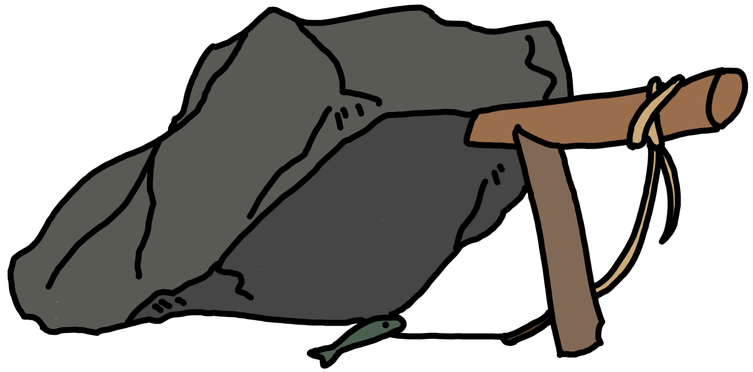


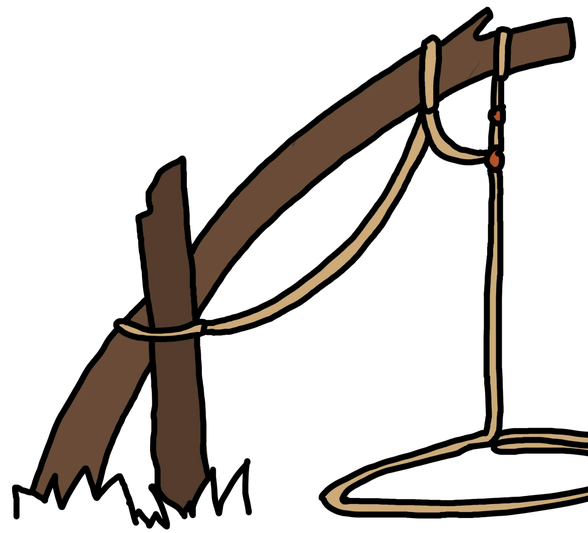










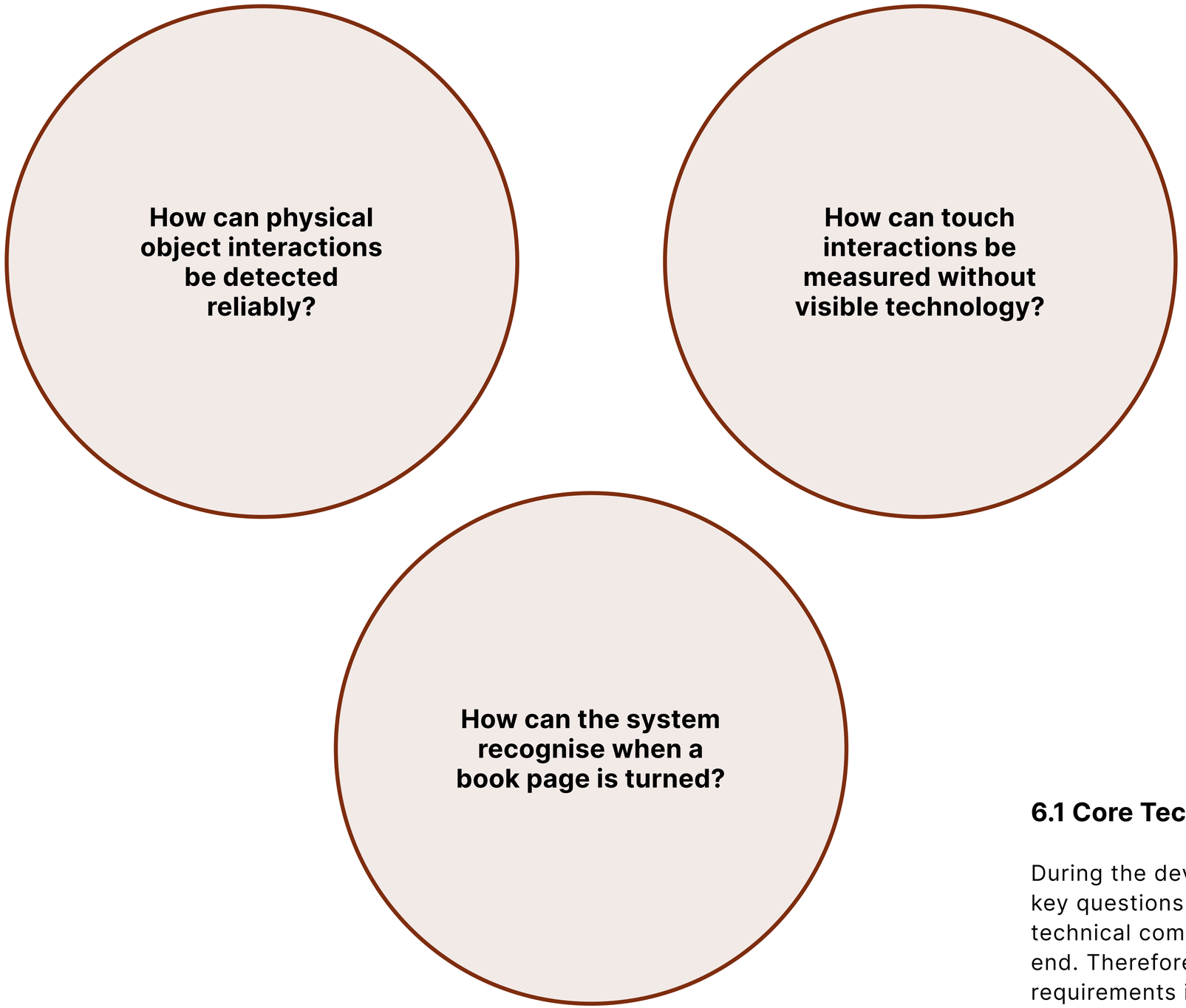








06 Technical Realization



6.1 Core Technical Questions

During the development we tried finding some key questions as a guide to which type of technical components we would need in the end. Therefore, we could separate our technical requirements into three different parts.

Chapter 1

Wake up

05 : 30 AM River camp

Continue

Chapter 1

05:30 AM River Camp

Wake Up

The First Tools

Tools were essential for early humans to survive.
The oldest known stone tools were made in Africa more than three million years ago. They were the beginning of a long history of technology that slowly changed how people hunted, built shelters, and prepared food.

The Lomekwian and Oldowan Toolsets

The Lomekwian toolset is one of the oldest known tool traditions. These tools were very simple and mainly used to break bones and crush plants.

The Acheulean Toolkit

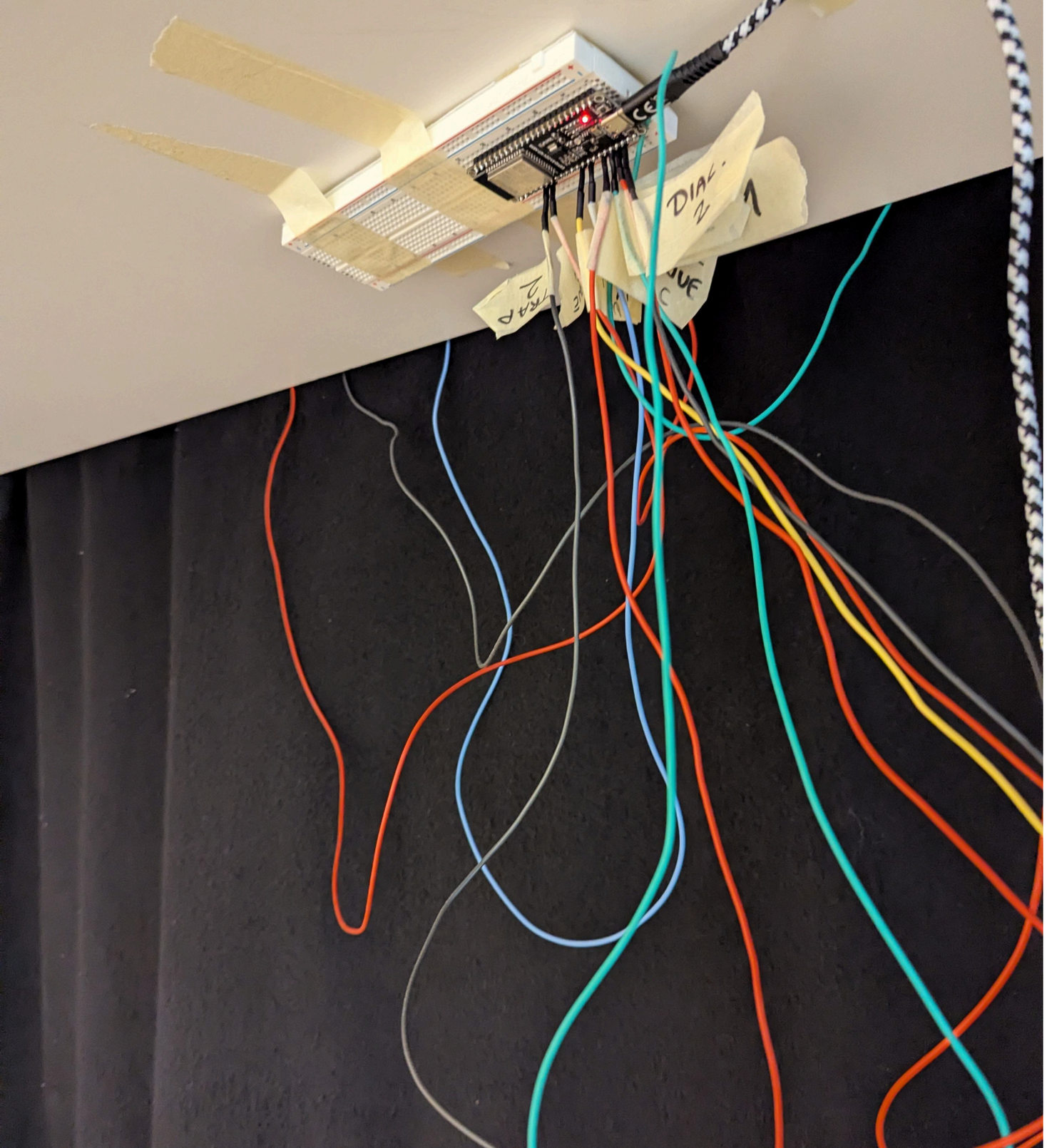
Around 1.7 million years ago, the Acheulean toolkit appeared. Its most famous tool is the hand axe. Hand axes were carefully shaped and could be used for cutting, digging, and hunting. This tool tradition lasted for hundreds of thousands of years.

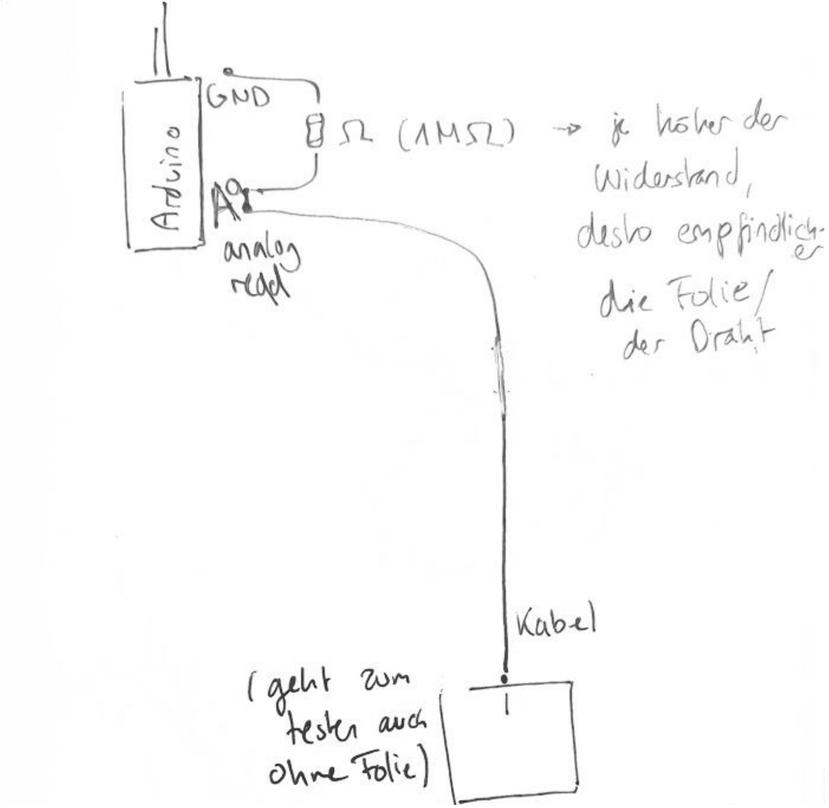
The Levallois Technique

Later, early humans developed the Levallois technique. Instead of shaping each tool directly, they first prepared a stone core and then struck off thin, sharp flakes in a controlled way.

Aurignacian and Magdalenian Tools

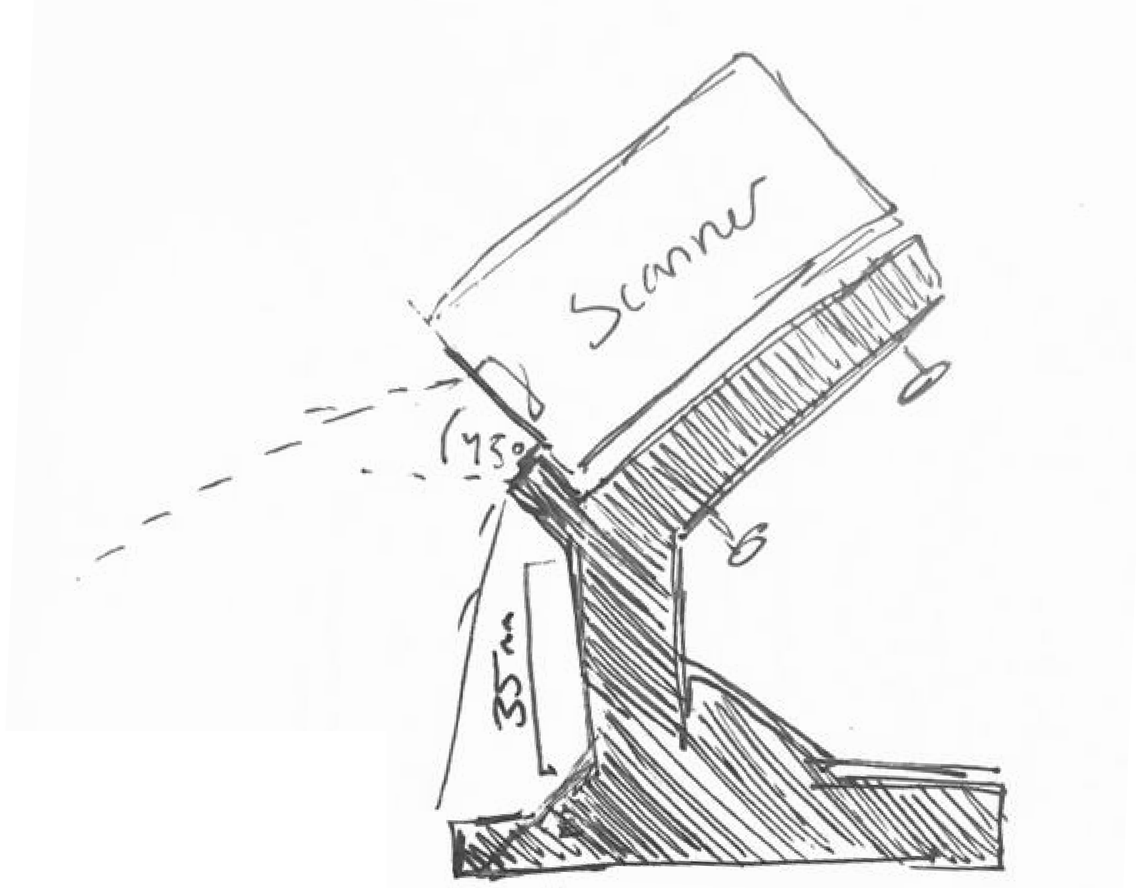
With the rise of Homo sapiens, tools became more refined. Aurignacian tools included blades, scrapers, and some of the first tools made from bone and antler. During the Magdalenian period, toolmaking became even more precise.
People made needles, harpoons, and finely carved tools. Some tools were mainly practical, while others also had decorative or artistic purposes.

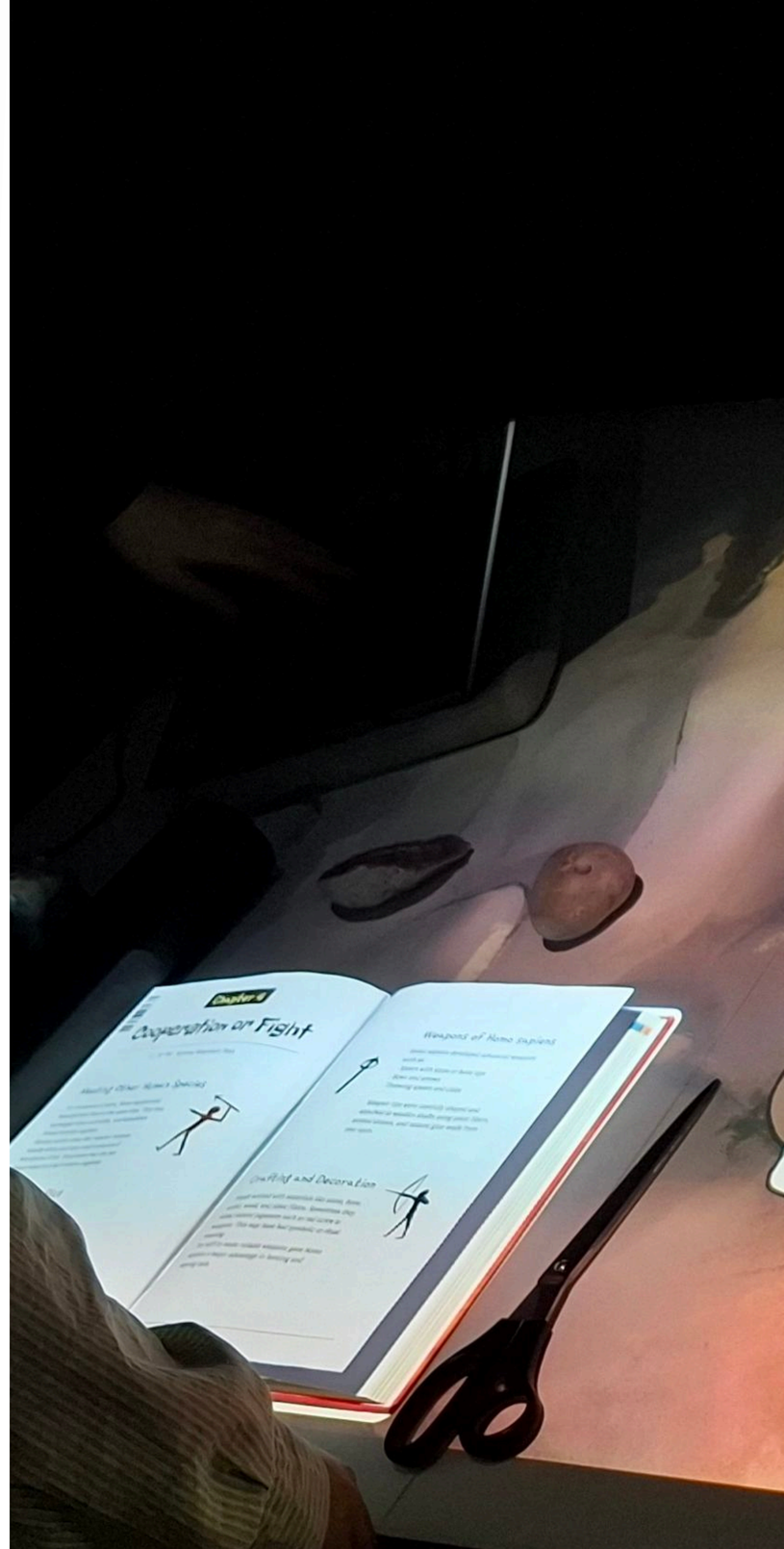




06.2 Implemented solutions

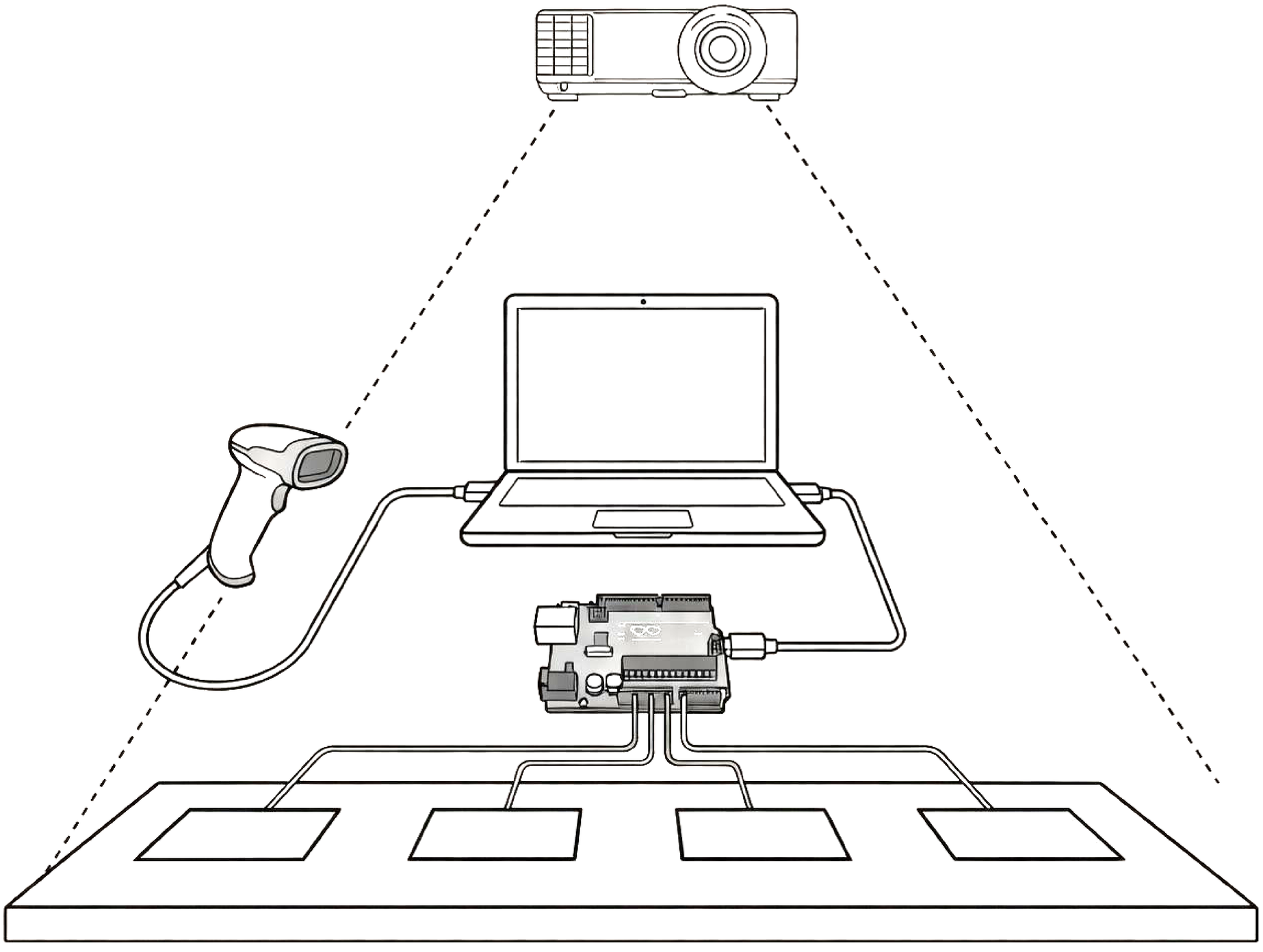
To detect physical touch, we considered using a touchscreen, but this would have required constant overhead lighting on the book and stones, which conflicted with the desired atmosphere. Instead, we implemented capacitive touch sensors, which worked reliably in combination with a projector and allowed for invisible interaction points beneath the table surface. The initial idea of detecting page turns in the book was using light sensors and light barriers but these could be easily disturbed by hand movements and cause false signals. We ultimately chose a barcode-based solution, placing a unique barcode on each page. A barcode scanner then allowed the system to always know exactly where the user was in the story.





After 5 minutes of no barcode being scanned, the projection will turn dark, displaying a text that encourages the book being opened. All interactions and mini-games were implemented in a browser environment.
A microcontroller acted as a keyboard, sending inputs from the physical setup directly to the digital website.
Each component was prototyped and tested individually before being integrated into the final setup. All technical elements were hidden within and beneath the physical structure to preserve the immersive illusion of a storybook that visitors can physically read through.

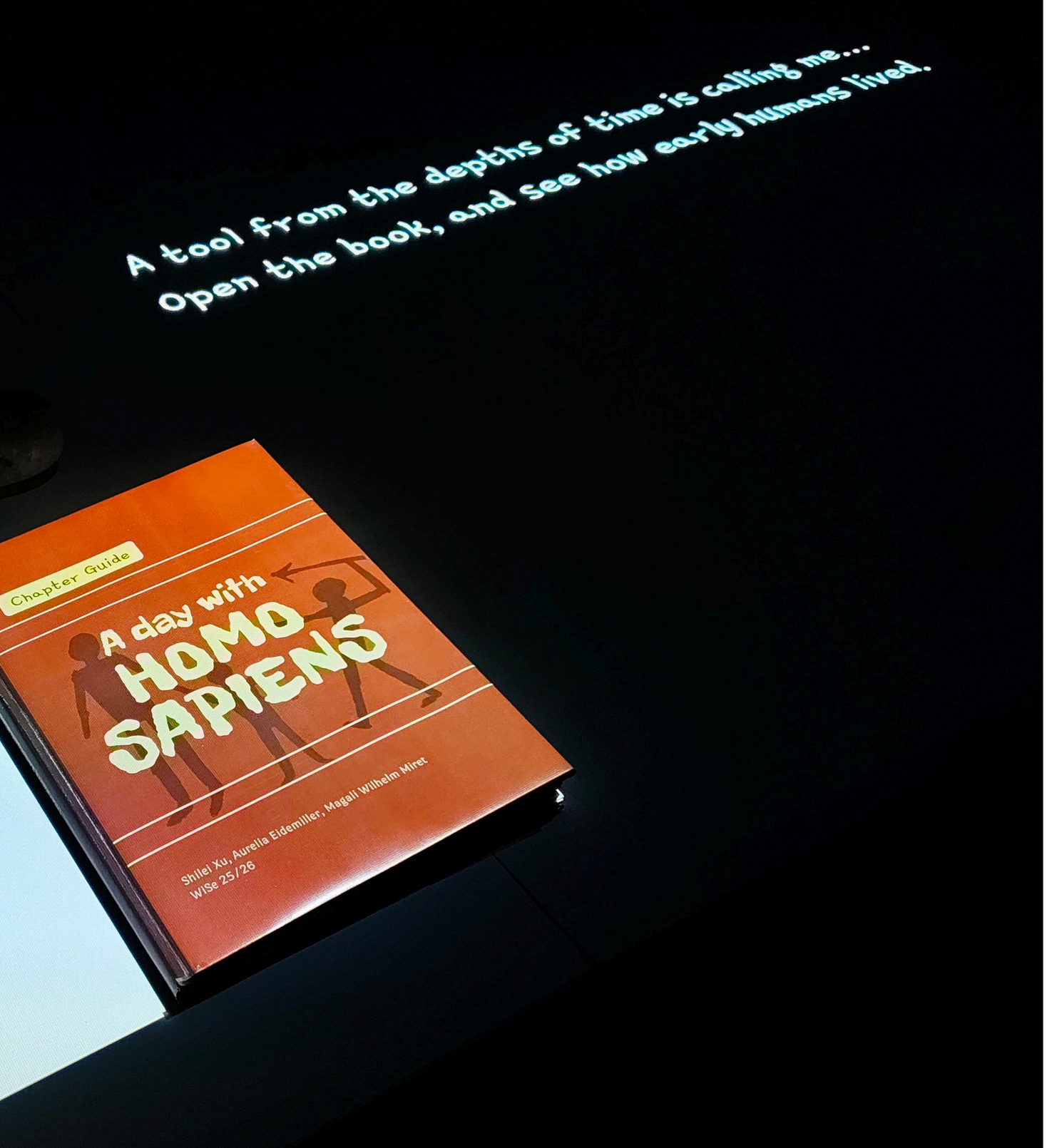




While the individual components functioned reliably on their own, integrating them into a single program introduced additional challenges. In particular, calibrating the sensitivity of the capacitive touchpoints proved demanding, as sensor values fluctuated due to interference and varying cable lengths. With eight separate touch areas, achieving consistent and stable input required extensive testing and adjustment. Despite these challenges, all technical elements were ultimately concealed within and beneath the physical setup, preserving the immersive illusion of a storybook world that visitors could physically read through and explore.

07 Conclusion





The final exhibit successfully combines storytelling, physical interaction, and educational content into a cohesive experience. By avoiding traditional touchscreen interfaces and focusing on tangible interaction, the project encourages exploration, empathy, and curiosity. Visitors are not only informed about early human life but also invited to actively take part in it.

Due to the lack of time, we had to cut out some content, but if we had more, we would make several improvements: Replacing the barcode scanner with an overhead camera system. Implementing previously scrapped storylines and alternative endings. Adding more detailed and varied interactions and further polishing of visuals and producing a printed version of the book.



2025/26 IG2
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